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Colette Ntépé-Nyamè: pioneer of modern tropical African Araceae taxonomy

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ABSTRACT
Colette Ntépé-Nyamè (*flor*. 1970-1988) was the first African botanist to specialize in the systematics of the Araceae, beginning with her doctoral studies at the Université Louis Pasteur at Strasbourg and culminating in the family account for the *Flore du Cameroun*. She was the first woman and the first African botanist to contribute a volume to this major Flora series. Her treatment, though published almost 40 years ago, remains foundational for aroid taxonomic studies in tropical Africa, being the most extensive and detailed so far published for any country and covering the region where aroids are most diverse; through her own collections she made the largest contribution of herbarium specimens of any field collector to this treatment. She was the first botanist to study African aroid hemi-epiphytes in detail and she made innovative discoveries in the genus *Culcasia* P. Beauv. where she significantly advanced the taxonomy of this notoriously difficult genus. The importance of her work has not previously been recognized sufficiently, but became plain during the recent preparation of the Araceae treatment for the *Flore du Gabon*. A lasting testament to her botanical perspicacity and determination was the discovery and publication of the magnificent central African hemi-epiphyte *Cercestis camerunensis* (Ntépé-Nyamè) Bogner (as *Rhektophyllum camerunense* Ntépé-Nyamè), and its untangling from the sympatric *C. mirabilis* (N.E.Br.) Bogner. Her early death robbed tropical Africa of an eminent systematist of Araceae.

KEY WORDS
Flore du Cameroun,
Central Africa,
René Letouzey,
hemi-epiphytes,
Yaoundé herbarium,
Université de Yaoundé.

RÉSUMÉ

Colette Ntépé-Nyamè : pionnière de la taxonomie moderne des Aracées tropicales africaines.

Colette Ntépé-Nyamè (*flor*. 1970-1988) fut la première botaniste africaine à se spécialiser dans la systématique des Aracées. Ses recherches sur les Aracées ont débuté lors de ses études doctorales à l'Université Louis Pasteur de Strasbourg et ont abouti à la description pour la Flore du Cameroun, l'une des principales séries de la Flore du continent. Cette étude taxonomique, bien que publiée il y a près de quarante ans, demeure fondamentale pour l'étude des Aracées en Afrique tropicale. Elle est la plus complète et la plus détaillée jamais publiée pour un pays de cette région, couvrant la région où les Aracées sont les plus diversifiées. Elle fut la première botaniste à étudier en détail les Aracées africaines hémi-épiphytes et la première femme et botaniste africaine à contribuer à la *Flore du Cameroun*, à laquelle elle apporta la plus grande contribution en spécimens d'herbier de tous les récolteurs. Ses études sur le genre *Culcasia* P. Beauv. furent novatrices et firent progresser considérablement la taxonomie de ce genre notoirement complexe. L'importance de son travail, jusqu'alors méconnue, est devenue évidente lors de la préparation récente de l'étude des Aracées pour la *Flore du Gabon*. La découverte et la publication du magnifique hémi-épiphyte d'Afrique centrale *Cercestis camerunensis* (Ntépé-Nyamè) Bogner (sous le nom de *Rhektophyllum camerunense* Ntépé-Nyamè), ainsi que sa séparation du *C. mirabilis* (N.E.Br.) Bogner sympatrique, témoignent durablement de sa perspicacité et de sa détermination botaniques. Sa mort prématurée a privé l'Afrique tropicale d'une systématicienne des Aracées des plus compétentes.

MOTS CLÉS
Flore du Cameroun,
Afrique centrale,
René Letouzey,
hémi-épiphytes,
herbier de Yaoundé,
Université de Yaoundé.

INTRODUCTION

Colette Ntépé-Nyamè (*flor.* 1970-1988, Fig. 1), who studied the systematics of Araceae during the 1970s and 1980s, was a Cameroonian botanist based in Yaoundé best known as the author of the family account for the *Flore du Cameroun* (Ntépé-Nyamè 1988), the most important taxonomic treatment of tropical African Araceae published in modern times – she was the first African botanist to author a volume of this series. She studied the systematics of Cameroonian Araceae for her doctorate and went on to produce a short but significant series of publications on these plants; her early death was a great loss to aroid research, especially in sub-Saharan Africa. She significantly advanced the systematics of African aroids because she combined an enquiring and critical mind, a solid academic training, extensive field experience and the study of cultivated and herbarium collections in Africa and Europe. She was the first African botanist to have specialized in the taxonomy of tropical African Araceae and the only one to have yet published a full Flora treatment of African taxa. The present article marks a much overdue appreciation of her pioneering work and is presented in the hope that her achievements will inspire new generations of African taxonomists to take up the challenge of the aroids, a family that, while also occurring in many drier environments, is especially characteristic and symbolic of perhumid evergreen tropical forests, now threatened with destruction throughout the world as never before.

Dr Ntépé-Nyamè was active as a teacher and researcher at the Laboratoire de Biologie et Physiologie végétales, Département de Biologie, Faculté des Sciences de l'Université de Yaoundé (today the Université de Yaoundé I), Cameroon. Among her most notable students are Prof. Jean-Michel Onana (Associate Professor at the Université de Yaoundé I, Researcher [1983-2016] and Head [2005-2016] of the National Herbarium Yaoundé, and the second Cameroonian author of a volume of *Flore du Cameroun*, Vol. 43 Burseraceae), Prof. Moundipa Fewou Paul (Université de Yaoundé I, biochemist), Prof. Fokou Eli (Université de Yaoundé I, biochemist), Dr Mbita Messi Hubert (former Head of Laboratory of Medicinal Plants, Institute of Medical Research and Medicinal Plants, Ministry of Science, retired 2018) and Dr Gaston Achoundong (Environmental Consultant IRAD). Her maiden name was Colette Ntépé; in 1973, when she completed her doctoral thesis, she was married to a Monsieur Missé. In 1981 she married Dr Nyamè, a medical doctor, and they had at least one child. She died early from cancer.

During her lifetime, Colette Ntépé-Nyamè was not as well known to the international community of aroid taxonomists as she deserved. This community became more organized from 1979 with the establishment of the journal *Aroideana* by Michael Madison and the first international aroid conference at Sarasota, Florida in 1980. Prior to this, during the early 1970s when she was studying for her doctorate in France, she became acquainted with the renowned aroid specialist Josef Bogner (1939-2020, Renner & Mayo 2020) who helped her with material for her studies, especially in providing root tips and pollen samples from the very rich cultivated aroid collection that he had created at the Munich Botanical Garden. Dan Nicolson (1933-2016, National Museum of Natural History, Smithsonian Institution, United States), the outstanding taxonomist of the Araceae at that time, received a copy of her PhD thesis in May 1974 and so, like Josef Bogner, was aware of her early studies. Marianne Knecht, who worked on the Ivory Coast Araceae between 1977 and 1983 for her own doctoral thesis (Knecht 1983), knew her personally better than other aroid botanists. In the early 1980s, while preparing her *Flore du Cameroun* treatment at the Muséum national d'Histoire naturelle at Paris, Colette Ntépé-Nyamè made two brief visits to the Herbarium at the Royal Botanic Gardens Kew during which Simon Mayo met her.

DOCTORAL THESIS (MISSÉ-NTÉPÉ 1973)

15 years before the publication of her most important work (Ntépé-Nyamè 1988), Colette Ntépé defended her doctoral thesis (Missé-Ntépé 1973) on 7 December 1973 at the Université Louis Pasteur de Strasbourg where she studied Cameroonian aroid species under the cytologist and geneticist Prof. Dr Alice Gagnieu and the bryologist Dr J. Augier at Paris. The precise dates of her study period in France are not known, but we assume she must have begun as early as 1970. This is important in assessing the significance of her work, as it places her studies at the early phase of a renaissance in Araceae systematics research that gathered speed from the late 1970s, more than half a century after A. Engler's monumental *Pflanzenreich* family monograph was completed in 1920 (Croat 2004).

Her thesis text indicates that she had already carried out fieldwork in Cameroon and had made collections of the plants she studied at Strasbourg. It is also evident that at this time her view of the plants was more ecological than taxonomic and some of her most interesting observations concern the interaction of morphology and anatomy with habitat, particularly in the case of the hemi-epiphytic climbers (see Mayo *et al.* 2024 for a definition of this term). At this stage, taxonomic knowledge of the Cameroon Araceae was limited and for determining her plants she was working mainly from collections at the Yaoundé herbarium, then under the curatorship of Dr René Letouzey (1918-1989). Letouzey most probably encouraged her to study the Araceae since her publications show that they collaborated on some of the taxonomic problems she encountered in *Cercestis* Schott and *Culcasia* P. Beauv. (Ntépé 1981; Letouzey & Ntépé 1981). As founder of the *Flore du Cameroun* and the National Herbarium at Yaoundé, and the outstanding botanical expert of the country's flora and plant geography (Letouzey 1968), he was a tireless advocate who encouraged others to study the plants of Cameroon.

The thesis seems to have been designed to prepare the author for future taxonomic study of the Cameroonian taxa by acquisition of a deeper knowledge of the family systematics. It consists of an exploration of morphology, vegetative anatomy, shoot architecture, leaf venation, seedling morphology, pollen morphology and cytology, mostly in nine species (*Lasimorpha senegalensis* Schott [as *Cyrtosperma senegalense* (Schott) Engl.], *Anchomanes difformis* (Blume) Engl., *Amorphophallus* sp., *Stylochiton zenkeri* Engl., *Pistia stratiotes* L., *Rhaphidophora africana* N.E.Br., *Culcasia parvifolia* N.E.Br. [as *C. lancifolia* N.E.Br.], *Cercestis congensis* Engl. [as *C. dinklagei* Engl.], *Cercestis mirabilis* (N.E.Br.) Bogner and *C. camerunensis* (Ntépé-Nyamè) Bogner [both as *Rhektophyllum mirabile* N.E.Br.]), selected from the flora of Cameroon and representing five of A. Engler's eight subfamilies (Aroideae, Lasioideae, Monsteroideae, Pistioideae and Pothoideae). [We have checked the species names according to current taxonomy using information and images in the thesis; names in square brackets are Ntépé-Nyamè's determinations which we have changed]. Her visits to the Munich Botanical Garden and interactions with Josef Bogner provided opportunities for increasing her knowledge of the family, as the text makes clear.

Fig. 1. — Dr Colette Ntépé-Nyamè photographed by Dr Marianne Knecht during their joint field expedition in Cameroon in February 1980. Photo by Marianne Knecht.

Colette Ntépé began her thesis research at a time when Engler's *Pflanzenreich* monograph (Engler & Krause 1905-1920) was still the foundation of the family classification, there were few active systematists of the Araceae (Croat 2004) and the first molecular phylogenetic study of the family lay 25 years in the future (French *et al.* 1995; Mayo *et al.* 2013). The topics she chose to focus on soon became significant research areas as the renaissance of aroid systematics developed (Mayo *et al.* 1997; Renner & Mayo 2020). An especially interesting feature of the thesis was the use of scanning electron microscopy (SEM) for examining pollen when this technique was still innovative (Ridgway & Skvarla 1969), and it is one of the earliest applications of SEM to Araceae systematics. Josef Bogner, for whom SEM pollen images became standard practice, published his first images during the same period (Bogner 1972, 1973a, b). Michael Grayum's definitive SEM study of the Araceae was completed only ten years later (Grayum 1984) and was not fully published until 1992 (Grayum 1992).

The fact that in her thesis Ntépé most often gives French translations of the species and genus descriptions from previous authors (in particular Brown 1901, Engler 1911, Engler 1920a), shows that she had not yet taken up the detailed taxonomic study of the Cameroonian taxa. Her taxonomic

determinations must therefore be regarded as the result of comparison with previous published descriptions, herbarium specimens, and perhaps also advice from Letouzey and Bogner. These descriptions are separated from her own observations, and the latter show that she had already acquired a good deal of field experience and was interested in various biological aspects of the plants beyond taxonomy. Her studies of anatomy, cytology and palynology are characteristic of some of the primary research interests of plant systematists at this time – G. Thanikaimoni's light microscope survey of Araceae palynology, the first family-wide study, had recently been published (Thanikaimoni 1969), while C. J. Marchant's broad survey of Araceae cytology (Marchant 1970-1973) was contemporary with her own doctoral research.

Ntépé studied the seeds, seedlings and leaf development in several taxa (*Anchomanes difformis*, *Rhektophyllum* [including both *Cercestis mirabilis* and *C. camerunensis*], *Lasimorpha senegalensis*, *Rhaphidophora africana*) only the first of which had been previously investigated (see Tillich 2003). She included field observations on the development of seedlings in *L. senegalensis* and *Rhektophyllum*. In the latter, she used anatomical sections to try to establish the existence of tuber formation immediately after germination. Little has been done in this research area since the studies of Tillich (2003) and Seubert (1993) and almost nothing from an ecological standpoint. In her accounts of *Rhaphidophora africana*, *Culcasia parvifolia*, *Cercestis congensis* and *Rhektophyllum*, Ntépé gave the first detailed descriptions of the shoot and root morphology and anatomy of African hemi-epiphytes and their adaptive significance in relation to their habitats.

CERCESTIS CAMERUNENSIS (NTÉPÉ 1981)

Colette Ntépé was justifiably proud of her discovery of this magnificent hemi-epiphyte (Figs 2; 3), one of the most spectacular African aroids, and she gave it pride of place as the frontispiece in her *Flore du Cameroun* volume (Ntépé-Nyamè 1988). For many years *C. camerunensis* was confused with *C. mirabilis*, the latter described in the nineteenth century, and until the facts were established through careful field studies, its identity confused and eluded established experts.

She formally described the species in 1981 as *Rhektophyllum camerunense*, a genus then regarded as distinct from *Cercestis* and containing only *R. mirabile* N.E.Br. However, in her thesis eight years previously, she had already expressed doubt regarding the conspecificity of two juvenile forms she referred to as the hastate-leaved and cordate- or oblong-leaved forms of *R. mirabile*. These were treated in the herbaria at Yaoundé and elsewhere as variant kinds of foliage belonging to the same plant (Letouzey 1972). In a letter to Marianne Knecht written in July 1978, Colette Ntépé expressed her increasing certainty that she was dealing with two distinct species of *Rhektophyllum*, mentioning differences in overall and base shape of the leaf blade, female flower colour, and in what became *Rhektophyllum camerunense* the widely flattened aerial roots and thick stem as well as its much more abundant seed production and germination. The difficulties she faced in coming to a decision, like so many botanists based in the tropics, were well expressed in the same letter: "Je serais effectivement très enchantée d'une collaboration entre nous, car je me bute aux mêmes problèmes que vous : à notre herbier d'ici, il y a pas mal d'espèces, mais les déterminations sont ou mal faites ou ne le sont pas du tout, puisqu'on se base sur le [sic] Flore de Hutchinson [Hepper 1968] ; que faut-il faire dans ce cas où l'on se trouve en présence d'une espèce non signalée par l'Herbier ou signalée mais non déterminée et dont on ne trouve pas l'équivalent dans Hutchinson ?" ["I would indeed be very pleased to collaborate with you because I have come up against the same problems as you. Our herbarium here has quite a lot of species but the determinations are either unsatisfactory or altogether lacking, since we rely on the Flora of Hutchinson [Hepper 1968]; what should we do when we are faced with a species that isn't recorded in the herbarium or is recorded but undetermined and for which there is no equivalent species in Hutchinson?"]

Having commented in her thesis that she had never seen both leaf types on the same plant, she described in 1981 how R. Letouzey carefully disentangled the juvenile stems of *C. mirabilis* and *C. camerunensis* in the field and confirmed that the different leaf types occur on different plants. The juvenile terricolous plants of the two species occur very frequently tangled up together and mixed collections are often found in herbaria. It may be significant that in Ntépé's herbarium collection series, beginning in 1979 (Plateforme des Herbiers 2025), the first two numbers are *C. camerunensis* and *C. mirabilis*, suggesting that once focused on the preparation of her Flora treatment, the resolution of this problem was a priority.

Because of her doubts, she deliberately avoided in her thesis assigning species names in most of her detailed morphological and anatomical observations of *Rhektophyllum* plants. There she described and illustrated in considerable detail the seed germination and development, seedling growth in habitat into terricolous and hemi-epiphytic forms, progressive division of the leaf, flowering behaviour and root anatomy and morphology; most of this information had never been recorded before and was included in her later publications. Later, Patrick Blanc (1980) published observations on the shoot architecture of *Cercestis mirabilis* (as *Rhektophyllum mirabile*) which showed that in this African genus, unlike Neotropical aroid flagellae-producing taxa (e.g., *Monstera* Adans., *Philodendron* Schott), a single shoot consists of euphyll-bearing stages alternating with flagellae bearing only cataphylls.

In 1981 Ntépé had new characters to distinguish the two species, among which were root morphology and anatomy: in *C. camerunensis* the feeder roots are broad and flattened with distinct external flanges and have long been used locally as a source of fibres. More recently these have been studied by engineers investigating natural fibres in Cameroon (Béakou et al. 2008, Betene *et al.* 2019; Kah *et al.* 2014; Noutegomo *et al.* 2017, 2019, 2023, 2024). Recent studies of *Cercestis* in Gabon (Mayo in Mayo *et al.* 2024) have added two other useful diagnostic leaf characters separating *C. camerunensis* and *C. mirabilis*, the presence of lacunar parenchyma in the

Fig. 2. — *Cercestis camerunensis* (Ntépé-Nyamè) Bogner [*Rhektophyllum camerunense* Ntépé-Nyamè]. Campo, Cameroon, showing the whole hemi-epiphytic plant. Photos by Patrick Blanc.

Fig. 3. — *Cercestis camerunensis* (Ntépé-Nyamè) Bogner [*Rhektophyllum camerunense* Ntépé-Nyamè]. Campo, Cameroon, view of the leaf crown and inflorescences from below. Photos by Patrick Blanc.

former, and distinctly denuded basal ribs in the leaves of the latter. Ntépé used the overall leaf base sinus shape as a differentiating character, but the basal rib denudation in *C. mirabilis* is a reliable extra feature.

CULCASIA SCANDENS (LETOUZEY & NTÉPÉ 1981)

The correct identity of *Culcasia scandens* P. Beauv. has been and remains (Lebrun & Stork 2014) the source of much taxonomic confusion. The central issue turns on the interpretation of the type specimen at the Geneva Herbarium (G) and Palisot de Beauvois' original illustration. Two papers have been published that addressed the identity of *C. scandens*, but they reached different conclusions. Hepper (1967) applied the name *C. scandens* to the species recognised today as *C. piperoides* A. Chev. and applied the name *C. saxatilis* A. Chev. to what should correctly be *C. scandens*. This view was also presented in Hepper's revision of the *Flora of West Tropical Africa* (Hepper 1968) and has thus been very influential. Letouzey and Ntépé (1981), on the other hand, noticed that the type collection at the Geneva Herbarium (G) was composed of two distinct elements, and made a careful comparison with the two versions of the original illustration of Palisot de Beauvois (1803, 1805). Their conclusion was that *C. saxatilis* is a synonym of *C. scandens*. Their field experience and specialist knowledge were certainly critical in enabling them to confidently interpret Palisot de Beauvois' original plate as an accurate and informative representation, since it illustrates many of the critical diagnostic characters used today (rootless upper internodes, constricted spathe, spadix distinctly longer than spathe with persistent male axis post-anthesis, laxly arranged female flowers; Lachenaud in Mayo *et al.* 2024). As Olivier Lachenaud has highlighted, *C. scandens* is confined to periodically flooded forest along river and lake margins where it may grow as an erect terricolous plant, or develop into a climber wherever a supporting tree is available. It turns out that this species, which has caused so much nomenclatural and taxonomic confusion, is among the easiest to determine, especially when details of its habit and growth form are recorded.

NEW SPECIES OF *CULCASIA* (NTÉPÉ-NYAMÈ 1984)

The genus *Culcasia* was the most difficult challenge that Ntépé-Nyamè faced in preparing her Flora account for Cameroon, finally recognizing 20 species, two of which were known only from single non-flowering specimens and were not given specific epithets. The only attempt to revise the whole genus, then and now, was made by Engler (1905) about 80 years earlier and contained only 15 species. As a result of her studies of new collections from Cameroon and type material in European herbaria from various other parts of tropical Africa, she published five new species (Ntépé-Nyamè 1984; *C. annetii* Ntépé-Nyamè*, C. bosii* Ntépé-Nyamè*, C. ekongoloi* Ntépé-Nyamè*, C. sanagensis* Ntépé-Nyamè and *C. simiarum* Ntépé-Nyamè), one of which has subsequently been synonymized (*C. simiarum* is a synonym of *C. piperoides*, Lachenaud in Mayo *et al.* 2024: 84). In her 1984 paper Ntépé-Nyamè introduced for the first time the leaf character of lacunar parenchyma that has proved to be of critical diagnostic value for delimiting species in the genus (Lachenaud & Mayo in Mayo *et al.* 2024: 60, 61). She also used the presence and morphology of leaf resin canals and surface structures of various kinds, and these have been followed up by O. Lachenaud (in Mayo *et al.* 2024) in the recent *Flore du Gabon* treatment. Neither the taxonomic significance of these structures nor their anatomy is yet fully understood, and thus a thorough anatomical study of leaf structure in *Culcasia* would be highly desirable.

ARACEAE IN *FLORE DU CAMEROUN* (NTÉPÉ-NYAMÈ 1988)

According to her 1984 paper, Colette Ntépé-Nyamè (Ntépé-Nyamè 1984: 313) began a programme of fieldwork in Cameroon in 1976, specifically aimed at the preparation of the Araceae volume for the *Flore du Cameroun*. This treatment, published as Vol. 31 of the Flora series, is monographic in its ambition and format, and remarkable on a number of counts.

Many new species descriptions and new records of aroid species from central Africa were published by European botanists during the colonial era as part of wider botanical surveys. N. E. Brown (1901) brought existing taxonomic knowledge of the family together in his treatment for *Flora of tropical Africa* and the great aroid specialist A. Engler revised all species then known for Africa as part of a complete monograph of the Araceae (*Das Pflanzenreich*, Engler & Krause 1905-1920). The last major study of the African taxa of the family in this period was that of J. Hutchinson in the first edition of the *Flora of West Tropical Africa* (Hutchinson 1936). However, no fully worked out modern Flora treatment of Araceae, based on the author's field and herbarium studies, was published for any central African country until Ntépé-Nyamè's account in the *Flore du Cameroun* (Ntépé-Nyamè 1988). As noted earlier, her basic reference text was F. N. Hepper's revision of the Araceae for the second edition of FWTA (Hepper 1968), written in a very constrained format and which included a few species from the western margins of central Africa in eastern Nigeria, southwest Cameroon and Bioko. With about 50 accepted native species recorded today, Cameroon has richest aroid flora of any African nation. Ntépé-Nyamè thus took up a daunting floristic challenge at a time when the only other comparable publication was Josef Bogner's treatment for the *Flore de Madagascar et des Comores* (Bogner 1975), which included only three species occurring in Cameroon (*Lemna aequinoctialis* Welw.; *Pistia stratiotes* L.; *Remusatia vivipara* [Roxb.] Schott). Marianne Knecht began her doctoral research at around the same time and her monograph of the Araceae of Ivory Coast (Knecht 1983) has a real affinity with the work of Colette Ntépé-Nyamè in that both authors focused on a multidisciplinary approach to the Araceae and undertook field studies on the family extending over a number of years; this led to their personal correspondence and joint fieldwork in Cameroon in 1980.

The presentation of the *Flore du Cameroun* Araceae was clearly intended to be taxonomically comprehensive in its level of detail. The 49 native species then recognized (not including the Lemnaceae) and seven most important introduced species of food or ornamental plants are fully described and, exceptionally, all species are illustrated with good original line drawings by Hélène Lamourdedieu. The genus and species accounts cite significant previous taxonomic treatments, a feature of traditional formats that many modern Floras have abandoned. Under every species there is a list of all specimens seen, with detailed label data and herbarium citations. Type specimens are cited for all names, including synonyms, and explanatory and interpretative notes are amply provided. A complete list of exsiccatae is provided at the end with coded determinations.

Colette Ntépé-Nyamè made the single biggest contribution of collected specimens to her Flora treatment. Her specimens listed in the online database of the Yaoundé National Herbarium (Plateforme des Herbiers 2025) resulted mostly from a programme of field expeditions that she led between 1979 and 1981, focusing on the southern half of Cameroon (Fig. 4). Of the total 860 specimens cited in the *Flore du Cameroun* Araceae treatment, 198 were collected by her, i.e. 23 % of the total, which included 37 (70 %) of the 56 species described. René Letouzey, the overall major contributor of Cameroonian herbarium specimens to the Yaoundé herbarium, was the second biggest contributor of Araceae, with 148 specimens (17 % of total) and 41 species (77 %).

Her Flora treatment is a manual that provided a fully detailed foundation for future aroid taxonomists of Cameroon and central Africa as a whole. Subsequent work has revised some of her taxonomic decisions and some of her descriptions lack desirable details, but these are shortcomings which no Flora author can avoid; taxon recognition and delimitation is always provisional and contingent on current circumstances and data; what is important is to advance knowledge and leave a clear path so that successors can test the results (Popper 1972; Mayo 2022) and this obligation was fully achieved in her work.

Our interest in drawing attention to the work of this botanist was spurred by the preparation of the Araceae account for the *Flore du Gabon* (Mayo *et al.* 2024). The aroids of Gabon are

Fig. 4. — Colette Ntépé-Nyamè with her two field assistants at the River Ngoko, Moloundou, Cameroon, on the border with Congo Republic, February 1980. Photo by Marianne Knecht.

thought to be around the third richest in tropical Africa, after Cameroon and the Democratic Republic of the Congo, but the Gabon treatment was undertaken in the world of internet taxonomy, online images of types, digital photography, and with the benefit of revisionary and molecular phylogenetic studies of the past thirty years. The genus *Amorphophallus* Blume ex Decne., for example, impossible to study effectively in the herbarium alone, has since the 1980s been comprehensively revised for Africa by S. Ittenbach, W. Hetterscheid, W. Lobin and J. Scholten (Hetterscheid & Ittenbach 1996, Ittenbach 2003, Ittenbach & Lobin 1997, Scholten 2023) within a molecular phylogenetic framework (Claudel *et al.* 2017). But some of the most poorly understood genera in central Africa, *Anubias* Schott, *Culcasia*, *Cercestis* and *Nephthytis* Schott, have remained unrevised since Ntépé-Nyamè's time, and it is here that the modern author can get a sense of the challenge that she faced in the 1970s and 1980s, long before the internet when types (almost invariably in European herbaria) and historical literature had to be consulted at first hand after travelling from Africa, when the natural variation of the plants in the field was (and still is) poorly known, when funds for fieldwork were hard to come by and when consultation with expert colleagues in other parts of the world was so much slower and more difficult than it is today. One way or another Colette Ntépé-Nyamè succeeded in overcoming these various difficulties. Her determination and natural authority created the opportunities she needed. She travelled to Europe, she made a major effort in field collection, she considerably advanced taxonomic knowledge of African Araceae and she passed on her knowledge of plants to new generations of Cameroonian biologists. It is in this context that a true evaluation of her achievements should be made.

Today, botanists can access a wealth of botanical and taxonomic information without moving from their desks, but the forests and plants themselves are withering away. Knowledge of the species, as they live in their habitat, is only accessible

through long term and repeated field studies. It is not easy to understand how, for example, a hemi-epiphytic aroid might differ in its ecological niche from another – life histories also embody critical taxonomic information (e.g., Madison 1977; Jeanson *et al.* 2025). Genetic analysis is crucially important for systematics and is now part of the routine toolkit of taxonomists (e.g., Bello 2018), but taxonomy is not just an inventorying of exploitable resources nor an analysis of services made available to us by organic evolution. Taxonomy is fundamentally the scaffold for humans to understand the biological universe of which they are part. The structure of our human cognition requires us to build this with units we call species, and to construct and expand these concepts we have to go to the plants themselves in their own world – this is and will always remain a voyage of discovery. The process of turning experience into scientific knowledge distances the researcher from the reality of the organisms she studies (Latour 1999) and returning to the source is always, if we are honest, humbling in revealing the scale of our ignorance. Nevertheless, the most complete knowledge of plant species is to be gained by those determined spirits who are not discouraged by the overwhelming complexity of the forest nor by the difficulties of finding the plants, and who, once there, can contemplate them with an open and enquiring mind, as Colette Ntépé-Nyamè showed us in her pioneering studies of aroids.

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