

The Mystery of Ontogenic Plant Diversity and the Attitude of Biodiversity Conservation NGOs to Biodiversity Projects in Nigeria

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Understanding Plant Morphology in Nigerian Forests

There are lots of mysteries in the diversity of plant morphology in Nigerian forests during their developmental stages that need to be understood by plant taxonomists in the survey of tropical plants. One such mystery is the one I encountered in the genus *Cercestis* in a comprehensive plant survey, which my team members and I have been conducting for the past three months plus at the Cross River National Park, Cross River State, Nigeria under the mentorship of Professor Israel Borokini. He is one of the few mentors who care for the development of academics in his home country, despite being in the diaspora. He is the head of Conservation Ecology and Biogeography Lab, Montana State University, Bozeman, United States. The survey is under the sponsorship of his lab, and he has always been encouraging me, which is why I haven't given up on the survey despite various challenges and difficulties we have encountered so far, both human and inhumane.

Mentorship and Field Challenges

At the initial stage, when it seemed nothing was moving in terms of commencing the survey and there was a little clash between me and the head of the NGO, I remember his comment, "Alfred take it easy, things can be slow." Despite his busy schedule in the US, he has looked for every opportunity to visit us in the forest. Yet here we have a professor at a stone's throw from the survey site, claiming to be overseeing the project but never having it in his thoughts to visit the site. He sits in the comfort of his office requesting a report that will properly give a very beautiful acknowledgment to his organization.

Morphological Diversity in *Cercestis*

Back to the subject of the day, a significant example of these plants is *Cercestis mirabilis* and *Cercestis kamerunensis*. In my first three weeks of the survey, I was very confused with these plants having diverse morphological physiognomies. I unknowingly tagged the same plant species as different unknown species entirely, judging from their striking morphological differences. It was unknown to me that those plants I had tagged as different unknown species were actually the same species but at different ontogenic stages. After some research about the plants, I eventually discovered the mystery in their morphological differences to be ontogenic.

Ontogenic Changes in *Cercestis mirabilis*

At the juvenile stage of *Cercestis mirabilis*, the leaves are entire hastate and silver-maculated (Figure 1). After a while, the color changes gradually to green (Figure 2). At this stage, the plant begins to send its roots to the adjoining trees by both horizontal and vertical anchoring roots (Figure 3). The horizontal roots are used as anchors on the tree stems, while the vertical roots extend to the soil for nutrient absorption, forming a climber.

Ontogenic Changes in *Cercestis kamerunensis*

In the case of *Cercestis kamerunensis*, at the juvenile phase (Figure 3), they usually creep on the forest floor with an oval leaf shape. As they grow older, their leaves begin to perforate longitudinally, mostly climbing on a host tree with their roots anchored on the stems (Figures 3 & 4). At the adult phase, they have fully developed roots anchored on a host tree. Another morphological characteristic of an adult *Cercestis kamerunensis* is successive rosettes of leaves, usually separated by an ascending flagelliform narrow part of the stem (Figure 4). The adult phase of *Cercestis kamerunensis* is also characterized by inflorescence and infructescence (Figure 5).

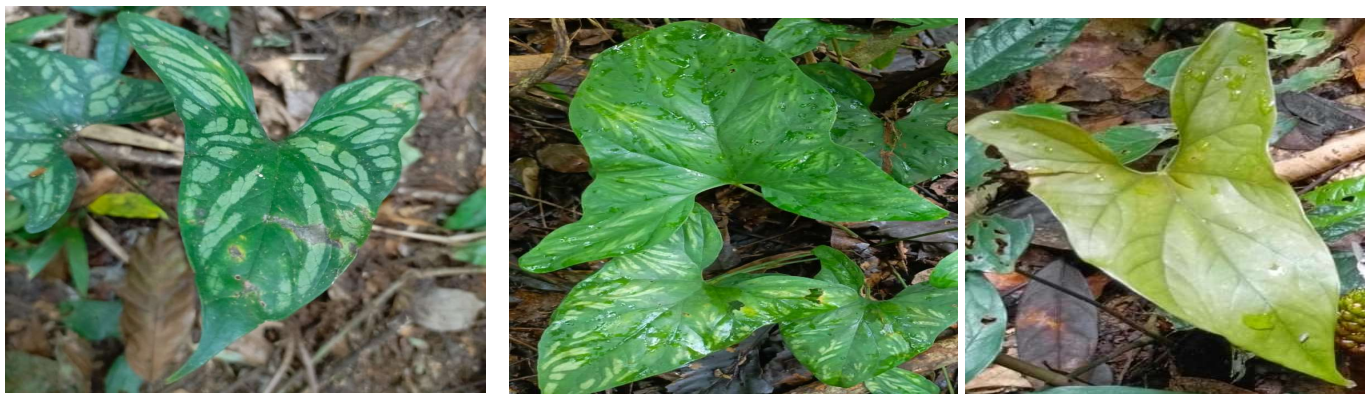


Figure 1. *Cercestis mirabilis* at the juvenile growth stage having entire hastate silver maculated leaves (left), creeping stage on forest floor, Bashu, CRNP, Nigeria.. Juvenile *Cercestis mirabilis* getting rid of the silver colour (middle), creeping stage on forest floor, Okwangwo, CRNP, Nigeria. Juvenile *Cercestis mirabilis* with brownish yellow colour (right), creeping stage on Kwa riparian forest floor, CRNP, Nigeria.

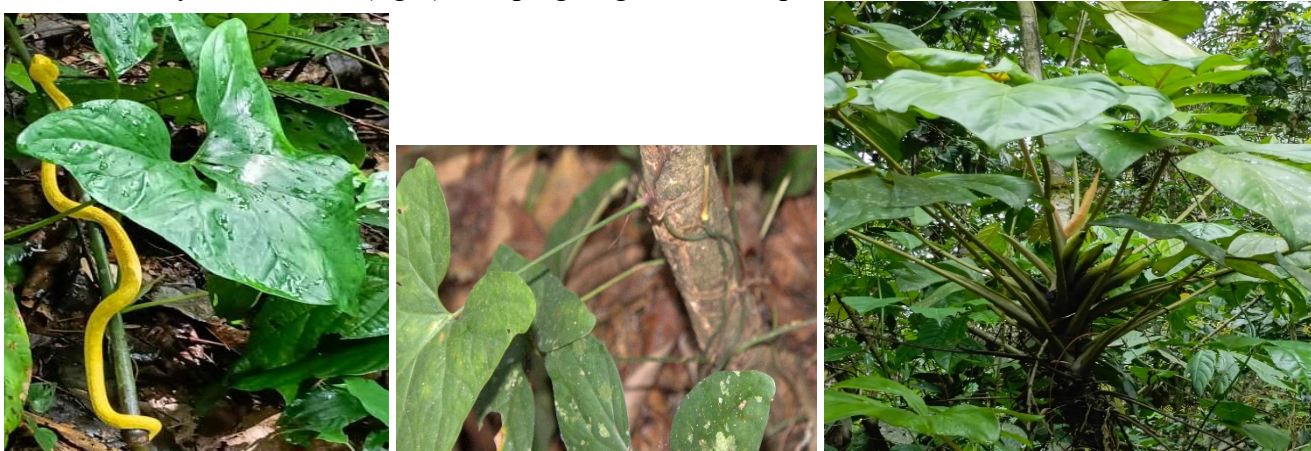


Figure 2. *Cercestis mirabilis*, juvenile phase of a form with entire hastate plain green leaf, creeping stage on forest floor, and beautiful *Atheris squamiger* snake hibernating underneath Osomba, CRNP, Nigeria (left) *Cercestis mirabilis*, gradually advancing from a juvenile to adult phase with entire hastate plain green leaf, anchoring the roots onto a tree stem (middle) and *Cercestis mirabilis*, adult phase on small tree trunk and fully developed flowering individual (right)



Figure 3. juvenile *Cercestis camerunensis* creeping stage on forest floor with oval shaped leaves, along Ekameghen river, CRNP, Nigeria (left), juvenile *Cercestis camerunensis* creeping stage on forest floor with one oval shaped leaf and one leaf longitudinally perforated (middle), *Cercestis camerunensis* with longitudinally perforated leaves approaching adult stage, already climbing and having its roots anchored on a tree along Ikpan river at Oban, CRNP, Nigeria (right)



Figure 4. Dr Alfred trying to examine the roots of a climbing *Cercestis camerunensis* Bashu Salt Lick, CRNP, Nigeria (left), *Cercestis camerunensis* approaching an adult phase on a tree trunk (middle), subadult *Cercestis camerunensis*, stem fixed to the trunk by horizontal anchoring roots with successive rosettes of leaves separate by an ascending flagelliform narrow part of the stem, Erokut, CRNP, Nigeria



Figure 5. Adult phase of *Cercestis camerunensis* with some inflorescences and infructescences at Erokut, CRNP, Nigeria

The Role of Biodiversity Conservation NGOs

As there is diversity in plant ontogeny, there is also diversity among NGOs in Nigeria claiming to be involved in biodiversity conservation. It is essential to inform seasoned biodiversity researchers in the diaspora to be cautious about the NGOs they trust with their hard-earned money for biodiversity conservation studies in Nigeria. I have conducted plant surveys for years under the supervision of renowned conservation agencies like Proforest, but I have never encountered an experience like this one. I refuse to mention the name for confidentiality's sake, but those who have worked with them will know the NGO I am referring to. Such NGOs do not care about the success of your project and can trade any part of the project to frustrate those involved.

Equipment and Support Issues

Is it purchasing inferior items that will never stand the test of time in the field? I have used a rain boot consecutively for more than three years for fieldwork, and it never wore out. An NGO bought rain boots for my team, which were not used for more than two months before all the rain boots tore in one part or another. I have used an "I Better Pass My Neighbor" generator for years, and it has never once burnt any of my electronics connected to it. In this case of a "Sunshine Generator," we used it for just two weeks, and all our laptop and phone chargers got burned. All efforts to fix it proved abortive.

Monitoring and Accountability

How on earth will you say you are monitoring a survey project meant to last more than three months and, within a span of more than three months, you never thought of sending just a representative from your organization to see what those you claim to be monitoring are actually doing in the field? Only Nigerian NGOs can do that. And all of a sudden, you start requesting a "Comprehensive Report" that will acknowledge the effort of your NGO on the project without caring about the deliverables of the project. For what, please? All the years I have carried out plant surveys under Proforest, despite the fact that the sponsor of the project is a different company entirely, they send at least two of their representatives for every field survey all the way from Ghana, the UK, and even Canada to join the team for at least the first three days. And when the survey has been concluded, aside from the data collected, they ask for important information like GPS tracks of your trips that you cannot manufacture unless you actually carried out the survey. They pay all your entitlements when due, but some Nigerian NGOs want to become your gods, waiting for you to prostrate before them before you are paid for what you worked for.

Conclusion

For serious plant ecologists intending to embark on a comprehensive plant survey of forests in Nigeria, please be on the lookout for my article titled "Challenges and Insights from a Comprehensive Floristic Survey of Tropical Forest: A Case Study of Cross River National Park

and Its Implications for Conservation and Sustainable Management," which will be published soon. It will help you overcome some of these challenges I have shared.