Several hypotheses have been advanced to explain the paucity of the African palm flora. The main hypothesis stipulates that palms underwent high extinction rates linked to an increase in aridity of the climate since the Miocene (Moore 1973; Morley 2000) leading to fewer species than in other tropical regions. This was supported to some extent by the fossil record (Pan et al. 2005) and by a worldwide ecological study of palms (Kissling et al. 2012). In contrast, a study of global diversification rates at the family level did not detect a significant decrease in rates for African palms (Baker & Couvreur 2012), suggesting that African palms might not have been affected by the change in climate as previously suggested. However, to date, detailed knowledge of palm species evolutionary dynamics are lacking hampering any solid understanding of palm history in Africa. To this end, we shall reconstruct the phylogeny in order to understand the evolutionary dynamics of the African rattan clade, Ancistrophyllineae. This clade comprises three genera representing 21
species and has recently been revised (Sunderland 2012). They are mostly distributed across the rain forests of West and Central Africa. Moreover, rattans are used for a multitude of purposes across tropical Africa, mainly for the construction of furniture, which represents a large international market for cane exportation (Sunderland et al. 2008). Seventeen species of this clade are found in Cameroon, and thus a field trip was undertaken there (Fig. 1) in order to collect herbarium and DNA material for phylogenetic studies.

We first visited the Campo Ma’an National Park, in the south-west of the country. This park is well known for its high biodiversity with numerous endemic species. Part of the park is suggested to have been a potential refuge forest during the Pleistocene climatic fluctuations (Tchouto et al. 2006a, Tchouto et al. 2006b), underlining its biological and conservation importance.

The first day we drove to the seaside town of Kribi (Fig. 1), one of the favorite holiday spots for Cameroonian and tourists. From there we drove to the small village of Campo. The coastline between these two villages has been the site of numerous botanical collections in the past, so we did not stop that much as our main goal was to collect within the park boundaries. We did, however, come across a sad sight. Part of the large economical reforms of the country, a new deep-sea port is being constructed 30 kilometers south of Kribi. The construction started by massive deforestation leaving once lush tropical and mangrove vegetation to a bare ground of white sand that extends for over 4 kilometers.

After an interesting discussion with Campo Ma’an manager we headed out to our camping site at the edge of the park. From there we undertook daily trips around the park and collected all palm species we encountered. Rattans grow in a wide range of different habitats. Some species are light demanding and grow along roads and in gap vegetation while others grow in the understory vegetation (Sunderland 2007).

The first species we encountered were the widespread abundant ones growing along the roads, such as Laccosperma robustum (Burret) J. Dransf. (Fig. 2) or Oncocalamus mannii (H. Wendl.) H. Wendl. (Fig. 3). The former is the most common species we saw and is largely widespread in Central and Western Africa. It is also a good source for cane production (Sunderland 2007). The latter species has a strong leaf dimorphism, with juvenile leaves...
initially bifid then becoming pinnate, a change that can lead to some confusion (see Fig. 2). We also collected *Laccosperma secundiflorum* (P. Beauv.) Kuntze, a species closely resembling *L. robustum*.

Further into the national park, along the main road to Nyabysan we came across a population of the wonderfully beautiful *Eremospatha wendlandiana* Dammer ex Becc.. This species is characterized by its leaves with ca. 40 fish-tail leaflets (Fig. 4). Its presence along the walls of vegetation that surround the roads provides a lovely contrast to the other shapes commonly encountered in the forest.

Finally, in the understory of the forest we also collected *Podococcus barteri* Mann & H. Wendl., a small understory palm easily recognizable by its jagged leaflet margins. This is one of the two species known from the genus, the other, *P. acaulis* Hua, being located farther south, in Gabon (van Valkenburg & Sunderland 2008). The populations around Campo Ma’an represent the limit of its distribution to the north. It is found again locally in southern Nigeria. One of our projects is to understand better the genetic structure of populations of these two species of *Podococcus* in order to draw a model response from undergrowth species to climate change since the last glacialiation in the rainforests of Africa.

The next stop of our trip was located in the small mountain range of Ngovanyang, situated between the town of Bipindi (famous as the home to the botanist George Zenker 1855–1922) and the old town of Lolodorf. This region has been the focus of a recent vegetation study, but unfortunately palms were not inventoried (Gonmadje et al. 2011). The idea was to try and collect a few understory rattan species, in contrast to Campo where most species we encountered were light demanding.

We camped near the village of Mbikiliki (midway between Bipindi and Lolodorf), at 500 m altitude in an abandoned Baka tribe camp. The roofs of the small huts were made with *Raphia* leaves. The first interesting collection we made was *Laccosperma korupensis* Sunderland. This species was recently described by Sunderland (2002) and this represents the tenth collection of this species, and the first for the mountain range. *Laccosperma korupensis* is characterized by a lack of acanthophylls on the cirrus (Fig. 4). Unfortunately, the flowers and fruits of this species remain unknown, as our collection was also sterile. A few meters farther we made yet
another interesting collection. *Eremospatha haullevilleana* De Wildeman is distributed mainly in the Congo basin and is very rare in Cameroon but was found growing in Ngovoyang (Fig. 5). This is the second collection of this species for the country and
the first for the region. This collection nicely fills in the small gap between the other Cameroonian collection (southwestern Cameroon, near the border with Nigeria) and the rest of its distribution (Sunderland 2012). Another rattan species, *Eremospatha laurentii*...
De Wildeman was also found growing in the understory (Fig. 4). The flowers of this species turn a bright pink at anthesis and emit a sweet scent of jasmine – just what one needs after a long day in the field!

A bit higher up, we collected an unidentified species of *Eremospatha*, which had leaves lacking leaflets on the rachis. It was a clustering individual and all the stems we brought down had this characteristic, even those at the end of the stem, closer to the canopy. This condition has been documented in *Eremospatha* and *Oncocalamus* but it remains unclear as to what the function of such leaves is (Sunderland 2001). Up to now it is unclear to what species this form belongs.

Besides rattans we also collected material of potentially two *Raphia* species. The first one was growing along a small stream and had a stem of ca. 2–5 m. It was an impressive sight, with numerous individuals scattered across a marshy type of vegetation (Fig. 6). The inflorescences had one thick rachis with numerous pendulous rachillae and the fruits had yellowish scales, suggesting that we had come across *R. hookeri* G. Mann & H. Wendl. The other species of *Raphia* was found higher up the mountain, and was on *tierra firme* (Fig. 7). All individuals seen were stemless. The young immature inflorescences were hidden between the large peltioles of the upright leaves. The rachis was also robust with numerous pendulous rachillae. It could be that this form corresponds to the species *R. regalis* Becc., although more detailed study of the material is still needed at this point.

The last part of our trip was supposed to be the hardest, but the most exciting. We wanted to recollect *Eremospatha barendii* Sund., known only by a single collection. In 1996, the forester Barend van Gemerden, who incidentally did his PhD with the same supervisor as the first author, collected this new species near a river south of Lolodorf. Little was known about this species as the collector was in a great hurry that day (pers. comm.). Some of our colleagues had little hope we would recollect this species 15 years later especially because of its proximity to Lolodorf.

We drove off in the morning, and came to the river as indicated by Barend, which we later learned was called Melange. We walked a bit in the secondary vegetation and within a few minutes we came across a species of
6: *Raphia* cf. *hookeri*. Adama Faye using a collecting pole to saw down a leaf and a bunch of fruits.
Eremospatha that appeared to have the morphological characteristics of *E. barendii* – an elongate-linear knee and linear leaflets. We were pleased and excited as this was going to be only the second collection of this species (Fig. 8), which was later confirmed by Sunderland (pers. comm.). We were able to make some extra observations on the ecology of this species. *Eremospatha barendii* appears to be restricted to rivers, and interestingly it grows on sand banks. Indeed, we were able to locate up to six individuals all growing on sand, which was not suspected up to now. In addition it would appear to be a shade tolerant species. A few 100 meters on both sides of the river, the vegetation became seriously degraded (slash-and-burn), and we failed to find this species anywhere else including along two other rivers further up the road. Unfortunately, none of the individuals we found was fertile. The flowers of this species thus remain unknown. We did however come across a snake that was sleeping in one of the low reaching leaves of *E. barendii*, and we were lucky not to have tried to grab it while searching for some fertile material. Given these observations, this species deserves the highest conservation status of “critically endangered” especially because its ecology is so specialized. One idea would be to continue down the Melange River in search of other potential sand banks and verify its presence at other localities.

In total we made 26 palm collections in two weeks, representing eleven rattan species, one *Podococcus* and two *Raphia*. We have now started reconstructing the phylogenetic relationships within the Ancistrophyllineae, which will provide a better understanding of palm evolution in Africa since the Miocene.

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8: The second collection of *Eremospatha barendii* growing along a river bank on sandy soil.
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LITERATURE CITED


