Re-evaluating the Upper Guinean species of Triclisia (Menispermaceae)

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Abstract: In Upper Guinea in Africa three species of Triclisia Benth. (Menispermaceae) are recognized: T. dictyophylla Diels, T. patens Oliv. and T. subcordata Oliv. Triclisia dictyophylla and T. subcordata, as delimited in the revision of this genus by Troupin (1962), each include more than one distinct species. On the basis of a comparative morphological analysis, T. dictyophylla is split here into T. dictyophylla s.s. and T. gilletii (De Wild.) Staner and T. subcordata is split into T. angolensis Exell, T. hypochrysea Diels and T. subcordata s.s. No new names have to be published. Illustrations are provided along with distribution maps.

Key words: Africa, Menispermaceae, taxonomy, Triclisia, tropical forest, Upper Guinea

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Introduction

Triclisia Benth. is a genus of Menispermaceae with c. 16 liana species endemic to Africa including Madagascar; all species are dioecious. In Upper Guinea (sensu White 1979), three species are recognized: T. dictyophylla Diels, T. patens Oliv. and T. subcordata Oliv. (Hawthorne & Jongkind 2006). Only T. patens is endemic to Upper Guinea. In Upper Guinea the male flowers and fruits of T. dictyophylla, T. patens and T. subcordata are clearly different from each other. Triclisia dictyophylla has male flowers with six stamens (Fig. 1A–E) and almost glabrous fruit carpels of 3–4.5 × 2.5–3.5 cm, while T. patens has male flowers with only three stamens (Fig. 1H–M, Fig. 2) and pubescent fruits 1–2 cm in diameter. The third species, T. subcordata, has male flowers with six stamens (Fig. 3) and is smaller than the other two in habit, leaf, inflorescence, flower and fruit (Table 1).

Part of the herbarium specimens from outside Upper Guinea, included in Triclisia dictyophylla and T. subcordata in the last revision of the African Menispermaceae (Troupin 1962), have flower and fruit characters that are clearly different from those in Upper Guinea. Because of that, these two species are re-evaluated here. Three species, T. angolensis Exell, T. gilletii (De Wild.) Staner and T. hypochrysea Diels, which were earlier made synonym by Troupin, are resurrected here as a result.

This paper is a first step to a new revision of Triclisia for continental Africa. More problems have to be solved before a complete revision can be published. Several more Triclisia species, in the way they are used by Troupin (1962) in his revision of the Menispermaceae for Africa, are clearly a mixture. Solving the complete Tri-
from Guinea to Angola, with small flowers (Fig. 1A–E). The species involved are as being about half that size and ending in a conspicuously beak. This beak was also mentioned by Exell (1935: 8) for T. flava Exell, here a synonym of T. gilletii.

Another name presented by Troupin as synonym of Triclisia dictyophylla, T. trichantha Diels from Cameroon, cannot be placed yet with certainty; it might not be a Triclisia species.

In the Flora of West Tropical Africa (Keay & Troupin 1954: 72), Triclisia subcordata was still restricted to Ghana, Togo, Benin and Nigeria, but was later united by Troupin with T. angolensis Exell from Angola and T. hypochrysea Diels from Gabon (Troupin 1962: 86). This lumping does not seem correct because the flowers and fruits from T. subcordata s.s. and T. angolensis are clearly different. The type and only known specimen of T. hypochrysea, the third species included by Troupin in T. subcordata, is sterile.

Triclisia angolensis and T. subcordata s.s. (Table 1) are in fact distinct species. The innermost sepals in the male flower of T. angolensis are more than twice as long as wide (Exell 1926: 13), while these sepals in T. subcordata s.s. (Fig. 3C–G) are almost equal in length and width (Keay & Troupin 1954: 71). The fruit carpel and endocarp of T. subcordata s.s. are also conspicuously different from those of T. angolensis and from all other species in the genus. To show this, these fruit characters are illustrated here for five different Triclisia species, including four T. subcordata s.s. examples from different countries (Fig. 4).

The shape of the fruit carpel and endocarp of T. angolensis is more or less equal to that of most other species of the genus, with the style relatively close to the stipe (Fig. 4A–3). The orientation of the endocarp in the fruit carpel of T. subcordata s.s. is different from that in all the other Triclisia species, resulting in a style that is situated almost opposite to the stipe (Fig. 4B–E, Fig. 7).

There is a large geographical gap between Triclisia angolensis and T. subcordata s.s. The type and only specimen of T. hypochrysea, the third species included by Troupin, was collected in between the areas of these other two species (Fig. 10). This type specimen is sterile and the leaf shape and indumentum do not link it to other species.

### Material and methods

The morphological characters of all continental African Triclisia species in the BM, BR, K, P and W AG herbaria were studied and the three Upper Guinean species were also studied in the field. The herbaria are indicated by the international code registered in Index Herbariorum (Thiers 2017+). The African Plant Database (2015+) was checked for more information on the species and the genus. The distribution maps are based only on herbarium specimens.

### Results

When specimens of Triclisia dictyophylla from all over its distribution area are compared, conspicuous differences in the shape and size of flowers and fruit carpels can be seen. The exceptional large, for Triclisia, fruit carpels from the specimens west of Cameroon were already described by Keay & Troupin (1954: 71, as T. gilletti). In publications on Central Africa the fruit carpels of the same species were described by Troupin (1951: 216, fig. 17; 1962: 91) as being about half that size and ending in a conspicuously beak. Both descriptions are correct for the specimens here for five different Triclisia species, including four T. subcordata s.s. examples from different countries (Fig. 4).

<table>
<thead>
<tr>
<th>Triclisia</th>
<th>dictyophylla</th>
<th>gilletii</th>
<th>patens</th>
<th>angolensis</th>
<th>hypochrysea</th>
<th>subcordata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf blade size</td>
<td>to 36 cm wide</td>
<td>to 32 × 27 cm</td>
<td>10–18 ×</td>
<td>7–9.5 ×</td>
<td>7–9 ×</td>
<td>5–11 ×</td>
</tr>
<tr>
<td>Petiole length</td>
<td>5–20 cm</td>
<td>5–22 cm</td>
<td>5–12 cm</td>
<td>3–4 cm</td>
<td>2.5–3 cm</td>
<td>1.6–3.2 cm</td>
</tr>
</tbody>
</table>

#### Table 1. Summary of diagnostic characters for the species of Triclisia treated here.

<table>
<thead>
<tr>
<th>Character</th>
<th>T. dictyophylla</th>
<th>T. gilletii</th>
<th>T. patens</th>
<th>T. angolensis</th>
<th>T. hypochrysea</th>
<th>T. subcordata</th>
</tr>
</thead>
<tbody>
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<td>to 36 cm wide</td>
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<td>3–4 cm</td>
<td>2.5–3 cm</td>
<td>1.6–3.2 cm</td>
</tr>
<tr>
<td>Male flower</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>innermost sepal length</td>
<td>3–4 mm</td>
<td>c. 6 mm</td>
<td>c. 3 mm</td>
<td>c. 7 mm</td>
<td>–</td>
<td>3–4 mm</td>
</tr>
<tr>
<td>Stamens number</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>Stamens length</td>
<td>c. 2 mm</td>
<td>4–5 mm</td>
<td>2–2.5 mm</td>
<td>c. 4 mm</td>
<td>–</td>
<td>2.5–3 mm</td>
</tr>
<tr>
<td>Fruit carpel size</td>
<td>3–4.5 ×</td>
<td>2–2.5 × c. 2 cm</td>
<td>1.5–2 cm in diam.</td>
<td>c. 1 cm in diam.</td>
<td>–</td>
<td>1–1.5 cm in diam.</td>
</tr>
<tr>
<td>Fruit carpel</td>
<td>glabrous</td>
<td>hairy</td>
<td>hairy</td>
<td>hairy</td>
<td>hairy</td>
<td>hairy</td>
</tr>
<tr>
<td>indumentum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fig. 2. *Triclisia patens* – A, B: stem of big liana with cauliflorous male flowers (stamens alternating with inner sepals). – Liberia, 2010, Jongkind & al. 9461, photographed by Carel Jongkind.

Fig. 3. *Triclisia subcordata* – A: flowering branch; B: inflorescence; C: flower; D–G: sepals; H: petal; I: stamen; J: petals and androecium; K: petal and stamen. – Source: Togo, Warnecke 327 (B). – Previously published in *Das Pflanzenreich* (Diels 1910: 72).
Fig. 4. *Triclisia* fruit carpel and endocarp details: 1: dry fruit carpel; 2: endocarp, lateral view; 3: endocarp, from below. – A: *T. angolensis*, also showing branch with leaves and fruit. – B–E: *T. subcordata*. – F, G: *T. patens*. – H: *T. lanceolata* Troupin. – I: *T. riparia* Troupin. – Source: A: Angola, Gossweiler 8435 (BM); B: Nigeria, Geerling 4194 (WAG); C: Benin, Akoègninou & Bada 3038 (WAG); D: Togo, Breteler 7199 (WAG); E: Ivory Coast, J. J. de Wilde 263 (WAG); F: Liberia, Jongkind 5401 (WAG); G: Liberia, Jongkind 6070 (WAG); H: Congo Kinshasa, Compère 1239 (BR); I: Congo Kinshasa, Evrard 679 (BR). – All drawn by Hans de Vries, April 2017.
Fig. 5. *Triclisia dictyophylla*, fruit carpels. – A: Liberia, 2005, Jongkind & al. 6450; B: Guinea, 2012, Jongkind & Bilivogui 11470; both photographed by Carel Jongkind.

Fig. 6. *Triclisia gilletii* – A: branches with fruits; B: fruit carpels showing characteristic beak. – A, B: Congo Kinshasa, 2011, X. van der Burgt 1510, photographed by Xander van der Burgt.
to T. angolensis or to T. subcordata, making it hard to place this species. In the protologue, Diels keyed out T. hypochrysea using the characters of the flowers (Diels 1910: 69, 71), which is surprising because in the same publication he wrote that his type and only specimen is sterile. Mildbraed 8726 from Cameroon, a specimen with flower buds also cited by Troupin under T. subcordata, might belong to T. hypochrysea. Looking at indumentum and leaf shape, there could also be a connection with T. lucida Exell & Mendonça from Angola.

After separating Triclisia subcordata, T. angolensis and T. hypochrysea, T. subcordata is here restricted to West Africa again, it is found from Ivory Coast to Nigeria (Fig. 10). There it is found only in drier forest types such as semi-deciduous forest (Hall & Swaine 1981: 310). Triclisia angolensis is again endemic to the north of Angola. Only a few herbarium specimens of T. angolensis exist but, according to Exell (1926: 13), it was not uncommon early last century in rocky situations around Cazengo in the north of Angola.

The distribution of none of the three species from Upper Guinea goes all the way to E Africa. In the Flora of Tropical East Africa, Troupin (1956: 5–7) recognized three species of Triclisia for East Africa: T. sacleuxii (Pierre) Diels, T. sp. A (based on Faulkner 769) and T. sp. B (based on Loveridge 244). Faulkner 769 (T. sp. A) became the type of Anisocyclea blepharosepala subsp. tanzaniensis Vollesen (Vollesen 1981). Loveridge 244 (T. sp. B) in the Kew herbarium is in the present study identified as Syrreheonema fasciculatum Miers. This means that T. sacleuxii is the only species of Triclisia that is found in East Africa.

No new names have to be published here, all species have already published names. The number and names of the species in Upper Guinea stays the same: Triclisia dictyophylla, T. patens and T. subcordata.

List of species with synonyms, types and vouchers

**Triclisia angolensis** Exell in J. Bot. 64 (Suppl. 1): 12. 1926. – Holotype: Angola, Cuanza Norte, Cazengo, Granja de S. Luis, fl., Nov 1909, Gossweiler 4892 (BM; isotypes: COI, K, LISC). – Table 1, Fig. 4A, Fig. 10.

Additional specimens seen — **ANGOLA:** Cuanza Norte, proximum flumen Zenza, fr., 20 Oct 1922, Gossweiler 8435 (BM); Cuanza Norte, Cazengo, Granja de S. Luis, fl., Gossweiler 10356 (BM).

**Triclisia dictyophylla** Diels in Engler, Pflanzenreich IV. 94 (Heft 46): 70. 1910. – Holotype: Angola, Bembe, fl., Apr 1873, J. J. Monteiro s.n. (K). – Table 1, Fig. 1A–E, Fig. 5, Fig. 8.
Additional specimens seen —
— Congo Kinshasa: 40 km E-SE de Bomassa, fl., 27 Feb 2011, Ndolo Ebika & Koni 504 (E, WAG).

**Triclisia gilletii** (De Wild.) Staner in Bull. Séances Inst. Roy. Colon. Belge 4: 430. 1933 = *Tiliacora gilletii* De Wild. in Bull. Jard. Bot. État. Bruxelles 3: 255. 1911. – Lectotype (designated by Trupin 1951: 216): Congo Kinshasa, Mogandjo, 1 Jan 1906, Laurent 1876 (BR). – Table 1, Fig. 1F, G, Fig. 6, Fig. 8.
= **Triclisia flava** Exell in J. Bot. 64(Suppl. 1): 12. 1926. – Holotype: Angola, Maiombe, Sub-Luali, 5 May 1919, Gossweiler 8046 (BM; isotypes: COI, K, LISJC, LISU).


**Triclisia hypochrysea** Diels in Engler, Pflanzenreich IV. 94 (Heft 46): 71. 1910. – Holotype: Gabon, Sibangefarm, 1890, Dinklage 592 (B). – Table 1, Fig. 10.

Known only from the sterile type specimen.

**Triclisia patens** Oliv., Fl. Trop. Afr. 1: 49. 1868. – Holotype: Sierra Leone, Bagroo River, fl., Apr 1861, Mann 797 (K). – Table 1, Fig. 1H–M, Fig. 2, Fig. 4F, G, Fig. 9.


**Triclisia subcordata** Oliv., Fl. Trop. Afr. 1: 49. 1868. – Lectotype (designated by Bourret 1962: 86): Nigeria, Nupe, 1858, Barter 1146 (K). – Table 1, Fig. 3, Fig. 4B–E, Fig. 7, Fig. 10.


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**References**


