

Brachytron



Nederlandse Vereniging
voor Libellenstudie

Libellenvereniging
Vlaanderen



Done try – reflecting on a joint expedition by Nigerian and Dutch odonatologists

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Summary

Seven Nigerian and four Dutch odonatologists organized a collaborative expedition to Nigeria's Cross River State in 2022. While exploring one of the most biodiverse but least well-known regions of Africa, they documented several rare, poorly known and even undescribed dragonflies and damselflies. The expedition benefitted from Dutch resources and taxonomic expertise and from Nigerian knowledge and networks in the field. Moreover, the team experienced that a collaborative expedition has important benefits beyond the ecological insights obtained. These benefits arise from knowledge exchange among team members and from broader knowledge distribution through local connections. Cross-continental collaborations can therefore provide distinct support to research and conservation in countries of the Global South. Such projects also come with challenges that stem from cultural differences, which in itself form valuable learning experiences. This article reflects on the collaboration during the Dutch-Nigerian Odonata expedition and presents seven recommendations to help navigate some of the challenges that were encountered. With this, we hope to encourage other ecologists to organize field expeditions collaboratively.

Samenvatting

de Vries J.P.R. 2026. Done try – reflecties op een gemeenschappelijke expeditie van Nigeriaanse en Nederlandse libellenonderzoekers. Brachytron 26(1): 1-8.

Zeven Nigeriaanse en vier Nederlandse odonatologen organiseerden een gezamenlijke expeditie naar Nigeria's Cross River State in 2022. In een van de meest biodiverse maar minst bekende regio's van Afrika vonden zij diverse zeldzame, slecht bekende en zelfs enkele tot dusver onbeschreven soorten libellen. De expeditie kon gebruik maken van Nederlandse middelen en taxonomische expertise, evenals van Nigeriaanse kennis en connecties in het veld. Daarnaast heeft het team ervaren dat de waarde van een gezamenlijke expeditie veel verder reikt dan de verkregen ecologische kennis. Deze waarde ontstaat door kennisuitwisseling tussen teamleden en door bredere kennisdeling, wat bevorderd werd door goede lokale connecties. Hierdoor kan intercontinentale samenwerking het onderzoek en natuurbehoud in landen in het Mondiale Zuiden versterken. Bij dergelijke projecten brengen culturele verschillen ook uitdagingen met zich mee, die op zichzelf een leerzame ervaring vormen. Dit artikel reflecteert over de samenwerking tijdens de Nederlands-Nigeriaanse libellenexpeditie en doet zeven aanbevelingen om met enkele uitdagingen om te gaan. Wij hopen dat dit andere ecologen zal aansporen om gezamenlijk veldexpedities te organiseren.

Keywords: Biodiversity Conservation, Capacity Building, International Collaboration, Knowledge Exchange, Nigeria, Odonata

In January 2022, four Dutch and seven Nigerian odonatologists surveyed the Odonata of Cross River State, southeast Nigeria. This region supports Nigeria's largest remaining tropical rainforests and is part of one of Africa's main centers of Odonata diversity and endemism, but its fauna remains little-known. This article reflects on the collaboration in this expedition and lists some recommendations. We hope to inspire other biologists from different parts of the world to organize field expeditions collaboratively. Such collaborations can cover regions that are otherwise challenging to reach and can have multiple positive outcomes beyond the ecological data obtained.

'To try' makes a big compliment in Nigeria: one who has 'done try' has done his very best. In October 2020, Ojonugwa Ekpah tried to initiate a joint exploration of Nigeria's Cross River State by reaching out to Dutch odonatologists. Two students, Jan van Leeuwen and Rick Buesink answered his call to try organizing this together. In the end, the expedition could take place only two years later, after the Covid pandemic. The field team had by then grown to nine participants and was supported logistically by Kehinde Kemabonta and Sylvester Ogbogu, professors at the universities of Lagos and Ile-Ife. Although it will always remain challenging to prepare a project like this remotely through online meetings, the necessary funding and permissions were obtained and the Dutch participants took flight to Lagos, Nigeria. As they were picked up by Kehinde, Sylvester and a military escort, they soon realized that for a safe and effective survey in Nigeria close collaboration with local peers was just critical. Safety judgments, local expenses (Dutch bank cards would not work), navigating the paperwork, obtaining export permission for specimens, passing the roadblocks, and establishing local contacts such as with park rangers and community leaders, could never have been managed otherwise.

After two days of preparations in Lagos, we boarded an inland flight to Calabar, Cross River State. This state supports vast tropical lowland forests and highlands which connect to the more

extensive volcanic highlands of Western Cameroon (Figure 1). Large areas of mainly lowland rainforest fall within the Cross River National Park. Only two team members had visited the region before as for most Nigerians, travelling to this region is also challenging and costly. Prior knowledge about Cross River State's Odonata was poor: no thorough region-wide survey existed, but prior records of localized species are reported by Gambles (1970, 1975), Parr (1977), Ekpah et al. (2020) and Akindele et al. (2021). The names mentioned here highlight that Nigerian researchers now lead studies on Nigerian Odonata, while the study of African Odonata has historically been dominated by western odonatologists. Ekpah et al. (2020) published the first systematic survey of Odonata in Cross River State but sampled a single stream. Nevertheless, Cross River State and adjacent Western Cameroon are regarded as one of Africa's most diverse regions for Odonata and support multiple endangered species. This makes this region one of Africa's primary research and conservation priorities (Dijkstra et al., 2011).

Our survey recorded 123 species of which three are presumably new to science, including a second West-African species in the genus *Atoconeura* (Figure 2H). Other species in this genus are mostly confined to the mountain ranges of eastern Africa (Dijkstra, 2006). Twelve other species represented new country records for Nigeria. Some of these were expected because the species were already known from neighboring countries, but others represent notable range extensions. For example, *Allocnemis interrupta* was previously only known from rainforest streams in Gabon at a distance of 576 km (Legrand, 1984). Several other little-known species were photographed in situ for the first time. Some examples of enigmatic species and their habitats are presented in Figure 2 (De Vries et al. 2024).

We also obtained better insight into the ecology of several little-known species, such as of the amazing color variation of the endemic *Africo-cypha centripunctata*. Our observations suggest

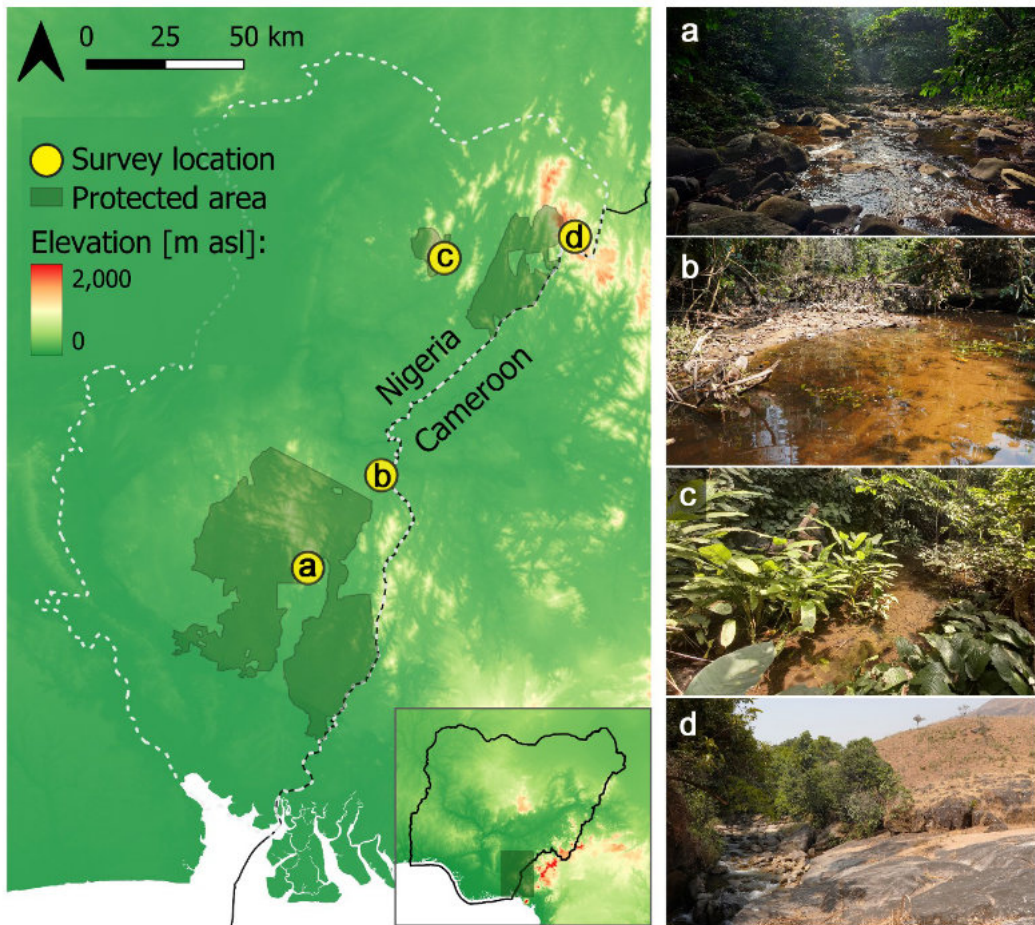


Figure 1. Map of Cross River State (dashed outline) in southeast Nigeria, with indication of the sampling locations and protected areas. Photos show examples of different types of streams that were investigated. Lowland locations supported fast-flowing rocky streams (a) as well as slow-flowing or stagnant water with sandy and organic substrates (b & c). The highland Obudu plateau (1000-1500 m a.s.l.) supported fast-flowing streams of differing sizes. Some of them run through montane forest remnants but outside protected areas, only narrow strips of riparian woodland remained (d).

Figuur 1. Kaart van Cross River State (stippellijn) in het zuidoosten van Nigeria, met situering van de onderzochte locaties en de beschermde gebieden. Foto's a-d geven voorbeelden van onderzochte beekjes en andere wateren. De laagland-locaties hadden snelstromende, stenige beekjes en langzaam stromende of stilstaande wateren met zandig of organisch substraat. Het hooggelegen Obudu-plateau (1000-1500 meter boven zeeniveau) had snelstromende beken van verschillend formaat. Sommige liepen door resterend bergbos maar buiten deze reservaatjes was slechts een smalle strook natuurlijke oeverbos behouden (d). Photos: Rick Buesink (a, c) & Reinier de Vries (b, d).

that both for male and female imagoes, abdomen colors change from bright blue to whitish to brick-red as they mature. This species is currently regarded 'Endangered', but we found it to be common in degraded habitats as well. However, other regional endemics such as *Allocnemis vicki*, *Umma mesumbei* (both Endan-

gered) and *Neurolestes nigeriensis* (Critically Endangered) were exclusively found in well-preserved montane streams on the Obudu plateau (1000-1500 m a.s.l.). In this localized habitat, anthropogenic pressures such as deforestation and overgrazing of stream catchments pose increasing threats to these threatened species.



Figure 2. Some rare and threatened Odonata from Cross River State, Nigeria. *Libyogomphus tenaculatus* (a), *Umma purpurea* (b), *Pentaplebia stahli* (c) and *Ictinogomphus fraseri* (d) were found along streams in lowland forest in Cross River National Park. *Nubiolestes diotima* (e), *Allocnemis vicki* (f), *Neurolestes nigeriensis* (g) and an undescribed *Atoconeura* species (h) were found along streams in montane forest on the Obudu plateau.

Figuur 2. Enkele zeldzame en bedreigde soorten libellen uit Cross River State, Nigeria. *Libyogomphus tenaculatus* (a), *Umma purpurea* (b), *Pentaplebia stahli* (c) en *Ictinogomphus fraseri* (d) werden gevonden langs beekjes in het laaglandregenwoud van Cross River National Park. *Nubiolestes diotima* (e), *Allocnemis vicki* (f), *Neurolestes nigeriensis* (g) en een onbeschreven *Atoconeura*-soort (h) werden gevonden langs beekjes in bergbos op het Obudu-plateau. Photos: Rick Buesink (a, d, e), Jan van Leeuwen (b, c, g) & Reinier de Vries (f, h)

Conservation measures to preserve and expand the remaining pockets of montane forest habitat, prevent soil erosion and limit disturbance of streams by livestock, are urgent.

Benefits of a cross-continental collaboration

Cross-continental collaborations are a powerful means of supporting researchers in countries of the global south, where biodiversity research is hindered by persisting constraints in taxonomic knowledge and access to resources, facilities and training, despite harboring earth's most biodiverse habitats (Sánchez Herrera et al. 2024, 2025). Knowledge exchange occurred in the first place among team members, which included students from both Nigeria and the Netherlands who were supported by Babasola Adu and K-D Dijkstra (Figure 3a-c). The latter is a leading

expert on African Odonata whose guidance provided outstanding learning opportunities for the whole team. Participants shared experiences in fieldwork, identification, collection and in reporting of results afterwards, although this was more challenging at a distance. Most importantly, the project has built lasting professional relations among participants, has laid a basis for future projects and has helped two Nigerian participants to proceed in PhD-studies on Nigerian Odonata.

Broader knowledge distribution was facilitated by connections with local forest rangers and conservationists, which have sparked education and conservation initiatives involving the local communities. For example, on the Obudu plateau, Abiodun Adedapo founded a local Odonata con-

ervation club that organizes excursions and distributes educational material among forest rangers and schoolchildren (Figure 3d). Furthermore, the University of Lagos organized a full-day workshop on taxonomy and ecology of African dragonflies at the end of our stay, led by K-D Dijkstra and attended by over 30 participants from several Nigerian universities (Figure 3e). Both these examples reflect that broader knowledge distribution in the surveyed country is typically accredited to efforts of local collaborators, in this case the Nigerian members of our team.

This collaboration also brought important practical benefits from both worlds together. On the one hand, we could build upon the resources, facilities and taxonomic expertise available in the Netherlands. On the other hand, we could build upon Nigerian knowledge and networks in the field. Some team members knew the area and its logistic challenges, and through exchange with locals and forest rangers, they gained further insight into local habitats and organized travelling and accommodation in remote villages. Nigeria is English-speaking but is also one of the most culturally diverse countries worldwide, hence the Nigerian members of our team did not know all local customs either. With the help of local rangers, they arranged meetings with local chiefs to discuss our access to communal lands. Such meetings require small talk and proper gifts (like a drink that was shared right away). Our team members made sure they were respectful but not too lengthy, as we wished to preserve fieldwork time.

Specimens were brought to the Netherlands and stored in the national collection at Naturalis Biodiversity Center. We are aware of the controversy around specimens brought from tropical to western countries, but at the moment Nigeria does not have a permanent arthropod collection with relevant reference material and safe storage conditions. Long-term storage is also considerably more challenging when facing wet tropical conditions and high import costs for storage materials. Naturalis guaranteed safe long-term storage and allowed us to access excellent

reference material and facilities for photography and genetic analyses. This was crucial to confirm species identity and to document specimens on the globally accessible BOLD database (<https://boldsystems.org>). Via this database, specimens and documentation are made available for scientific research all over the world. Therefore, our team agreed that until a national Nigerian collection is established, specimens should be stored in the collection of Naturalis. Collected material should be returned when Nigeria establishes a national natural history collection that meets international standards for preservation, which western institutes like Naturalis should help with.

The collection and transfer of specimens required permission compliant with national and international legislation (the Nagoya protocol). Both Nigerian federal authorities and Naturalis demand this, but we encountered differences in administrative standards between both parties. These differences were challenging to navigate for a self-organized expedition and required involvement from both Nigerian and Dutch team members. Future expeditions should preferably get informed about requirements by the receiving party before requesting permission from the relevant federal authorities, well in advance of the actual data collection.

Recommendations

We look back on a successful expedition and gained insights in how to improve the organization of future collaborations. Based on our experience, we listed some practical recommendations:

- *Divide organizational roles*

Two main organizers did most of the organizational work in our survey, but we realized during the survey that it is much more effective to make a concrete task division in advance. Pairs of team members could be responsible for tasks like travel and accommodation, finances, food and fieldwork (planning and materials). In international teams, it will strengthen exchange when different nationalities organize a task together.

- *Discuss expectations of rest*

We encountered different expectations about fieldwork hours and rest days. Some Nigerians valued rest in the afternoons and on Sundays while others and the Dutch wanted to maximize survey time. We solved friction about this with more prior discussion and planning of rest moments. For example, we planned some sampling locations at short walking distances that allowed people to take afternoon rest, optional surveys that involved long hikes, and early bird excursions for those interested. We also realized that even for the most fanatic, moments to reflect and note down impressions proved valuable and facilitated our reporting afterwards.

- *Do enough check-ups*

This advice refers to both preparation and expectations during the expedition. Even with tasks being divided, don't settle with promises but keep checking if things are really organized. It is wise to check on logistics and materials before leaving for the field. Our team brought tents, insect nets and collection material from the Netherlands, and bought food and water locally. We should however have confirmed before departure from the Netherlands if proper camping gear was available for all participants. We would also advise foreigners to bring some fibrous and energy-rich food such as bars, as the Dutch were used to a more fibrous breakfast and lunch than the Nigerians. During the survey, regular check-ups in the evening were helpful to align each other's expectations.

- *Donate field equipment*

In many countries fieldwork materials are not locally available, or the purchaser would face high costs for low-quality items. Resultantly, most Nigerian odonatologists lack photographic equipment, use self-made nets and fold collection bags from ordinary paper, which quickly damages specimens. Collaborative projects provide a unique opportunity to acquire professional materials. In this project, the Dutch team brought and donated equipment such as identification guides, insect nets, pergamine collection envelopes and smartphone-macro lens setups, which are still being

used for further research today. We strongly recommend future projects to budget such equipment for all participants in funding applications.

- *Agree upon financial compensation for local expedition members*

Our team experienced some tension about compensation for participating in the survey. Our funding covered the expedition costs for all participants but had anticipated voluntary participation. The Dutch could afford so but only afterwards, they realized that this one-month voluntary commitment could not be expected from their Nigerian partners. For instance, a PhD-position in the Netherlands provides financial security, whereas it is common in Nigeria to have several parttime jobs next to research work. Such jobs are halted during a longer field trip. Funding for field equipment and trip expenses is great but does not take into account the necessity to bring some money home after lacking or missing out on income for a month. It may be sensitive to discuss compensation online while a project team has never met in person, yet we would recommend clarifying whether local participants are supported by their institutes or missing income and expecting compensation. By agreeing upon and reserving compensation budget in advance, tension can be avoided and finances during the expedition will be more relaxed. We therefore recommend that compensation should be included in funding, too.

- *Plan genetic analyses beforehand*

We did not reserve budget or make arrangements for DNA barcoding beforehand, which turned out to be harder afterwards. Barcoding could not be arranged directly with donation of the specimen to the Naturalis collection but eventually received financial support from Naturalis' Pontium Fund in 2024 and was finally conducted in 2025. To prevent such delays in genetic analyses and follow-up publications, we recommend making prior arrangements with the relevant collection or a third party. The definite number of samples cannot be known in advance, but a thorough survey of a biodiverse region such as Cross River State can

be expected to produce at least a full plate of 95 samples. We also recommend storing samples directly in the correct sample-plate at the end of each field day, prior to specimen preparation (for which we used acetone). This preserves DNA quality and prevents extra sample processing afterwards. At last, by writing location, sex and date on the collection bags and saving sample numbers with online entries (e.g. on observation.org), a backup of crucial information is made.

- **Bridge cultural differences**

Experiencing and bridging cultural differences is a major outcome of collaborative projects, which depends on the level of exchange among participants of different nationalities. A field expedition naturally facilitates this, but cultural differences can also stand in the way

and make it easier to stick around whom one already knows. We experienced that especially at the start of the expedition, meaningful exchange did not happen by itself but required effort of participants. It is helpful to have an attentive introduction moment, to alternate fieldwork groups and most of all to start informal conversations. Reflecting on shared experiences, finding shared interests and getting to know each other's background, friendship bonds are formed that will inspire further collaboration and knowledge sharing.

Concluding

Although a collaborative expedition comes with its own challenges, we believe that it offers unique opportunities to uncover poorly studied regions and most importantly, to exchange expe-



Figure 3. The expedition's field team in Obudu, Cross River State (a) with from left to right: Ojonugwa Ekpah and his wife, Abiodun Adedapo, Jan van Leeuwen, Babasola Adu, Rick Buesink, K-D Dijkstra, Isaac Erhomosele, Reinier de Vries and Bibitayo Owolabi. The next photos show training in dragonfly collection during the field survey (b, d) and knowledge communication in practice: K-D Dijkstra leading a field practical during an Odonata workshop at the University of Lagos (c) and Abiodun Adedapo presenting a booklet on Obudu's threatened dragonflies to local schoolkids (e).

Figuur 3. Het team van onze expeditie in Obudu, Cross River State (a) met van links naar rechts: Ojonugwa Ekpah en zijn vrouw, Abiodun Adedapo, Jan van Leeuwen, Babasola Adu, Rick Buesink, K-D Dijkstra, Isaac Erhomosele, Reinier de Vries en Bibitayo Owolabi. De volgende foto's tonen training in het verzamelen van libellen tijdens het veldonderzoek (b, d), en kennisuitwisseling in de praktijk: K-D Dijkstra leidt een veldpracticum tijdens een libellenworkshop op de universiteit van Lagos (c) en Abiodun Adedapo presenteert een gidsje met Obudu's bedreigde libellen voor lokale schoolkinderen (e). *Photos: Abiodun Matthew Adedapo (d), Jan van Leeuwen (a, b, c, d)*

rience and initiate lasting relations between biologists from different backgrounds. This makes collaborative expeditions a powerful means of capacity building for local groups and ecological research. Cross-national collaboration helps oppose the deep inequalities that persist between countries in biodiversity research. Therefore, we strongly encourage other field ecologists to initiate collaborative surveys to more regions and species groups. Many regions exist where biodiversity remains severely understudied while habitat degradation is surging, thus increased research and conservation efforts are urgent. We hope that our experience in conducting a collaborative survey can inspire other ecologists to try so.

Acknowledgements

I deeply thank all team members for joining and organizing this expedition: Ojonugwa Ekpah, Rick Buesink and Jan van Leeuwen who initiated the collaboration, Abiodun M. Adedapo, Babasola W. Adu, Ehikhamele I. Erhomosele, Bibitayo A. Owolabi and Klaas-Douwe B. Dijkstra who joined the field survey, and Kehinde A. Kemabonta and Sylvester Ogbogu who provided essential support to the organization. Abiodun Adedapo, Rick Buesink and Ojonugwa Ekpah suggested improvements to earlier versions of this article. The expedition was financially supported by the Uyttenboogaart-Eliassen Stichting (UES), the International Dragonfly Fund (IDF) and the Dutch Dragonfly Society (Nederlandse Vereniging voor Libellenstudie, NVL) and was logistically supported by Naturalis Biodiversity Center.

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