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IDENTIFICATION KEYS TO THE WOODY LIANAS OF APOCYNACEAE FROM THE SANGHA TRINATIONAL, CENTRAL AFRICA

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Vegetative keys to the 16 genera and 46 species of woody climbers of Apocynaceae recorded from the Sangha Trinational, Central Africa, are presented. These are accompanied by genus and species descriptions and illustrations of key diagnostic characters.

Keywords. Apocynoideae, lianas, Rauvolfioideae, vegetative key.
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Introduction

The Sangha Trinational is a series of adjacent protected areas across three Central African nations, covering the Dzanga-Sangha Dense Forest Special Reserve and Dzanga-Ndoki National Park in the southwestern Central African Republic, Nouabalé-Ndoki National Park in the Republic of the Congo, and Lobéké National Park in southeastern Cameroon. Totalling over 10,000 km^2 (Harris, 2002; Weinbaum *et al.*, 2007) it protects a landscape of semideciduous and evergreen lowland forests, clearings and wetlands that contain more than 1500 vascular plant species, and populations of elephants, gorillas, chimpanzees, antelopes and other wildlife, making it a priority for conservation.

Large woody climbers, an understudied group of plants, are vital components to the forest's structure and can contribute to the high levels of species biodiversity of forests. In some species the trunk can reach 50 cm in diameter, approach 100 m in length, and produce large crowns that can form a substantial part of the forest canopy (Parthasarathy *et al.*, 2015; Schnitzer & Bongers, 2002). These large woody climbers provide food, habitats and pathways for many vertebrates. Additionally, some, like those in the Apocynaceae Jussieu, are used as food or as medicine by local people (Herzog, 1992; Termote *et al.*, 2012).

Apocynaceae belongs to the order Gentianales and includes 366 genera and approximately 4500 species (Angiosperm Phylogeny Group *et al.*, 2016; Fishbein *et al.*, 2018). They have a global distribution, with the highest diversity in tropical regions. Molecular studies have placed Asclepiadaceae Borkh. under Apocynaceae (Endress

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& Bruyns, 2000) and led to the recognition of five subfamilies: Rauvolfioideae and Apocynoideae (formerly treated as Apocynaceae) and Asclepiadoideae, Periplocoideae and Secamonoideae (formerly treated as Asclepiadaceae).

This paper focuses on the Rauvolfioideae and Apocynoideae subfamilies, as these include the taxa that grow as large woody climbers in Central Africa. The other three subfamilies contain only smaller herbaceous climbers (Endress *et al.*, 2014; Beentje, 2021).

Most of the existing keys for identifying woody climbers of the Apocynaceae in Central Africa depend on floral characters (Hawthorne & Jongkind, 2006). However, flowers of tall forest climbers are not often present or are inaccessible, 50 m up in the canopy. Therefore, identification keys using only vegetative characters are particularly useful for ecological surveys and other species-related research.

Materials and methods

A list of genera and species recorded from the Sangha Trinational was taken from *The Vascular Plants of the Dzanga-Sangha Reserve, Central African Republic* (Harris, 2002). An analysis of species selected by Bayo (2020) from Rainbio occurrence data (Dauby *et al.*, 2016) was used to identify species that had not been recorded from Sangha Trinational but were considered likely to occur there.

The genus key was created using vegetative characters seen on herbarium specimens. This was based on the species considered present in the Sangha Trinational and did not take into account morphological features that might be seen in other species of these genera occurring outside Sangha Trinational.

The names, species descriptions, and descriptions of diagnostic characters are based on the literature and herbarium specimens in Edinburgh (E) from Sangha Trinational. These are augmented with additional specimens (not from Sangha Trinational) from K and WAG (online). Herbarium codes follow Index Herbariorum (updated continuously). The names and descriptions do not necessarily correspond to the functional or developmental role of the feature and therefore may differ from other descriptions of the characters in previous work. The illustrations are based on observation of herbarium specimens so may differ slightly from fresh material.

Results

A total of 16 genera from Sangha Trinational are recorded as having woody climbers: *Alafia* Thouars, *Ancylobothrys* Pierre, *Baissea* A.DC., *Clitandra* Benth., *Cyclocotyla* Stapf, *Cylindropsis* Pierre, *Dictyophleba* Pierre, *Landolphia* P.Beauv., *Motandra* A.DC., *Oncinotis* Benth., *Orthopichonia* H.Huber, *Pycnobotrya* Benth., *Saba* (Pichon) Pichon, *Strophanthus* DC., *Tabernaemontana* L. and *Vahadenia* Stapf. Within these genera, 32 woody climbing species are recorded from the Sangha Trinational, and a further 14 are predicted to occur there (**Appendix**).

Diagnostic characters

Bent petiole bases. The petiole bends abruptly at a right angle, or nearly so, at the base where it joins the stem. Bent petiole bases are a diagnostic feature of the genus *Oncinotis* (**Figure 1A**).

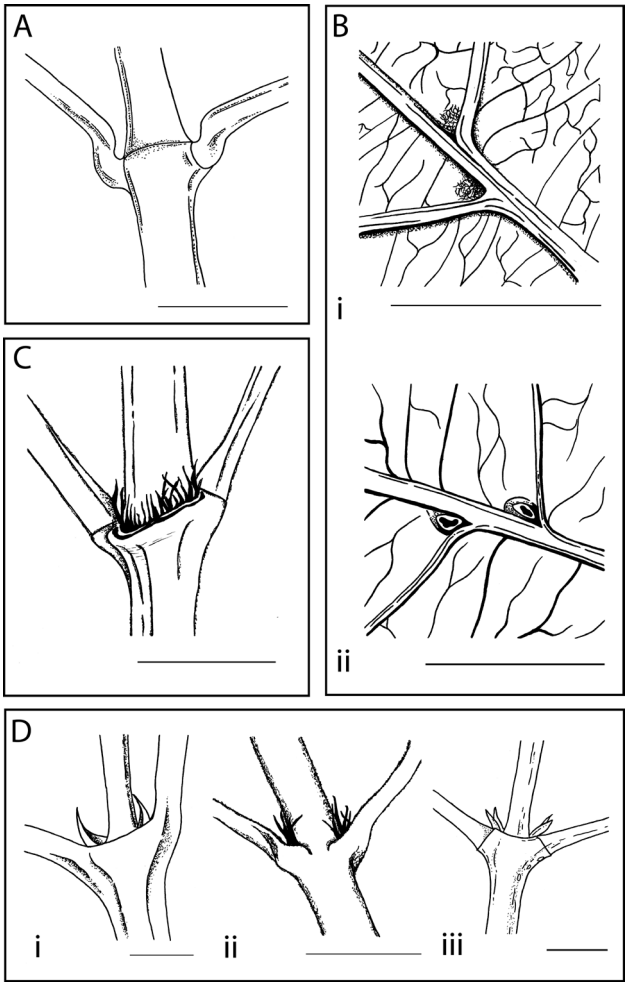

Figure 1. Diagnostic characters for the 46 species treated in the keys, comprising the 32 that have been recorded and the 14 expected to occur in the Sangha Trinational, Republic of the Congo. **A**, Bent petiole bases of *Oncinotis glabrata*, *Zenker, G.* 3039 (E). **Bi**, Tuft domatia on the abaxial leaf surface of *Baissea major*, *Harris, D.J. & Fay, J. M.* 1805 (E). **Bii**, Pit domatia on the abaxial leaf surface of *Oncinotis glabrata*, *Zenker, G.* 2424 (E). **C**, Interpetiolar colleters of *Dictyophleba lucida*, arising from behind the scar of a caducous interpetiolar stipule, *Harris, D.J.* 234 (E). **Di**, Single intrapetiolar colleter of *Alafia caudata*, *Harris, D.J.* 5517 (E). **Dii**, Numerous black conical intrapetiolar colleters of *Ancylobothrys scandens*, *Irvine, F.R.* 2772 (E). **Diii**, Paired intrapetiolar colleters of *Strophanthus sarmentosus*, *Harris, D.J.* 6121 (E). All scale bars: 1 cm. Drawn by E. Dwyer.

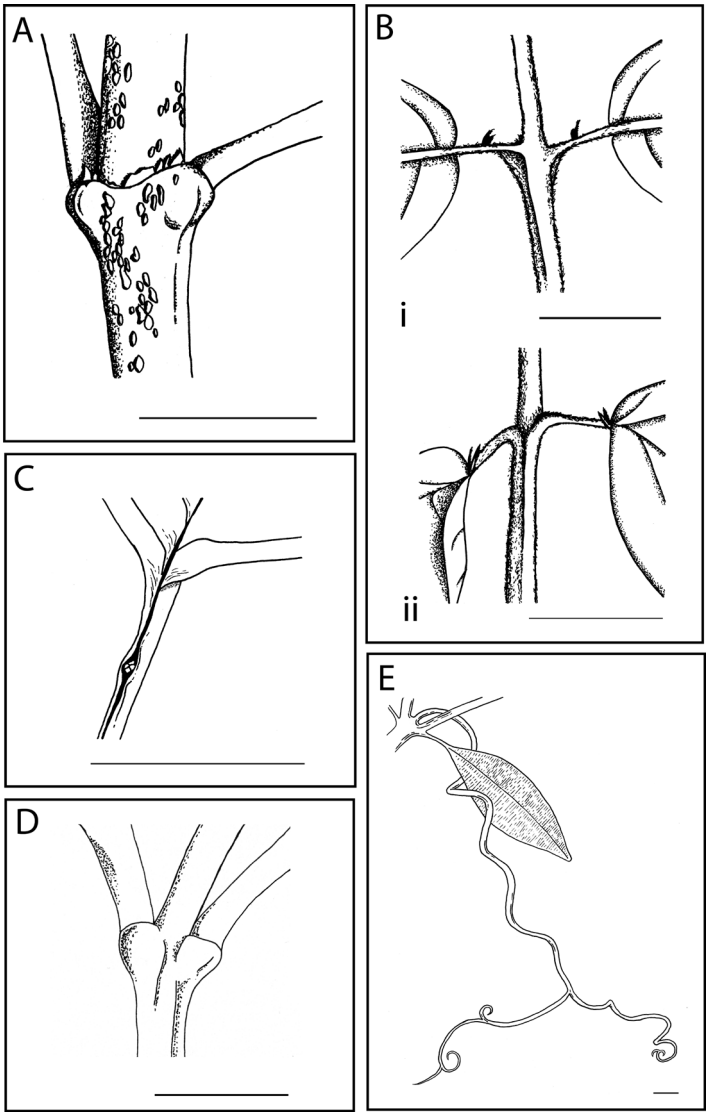

Figure 2. Diagnostic characters for the 46 species treated in the keys, comprising the 32 that have been recorded and the 14 expected to occur in the Sangha Trinational, Republic of the Congo. **A**, Lenticels on the leafy stem of *Clitandra cymulosa*; also visible are the swollen pads of the stems from which the petioles arise, as well as tissue left at the base of the petioles where an inflorescence has previously grown, *Harris, D.J.* 3958 (E). **Bi**, Colleters halfway up the petiole of *Motandra paniculata*, *Leeuwenberg, A.J.M.* 3058 (E). **Bii**, Colleters at the blade base of *Motandra paniculata*, *Swarbrick, J.T.* 2607 (E); also visible is the subopposite growth habit of the leaves in this species. **C**, Petiolar pit gland of *Oncinotis glabrata*, *Zenker, G.* 2538 (E). **D**, Swollen pads at the base of petioles of *Pycnobotrya nitida*, *Zenker, G.* 1274 (E). **E**, Tendril of *Orthopichonia barteri*, *Breteler, F.J.* 2225 (L). All scale bars: 1 cm. Drawn by E. Dwyer.

Domatia. Tufts of hairs or pits (Figure 1**Bi** and Figure 1**Bii**, respectively) found in the axils of the secondary veins on the abaxial leaf blade. A diagnostic character of the genera *Baissea*, *Motandra* and *Oncinotis*.

Interpetiolar colleters. Ciliate structures at the nodes of the stem behind an interpetiolar stipule, which remain after the interpetiolar stipules' abscission. A diagnostic character of the genus *Dictyophleba* (Figure 1**C**).

Intrapetiolar colleters. Outgrowths from the axil of the petiole. The colleters of a pair of leaves are separate from one another and do not connect around the stem with colleters of the opposite petiole. Present as a single intrapetiolar colleter (Figure 1**Di**), numerous black conical intrapetiolar colleters (Figure 1**Dii**), or paired intrapetiolar colleters (Figure 1**Diii**). They are diagnostic of the genera *Alafia*, *Ancylobothrys* and *Strophanthus*.

Lenticels. Patches of textured tissue on the stem, of a lighter colour than the surrounding stem, and more or less raised (Figure 2**A**).

Petiolar colleters. Small protrusions arising from the adaxial side of the petioles or leaf base. Present either halfway up the petiole, or at the blade base (Figure 2**Bi** and Figure 2**Bii**, respectively). They are diagnostic of the genera *Baissea*, *Motandra* and *Oncinotis* (except *Oncinotis glabrata*).

Petiolar pit glands. Small, circular structures emerging from the channel running down the centre of the petiole. They have been seen in the species *Oncinotis glabrata* only (Figure 2**C**).

Swollen pads. Two paired, small spherical growths at the nodes of the stems protruding outwards. Petioles arise from the top of these swollen pads. Pads remain after petiole abscission (Figure 2**D**).

Tendrils. Spiralling appendages twining around supports and sometimes branching. They arise from between diverging stems. Seen in the genera *Clitandra*, *Cylindropsis*, *Dictyophleba*, *Landolphia*, *Orthopichonia*, *Saba* and *Vahadenia* (Figure 2**E**).

Taxonomic treatment

Genus key

1a. Abaxial leaf surface with domatia as tufts of hairs or glabrous pits in axils of some or all secondary veins (Figure 1**B**) _____ 2

1b. Abaxial leaf surface without domatia _____ 4

2a. Petioles subopposite or opposite; petioles always with small (< 0.5 mm) colleters halfway along or at base of blade (Figure 2**B**), domatia always tufts _____ *Motandra*

2b. Petioles opposite; petiole with or without colleters, domatia tufts or pits _____ 3

3a. Petioles curved to form a right angle (Figure 1**A**); petioles often deeply channelled; domatia pits or tufts _____ *Oncinotis*

3b. Petioles straight or gently curved; petioles shallowly channelled to not channelled; domatia tufts (Figure 1**Bi**) _____ *Baissea*

4a. Leaves always with > 20 pairs of fine, closely spaced (1–3 mm) parallel lateral veins __ 5

4b. Leaves with < 20 (rarely up to 25) pairs of distantly spaced (> 5 mm) non-parallel lateral veins _____ 7

5a. Petioles not channelled along the whole length _____*Pycnobotrya*

5b. Petioles channelled along the whole length _____6

6a. Leaves narrowly elliptic to narrowly obovate; blade without black dots on the abaxial surface; 20–40 pairs of lateral veins; leafy stems with lenticels; without tendrils *Cyclocotyla*

6b. Leaves elliptic to ovate; blade with black dots on the abaxial surface; 30–50 pairs of lateral veins; leafy stems without lenticels; with tendrils (Figure 2**E**) ____ *Orthopichonia*

7a. Leafy stems with white, light-brown or orange lenticels (Figure 2**A**) _____ 8

7b. Leafy stems without lenticels _____ 14

8a. Intrapetiolar colleters present, singular, paired or multiple, persistent after leaf fall (Figure 1**D**); tendrils present or absent _____ 9

8b. Intrapetiolar colleters absent; tendrils present _____ 10

9a. Colleters numerous per axil, distinctly darker than the stem and often black, wrapping around the stem but never meeting (Figure 1**Dii**); large terminal tendrils present; no distinct line between petiole bases; leaves opposite _____ *Ancylobothrys*

9b. Colleters in pairs or numerous per axil, brown or white, the same colour as stem or lighter, not wrapping around the stem (Figure 1**Dii, Diii**); tendrils absent; straight line between petiole bases; leaves opposite or in whorls of 3 or 4 _____ *Strophanthus*

10a. Stems forming swollen pads where the petiole arises (Figure 2**D**), sometimes shrivelled when dried; blade with sparse raised black dots or dashes on the abaxial side, especially on the central vein near the base and sometimes continuing down onto the petiole _____ *Clitandra*

10b. Stems at petiole base not swollen; blade without raised black dots and dashes ____ 11

11a. Leaves 0.8–10 × 1.4–5 cm, most < 10 × 5 cm at maturity _____ 12

11b. Leaves 3–33 × 1.8–18 cm, most > 10 × 5 cm at maturity _____ 13

12a. Leaves elliptic; leaves of a pair equal and arrangement regular up the stem; tertiary venation inconspicuous below; leafy stems glabrous _____ *Cylindropsis*

12b. Leaves ovate, elliptic or obovate; leaves of a pair more or less equal and arrangement

more or less uniform up the stem; tertiary venation conspicuous below; leafy stems puberulous or sometimes glabrous _____ *Landolphia*

13a. Stems and leaves glabrous or covered in dense prostrate hairs (< 1 mm); lenticels dense and white; petiole 7.5–22 mm; blade orbicular, obovate or ovate, apex often obtuse, acute or rarely acuminate, base obtuse to subcordate; secondary veins 8–13 pairs, submarginal veins absent _____ *Saba*

13b. Stems and leaves glabrous, puberulous, or sometimes with very long (> 1.5 mm), straight hairs; lenticels varied; petiole 0.5–17 mm; blade ovate to obovate, apex acuminate, base cuneate, attenuate or rounded; secondary veins 5–23 pairs, anastomosed with submarginal veins _____ *Landolphia*

14a. Interpetiolar stipules present, sometimes caducous at older petiole bases, leaving ridge scar _____ 15

14b. Interpetiolar stipule absent _____ 17

15a. Interpetiolar stipule intact, forming collar around stem; leaves with minute scattered black dots on underside of blade, leaves of a pair equal or distinctly unequal *Tabernaemontana*

15b. Interpetiolar stipule caducous leaving a scar between older petiole bases, triangular or semicircular when intact; leaves without black dots; leaves of a pair always equal __ 16

16a. Interpetiolar stipule triangular, black or brown hair-like colleters present behind the stipule, visible on older nodes where the stipule has fallen off (**Figure 1C**); stems pubescent or rarely glabrous _____ *Dictyophleba*

16b. Interpetiolar stipule semicircular, colleters absent, stipule sometimes leaving behind fragments after abscission; stems glabrous to lightly puberulous _____ *Vahadenia*

17a. Stems, petioles, and leaf veins lined with a dense layer of long, red-brown, branched hairs _____ *Oncinotis*

17b. Stems, petioles, and leaves glabrous to sparsely puberulous with simple hairs _____ 18

18a. Petiole deeply channelled as though it has been folded in half lengthways, with a gland arising from within the channel, usually halfway up the petiole (**Figure 2C**) ___ *Oncinotis*

18b. Petioles not channelled to lightly channelled, without glands _____ 19

19a. Latex white, clear or rarely absent; single intrapetiolar colleters entire or bifid per axil (**Figure 1Di**); line between petiole bases present _____ *Alafia*

19b. White latex always present; colleters absent; line between petiole bases absent *Landolphia*

Species keys and descriptions

Of the 16 genera included in the genus key, seven contain more than one species from Sangha Trinational. For these seven genera, species keys are provided; for the others, only a genus and species description is provided. The descriptions for all 16 genera and 46 species focus on vegetative characters but also include brief information on inflorescence and fruit characters. Genus descriptions are based on the species found in Sangha Trinational only and therefore may not represent the genus as a whole. Literature references that provide a more complete description of genera and species and of the floral and fruit morphology are cited. Diagnostic characters are given in italics. All specimens cited in the checklist are collected from Sangha Trinational and held in E.

Alafia Thouars

Lianas reaching 20–80 m in length with white or clear latex in all parts or rarely absent. Stems without tendrils. Leafy stems with or without lenticels. *Colleters intrapetiolar, single per axil, entire or bifid.* Leaves opposite; blade elliptic or obovate; secondary veins 3–12 pairs; tertiary venation reticulate. Inflorescence terminal. Fruits two paired follicles, long, cylindrical, longitudinally dehiscent.

References. Jongkind (2022: 10).

1a. Single bifid colleter per axil _____ *A. caudata*
1b. Single entire colleter per axil _____ 2

2a. Leaves 5–32 × 3–15 cm, specimens always with at least some leaves at the higher end of this size range _____ 3
2b. Leaves 2–15 × 0.4–7 cm _____ 4

3a. Leaf blade glabrous above and pubescent below; colleters completely flush with petiole _____ *A. erythrophalma*
3b. Leaf blade glabrous: colleters growing slightly lifted from petiole _____ *A. multiflora*

4a. Leaves very narrowly elliptic, 2.5–5 times as long as wide; apex acute ___ *A. benthamii*
4b. Leaves rounded to slightly narrowly elliptic, 1.4–3 times as long as wide; apex acuminate _____ 5

5a. Between 8 and 15 pairs of lateral veins; intermediary veins conspicuous *A. landolphioides*
5b. Between 4 and 8 pairs of lateral veins; intermediary veins inconspicuous _____ 6

6a. Most to all leaves obovate _____ *A. lucida*
6b. Most to all leaves elliptic _____ *A. schumannii*

Alafia benthamii (Baill.) **Stapf**
Liana reaching 20 m in length with white latex. Leafy stems with pale lenticels; glabrous. *Colleters single per axil, entire, < 0.5 mm.* Leaves glabrous; petiole 2–8 mm; blade narrowly elliptic, sometimes asymmetrical, 2–7.5 × 0.4–3.5 cm, apex acute, base cuneate to attenuate; secondary veins 5–12 pairs; tertiary venation reticulate, clearly visible. Inflorescence 2–4 cm × 2–4 cm; peduncle 3–9 mm. Fruits two paired follicles 20–40 × 0.5–1 cm, smooth.

References. Pichon (1954: 164), Jongkind (2022: 12).

Specimens. Not yet collected in Sangha Trinational.

Alafia caudata Stapf
Liana reaching 25 m in length with white latex. Leafy stems with pale lenticels; glabrous. *Colleters single per axil, bifid, < 0.5 mm.* Leaves glabrous; petiole 1–5 mm, blade elliptic, 3–9 × 1–4 cm, apex acuminate, base cuneate; secondary veins 4–9 pairs; tertiary venation reticulate, clearly visible. Inflorescence 2–3 × 2–3 cm; peduncle 3–16 mm. Fruits two paired follicles 15–40 × 0.5–1 cm, slightly striated.

References. Jongkind (2022: 12).

Specimens. *Harris, D.J.* 475, 4103, 4530, 5517.

Alafia erythrophthalma (K.Schum.) Leeuwenb.
Liana reaching 20 m in length with white latex. Leafy stems with pale lenticels; glabrous to slightly pubescent. *Colleters single per axil, cupped, > 0.5 mm.* Leaves glabrous above and pubescent beneath; petiole 3–10 mm; blade elliptic, orbicular, to obovate, 7–32 × 4–15 cm, apex acuminate, base rounded to cuneate; secondary veins 3–15 pairs; tertiary venation reticulate, clearly visible. Inflorescence 4–12 × 4–12 cm; peduncle 5–30 mm. Fruits two paired follicles 26–62 × 0.7–1 cm, striated.

References. Jongkind (2022: 15).

Specimens. Not yet collected in Sangha Trinational.

Alafia landolphioides (A.DC.) K.Schum.
Liana reaching approximately 20 m in length with white latex. Leafy stems with pale lenticels; glabrous or puberulous. *Colleters single per axil, entire, < 0.5 mm.* Leaves glabrous; petiole 3–5 mm; blade elliptic, 4–13 × 2–6 cm, apex acuminate, base cuneate; secondary veins 8–15 pairs; tertiary venation reticulate, clearly visible. Inflorescence 2–7 × 2–7 cm; peduncle 3–40 mm. Fruits two paired follicles 18–45 × 0.5–1.5 cm, smooth.

References. Leeuwenberg (1997: 790).

Specimens. Not yet collected in Sangha Trinational.

Alafia lucida Stapf
Liana reaching 70 m in length with white latex. Leafy stems with lenticels, glabrous. *Colleters single per axil, entire, < 0.5 mm.* Leaves glabrous; petiole 2–6 mm; blade obovate, rarely elliptic, 4.5–15 × 2–7 cm, apex acuminate, base cuneate; secondary veins 4–8 pairs; tertiary venation reticulate, inconspicuous. Inflorescence 3–11 × 3–13 cm; peduncle 5–25 mm. Fruits two paired follicles 24–75 × 0.3–1.5 cm, striated.

References. Jongkind (2022: 18).

Specimens. Not yet collected in Sangha Trinational.

Alafia multiflora Stapf
Liana reaching 80 m in length with clear or white latex. Leafy stems with no lenticels or lightly scattered lenticels, glabrous. Colleters single per axil, entire, > 0.5 mm. Leaves glabrous; petiole 5–10 mm; blade elliptic, 6–21 × 4–12 cm, apex acuminate, base rounded; secondary veins 5–11 pairs; tertiary venation reticulate, clearly visible. Inflorescence 4–13 × 4–13 cm, peduncle 3–27 mm. Fruits two paired follicles 70–110 × 2.2–2.5 cm, slightly striated.

References. Jongkind (2022: 20).

Specimens. *Harris, D.J.* 1598, 9802.

Alafia schumannii Stapf
Liana reaching 40 m in length with or without white latex. Leafy stems with lenticels; glabrous. Colleters single per axil, entire < 0.5 mm. Leaves glabrous; petiole 5–20 mm, blade elliptic, 5–15 × 2–6 cm, apex acuminate, base rounded to cuneate; secondary veins 6–8 pairs; tertiary venation reticulate, inconspicuous. Inflorescence 3–7 × 3–7 cm, peduncle 3–17 mm. Fruits two paired follicles 40–110 × 0.5–1 cm, with lenticels.

References. Jongkind (2022: 20).

Specimens. Not yet collected in Sangha Trinational.

Ancylobothrys Pierre
Liana reaching 12–50 m in length with white latex present in all parts. Stems with large terminal tendrils. Leafy stems with lenticels; pubescent with orange-brown hairs. *Colleters intrapetiolar, sometimes reaching around the stem and almost connecting, black.* Leaves opposite; blade elliptic to ovate; secondary veins 5–25 pairs; tertiary venation reticulate. Inflorescence terminal. Fruits berries, globose to subglobose, epicarp smooth or bumpy.

References. Omino (2002: 28), Jongkind (2022: 29).

1a. One prominent colleter with multiple reduced colleter per axil _____ *A. robusta*
1b. Multiple prominent colleters per axil _____ 2

2a. Between 6 and 14 secondary veins; petioles < 5 mm or growing at a 35° angle to the stem; intrapetiolar colleters not wrapping around stem; leaf apex acute; leaf base rounded to cordate _____ *A. amoena*

2b. Between 10 and 25 secondary veins; petiole 8–15 mm, usually growing at a 90° angle to the stem; intrapetiolar colleters wrapping around stem almost joining together; leaf apex always acuminate with acumen up to 10 mm long; leaf base rounded to cuneate *A. scandens*

Ancylobothrys amoena Hua

Liana reaching 50 m in length. Leafy stems with lenticels; densely pubescent with orange-brown hairs. Colleters conical, numerous per axil, black, < 0.3 mm. Leaves glabrous; petiole 6–15 mm; blade elliptic to elliptic, 7–12 × 2.5–6.3 cm, apex acute, base rounded to cordate; secondary veins 6–14 pairs. Inflorescence 13–50 cm long; peduncle 10–45 cm. Fruits c.4 cm in diameter, subglobose, orange.

References. Omino (2002: 29).

Specimens. Not yet collected in Sangha Trinational.

Ancylobothrys robusta Pierre

Liana reaching 40 m in length. Leafy stems with lenticels; densely pubescent with orange-brown hairs. Colleters conical, numerous per axil, black, one long (> 0.5 mm) others reduced (< 0.5 mm). Leaves finely pubescent on both sides; petiole 12–26 mm; blade elliptic, 8–21 × 4–8 cm, apex acuminate, base rounded to cuneate; secondary veins 5–15 pairs. Inflorescence 5–25 cm long; peduncle 3–19 cm. Fruits globose 3–6 × 3–6 cm, epicarp smooth to slightly bumpy, orange.

References. Vonk *et al.* (1994: 22), Jongkind (2022: 29).

Specimens. Not yet collected in Sangha Trinational.

Ancylobothrys scandens (Schumach. & Thonn.) Pichon

Liana reaching 12 m in length. Leafy stems with lenticels, densely pubescent with orange-brown hairs. Colleters conical, multiple per axil, black, wrapping around the stem far enough to almost connect, > 0.5 mm. Leaves glabrous; petioles 8–15 mm; blade elliptic to elliptical, 6–19 × 2.5–8 cm, apex acuminate, base rounded to cuneate; secondary veins 10–25 pairs. Inflorescence 9–25 × 4–15 cm; peduncle 4–15 cm. Fruits spherical, 2–5 × 2–5 cm, epicarp bumpy, red.

References. Vonk *et al.* (1994: 25), Jongkind (2022: 33).

Specimens. *Harris, D.J.* 948.

Baissea A.DC.

Lianas reaching 10–40 m in length with white latex in all parts. Stems without tendrils. Leafy stems without lenticels; more or less pubescent. Colleters present halfway up the petiole, at the base of the blade, or absent. Leaves opposite; petiole 0.5–22 mm; blade elliptic, obovate, ovate or rarely lanceolate; secondary veins 3–17 pairs, *tuft or pit domatia in the axils of at least some secondary veins on the ventral surface*; tertiary venation reticulate or scalariform. Inflorescence axillary and terminal. Fruits two paired follicles, long, cylindrical, longitudinally dehiscent.

References. Jongkind (2022: 37).

1a. Leaves all < 7 × 3 cm; leaf base cordate to truncate; leaf apex acute; petioles 0.5–3 mm _____ *B. axillaris*
1b. Leaves mostly > 7 × 3 cm at maturity: leaf base variable but not cordate, apex acuminate or cuneate; petioles 1–22 mm _____ 2

2a. Leaves narrowly elliptic, never obovate, base cuneate; leaves 3–6 times as long as wide _____ *B. subrufa*
2b. Leaf shape ovate elliptic or obovate, base rounded, subcordate or cuneate; 1–4 times as long as wide _____ 3

3a. Most to all leaves obovate to obovate elliptic, some younger leaves ovate _____ 4
3b. Most to all leaves ovate to elliptic, rarely obovate _____ 5

4a. Leaf base rounded; leaf blade obovate, rarely narrowly so; secondary veins forming conspicuous marginal collecting vein _____ *B. major*
4b. Leaf base rounded to subcordate; leaf blade elliptic obovate; secondary veins connecting inconspicuously _____ *B. gracillima*

5a. Leaf blade > 10 × 5 cm at maturity; tuft domatia present or absent _____ *B. welwitschii*
5b. Leaf blade < 10 × 5 cm at maturity; tuft domatia always present _____ 6

6a. Secondary veins 5–10 pairs _____ *B. multiflora*
6b. Secondary veins 10–17 pairs _____ *B. leonensis*

Baissea axillaris (Benth.) Hua

Lianas at least 15 m in length. Leafy stems without lenticels; densely pubescent with short hairs. Colleters present or absent. Leaves glabrous or slightly pubescent on both sides; petiole 0.5–3 mm; blade elliptic to ovate, 0.2–7 × 0.2–3, apex acute, base truncate to cordate; secondary veins 3–10 pairs; tuft domatia present on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary and terminal; peduncle 0.3–1 mm, pubescent. Fruits two paired follicles 10–35 × 0.5–3 cm, densely pubescent with short hairs.

References. van Dilst (1995: 94), Jongkind (2022: 38).

Specimens. *Harris, D.J.* 3063, 4807.

Baissea gracillima (K.Schum.) Hua
Liana reaching 40 m in length. Leafy stems without lenticels; densely pubescent. Colleters present or absent. Leaves glabrous or pubescent on both sides; petiole 1–20 mm; blade narrow obovate, 3–18 × 2–7 cm, apex acuminate, base rounded; secondary veins 8–14 pairs; tuft domatia present on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary and terminal; peduncle 0–5 cm, pubescent. Fruits two paired follicles, 17–50 × 0.4–0.5 cm, pubescent.

References. Jongkind (2022: 45).

Specimens. Not yet collected in Sangha Trinational.

Baissea leonensis Benth.
Liana reaching 40 m in length. Leafy stems without lenticels; lightly pubescent. Colleters present or absent. Leaves lightly pubescent or glabrous on both sides; petiole 3–22 mm; blade narrowly elliptic, 3–15 × 1.5–3 cm, apex acuminate, base rounded to cuneate; secondary veins 10–17 pairs; tuft domatia present on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary and terminal; peduncle 2–29 mm, pubescent with black hairs. Fruits two paired follicles, 15–100 × 0.4–2.5 cm, densely pubescent.

References. Jongkind (2022: 47).

Specimens. Not yet collected in Sangha Trinational.

Baissea major (Stapf) Hiern
Liana reaching 15 m in length. Leafy stems without lenticels; glabrous to very lightly pubescent. Colleters present or absent. Leaves lightly pubescent at midrib on the adaxial side and lightly pubescent on the abaxial side; petiole 5–12 mm; blade obovate to elliptic, 3–16 × 1.5–6 cm, apex acuminate, base cuneate to rounded; secondary veins 7–12 pairs, tuft domatia present on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary or terminal; peduncle 0.8–10 cm, pubescent. Fruits two paired follicles, 10–50 × 1–4 cm, pubescent.

References. van Dilst (1995: 128).

Specimens. *Harris, D.J.* 460, 1805, 2037.

Baissea multiflora A.DC.
Liana reaching 25 m in length. Leafy stems without lenticels; pubescent. Colleters present or absent. Leaves pubescent on both sides; petiole 1–5 mm; blade elliptic, apex acuminate, base rounded or less commonly cuneate; secondary veins 5–10 pairs; tuft domatia present

on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary or terminal; peduncle 0.2–1.3 cm, pubescent. Fruits two paired follicles, 20–115 × 1–8 cm, pubescent.

References. van Dilst (1995: 130).

Specimens. *Harris, D.J.* 2747, 4481; *Ndolo Ebika, S.T.* 964.

Baissea subrufa Stapf
Liana reaching 20 m in length. Leafy stems without lenticels; densely pubescent. Colleters present or absent. Leaves glabrous above and pubescent on the veins below; petiole 2–9 mm; blade lanceolate to oblanceolate, 5–21 × 1–7 cm, apex attenuate to slightly acuminate, base cuneate; secondary veins 3–8 pairs, tuft domatia present on the abaxial surface in the axils of at least some secondary veins. Inflorescence axillary or terminal; peduncle 0.5–7 cm, pubescent. Fruits two paired follicles, 10–75 × 4–5 cm, pubescent.

References. van Dilst (1995: 143), Jongkind (2022: 51).

Specimens. *Harris, D.J.* 3514, 4755, 5130.

Baissea welwitschii (Baill.) Stapf ex Hiern
Liana reaching 10 m in length. Leafy stems without lenticels, glabrous or pubescent. Colleters present or absent. Leaves glabrous or pubescent on both sides; petiole 2–10 mm; blade elliptic, 3.5–13.5 × 1.5–5 cm, apex acuminate, base cuneate, rarely rounded; secondary veins 5–20 pairs, tuft domatia present on the abaxial surface in the axils of at least some secondary veins or rarely absent from all. Inflorescence axillary or terminal; peduncle 7–30 mm, glabrous or pubescent. Fruits two paired follicles, 30–51 × 0.5–4 cm, glabrous.

References. Jongkind (2022: 53).

Specimens. Not yet collected in Sangha Trinational.

Clitandra Benth.
Lianas reaching 40 m in length with white latex in all parts. Stems with tendrils. Leafy stems with lenticels; glabrous. Colleters absent. Leaves opposite; *petiole inserted on swollen pads at the stem*; blade narrow elliptic; secondary veins 6–16 pairs; tertiary venation reticulate; *black dots on abaxial blade surface*. Inflorescence axillary. Fruits globose or pear shaped.

References. Leeuwenberg & Berndsen (1988: 159), Jongkind (2022: 61).

Clitandra cymulosa Benth.
Lianas reaching 40 m in length. Leafy stems with lenticels, glabrous. Leaves glabrous on both sides; *petiole 5–12 mm, inserted on swollen pads at the stem*; blade narrowly elliptic, 4–30 × 2–12 cm, apex acuminate, base rounded to cuneate; secondary veins 6–16 pairs; *black dots on abaxial blade surface*. Inflorescence with 10–80 flowers. Fruits globose or pear shaped, 4–10 cm, yellow or orange, with or without lenticels.

References. Leeuwenberg & Berndsen (1988: 159), Jongkind (2022: 62).

Specimens. *Carroll, R.W.* 1024, 1048; *Harris, D.J.* 46, 844, 3958, 4483, 4511, 4896; *Medjibe, V.P.* 392; *Remis, M.J.* 113-95.

Cyclocotyla Stapf
Lianas reaching 40 m in length with white latex in all parts. Stems without tendrils. Leafy stems with lenticels; glabrous. Colleters absent. Leaves opposite; blade narrowly elliptic, to narrowly obovate; *20–40 pairs of fine, closely spaced (1–3 mm) parallel lateral veins*. Inflorescence terminal and axillary. Fruits pear-shaped berries.

References. Jongkind (2022: 66).

Cyclocotyla congolensis Stapf
Lianas reaching 40 m in length. Leafy stems with lenticels; glabrous. Leaves glabrous; petiole 10–20 mm; blade narrowly elliptic to narrowly obovate, 7–12 × 2–5 cm, apex acuminate, base cuneate to rounded; *20–40 pairs of fine, closely spaced (1–3 mm) parallel lateral veins*. Inflorescence terminal and axillary 3–8 × 5–12 cm; peduncle 0.7–3.5 cm. Fruits pear-shaped berries, 12–22 × 12–25 mm, green.

References. Jongkind (2022: 66).

Specimens. *Gentry, A.* 62628; *Harris, D.J.* 1963, 4590.

Cylindropsis Pierre
Liana reaching 45 m in length with white latex in all parts. Stems with tendrils. Leafy stems with lenticels; glabrous. Colleters absent. Leaves opposite; blade elliptic; secondary veins 7–14 pairs; tertiary venation reticulate, inconspicuous below. Inflorescence axillary and sometimes also terminal. Fruits globose to ovoid berries.

References. Jongkind (2022: 66).

Cylindropsis parvifolia Pierre
Liana reaching 45 m in length. Leafy stems with lenticels; glabrous. Leaves glabrous on both sides; petiole 2–10 mm; blade elliptic, 2.5–11 × 1.5–5 cm, apex acuminate, base rounded; secondary veins 7–14 pairs. Inflorescence terminal and possibly axillary with 3–30 flowers; peduncle 0–20 mm. Fruits globose to ovoid berries, 25–70 mm long, orange.

References. Jongkind (2022: 66).

Specimens. *Harris, D.J.* 5094, 5099.

Dictyophleba Pierre
Lianas reaching 30–40 m in length with white latex in all parts. Stems with tendrils. Leafy stems without lenticels, pubescent or rarely glabrous. Stipules interpetiolar, quickly caducous with black or brown colleters present behind the stipule. Leaves opposite; blade

elliptic; secondary veins 6–13 pairs; tertiary venation reticulate. Inflorescence terminal. Fruits indehiscent berries.

References. Jongkind (2022: 72).

1a. Leaf apex acute; triangular interpetiolar stipule 1.5–3 mm long; leaf blade 3–17 × 2–8 cm _____ *D. lucida*
1b. Leaf apex acuminate; triangular interpetiolar stipule 4–8 mm long; leaf blade 14–41 × 6–20 cm _____ *D. ochracea*

Dictyophleba lucida (K.Schum.) Pierre
Lianas reaching 35 m in length. Leafy stems without lenticels; pubescent or rarely glabrous. Stipules interpetiolar, *triangular, 1.5–3 mm long, black colleters present behind the stipules*. Leaves glabrous; petiole 3–23 mm; blade elliptic, 3–17 × 2–8 cm, apex acute, base rounded to cordate; secondary veins 6–13 pairs. Inflorescence 3–23 × 1–5 cm; peduncle 3–11 cm. Fruits indehiscent berries, depressed globose, 1–5 × 1–3.5 cm, red, orange or yellow.

References. Jongkind (2022: 72).

Specimens. *Harris, D.J.* 1380, 2608.

Dictyophleba ochracea (K.Schum. ex Hallier f.) Pichon
Liana reaching 40 m in length. Leafy stems without lenticels; pubescent. Stipules triangular, *4–8 mm long, black or brown colleters present behind the stipules*. Leaves glabrous above, pubescent below; petiole 10–20 mm; blade elliptic, blade 14–41 × 6–20 cm, apex acuminate, base cuneate, rounded or cordate; secondary veins 7–12 pairs. Inflorescence 19–80 × 3–16 cm; peduncle 9–25 cm. Fruits indehiscent berries, globose, 2.6–15 cm, yellow.

References. de Hoogh (1989: 216), Jongkind (2022: 72).

Specimens. *Harris, D.J.* 1380; *Medjibe, V.P.* 739; *Ndolo Ebika, S.T.* 803.

Landolphia P.Beauv.
Large lianas with white latex in all parts. Stems with tendrils. Leafy stems with or without lenticels, glabrous, pubescent or densely hirsute. Colleters absent. Leaves opposite; blade ovate, elliptic or obovate; secondary veins 5–23 pairs; tertiary venation reticulate. Inflorescence axillary and/or terminal. Fruits yellow, orange or red berries.

References. Jongkind (2022: 99).

1a. Stems, petioles and midrib of leaf hirsute, with long straight hairs of 1.5–2 mm, sticking out of stem at a right angle or nearly so; leaves red-brown in colour when dried, blade elliptic to obovate, 4–33 × 2–12 cm _____ *L. villosa* or *L. jumellei**
1b. Stem petioles and blade glabrous to pubescent, hairs < 1 mm if present; leaf colour, shape and size various _____ 2

2a. Leaves 0.8–10(12) × 1–3(5) cm at maturity; blade ovate-elliptic; base cuneate; apex acuminate _____ 3
2b. Leaves 5–30 × 3–19 cm at maturity; blade ovate, obovate or elliptic; base rounded, cuneate or cordate; apex rounded or acute _____ 4

3a. Leafy stems and petioles covered in sparse, woolly, rust-coloured hairs of 0.5–1 mm; stems usually smooth and lenticellate _____ *L. dewevrei*
3b. Leafy stems and petioles glabrous; stems usually ridged and rarely lenticelate *L. incerta*

4a. Leaves red-brown when dried, darker on adaxial surface than abaxial; stems, petioles and blade always glabrous _____ *L. foretiana*
4b. Leaves grey-green or a cool brown, two-toned or the same on both sides, stems, petioles, and blade glabrous or puberulous _____ 5

5a. Abaxial and adaxial leaf surfaces the same colour; blade elliptic or narrowly elliptic __ 6
5b. Leaves two-toned, with abaxial and adaxial sides differing in colour or shade; blade ovate, narrowly ovate or obovate _____ 7

6a. Secondary veins 8–16 pairs _____ *L. landolphioides*
6b. Secondary veins 6–8 pairs _____ *L. robustior*

7a. Leaves always grey-green on top and light brown on bottom when dried; leaves ovate to obovate _____ *L. owariensis*
7b. Leaves also two-toned, but not grey-green top and light-brown bottom combination (may be the same colour but two different shades or may be green on bottom, brown on top); leaves mostly narrowly ovate, sometimes ovate when younger _____ *L. mannii*

* *Landolphia jumellei* and *L. villosa* cannot be distinguished from one another using vegetative characters and are therefore combined in the species key. To distinguish these two species, floral characters are needed.

Landolphia dewevrei Stapf
Large lianas. Leafy stems with lenticels; *sparsely pubescent*. Leaves glabrous, sometimes pubescent on the abaxial side of the midrib; petiole 3–9 mm; blade elliptic-ovate, 0.8–10(12) × 1–3(5) cm, apex acuminate, base cuneate; secondary veins 8–19 pairs. Inflorescence terminal; peduncle 0.3–3 cm, glabrous to pubescent; flowers > 15. Fruits subglobose, 2.6–7 × 2.4–7 cm; surface green, purple or brown, often spotted.

References. Jongkind (2022: 114).

Specimens. Not yet collected in Sangha Trinational.

Landolphia foretiana (Pierre ex Jum.) Pichon
Large lianas. Leafy stems without lenticels; glabrous. Leaves glabrous; petiole 0.5–4 cm; blade elliptic, 5–30 × (2.4)3–19 cm, apex acute to acuminate, base cuneate; secondary veins 5 or 6 pairs. Inflorescence axillary; peduncle 0.1–4 mm, pubescent; flowers 5–30. Fruits ellipsoidal or ovoid, 4.3–21 × 4–19 cm; surface red, orange or yellow with or without white or green lenticels.

References. Jongkind (2022: 116).

Specimens. Not yet collected in Sangha Trinational.

Landolphia incerta (K.Schum.) J.G.M.Pers.
Large lianas. Leafy stems rarely with lenticels; *glabrous*. Leaves glabrous, sometimes pubescent on the abaxial side of the midrib; petiole 2–9 mm; blade elliptic-ovate, 0.8–10(12) × 1–3(5) cm, apex acuminate, base cuneate; secondary veins 10–20 pairs. Inflorescence axillary and terminal; peduncle 2–4 mm, glabrous or pubescent; flowers 1–15. Fruits ellipsoidal, obovoid or globose, 1.5–4.5 × 1–3 cm; surface orange, often with white lenticels.

References. Persoon *et al.* (1992: 94), Jongkind (2022: 120).

Specimens. *Harris, D.J.* 646, 1545.

Landolphia jumellei (Pierre ex Jum.) Pichon
Large lianas. Leafy stems with lenticels, *densely hirsute*. Leaves pubescent, hairier in midrib; petiole 4–20 mm; blade elliptic to obovate, 4–33 × 2–12 cm, apex acuminate, base cuneate to cordate; secondary veins 5–13 pairs. Inflorescence terminal; peduncle 0–0.5 cm, pubescent; flowers 3–30. Fruits ovoid to obovoid, 5–15 cm; surface red with bumps.

References. Jongkind (2022: 122).

Specimens. *Fay, J.M.* 8511.

Landolphia landolphioides (Hallier f.) A.Chev.
Large lianas. Leafy stems with lenticels; pubescent to glabrous. Leaves glabrous; petiole 4–17 mm; blade elliptic or narrowly elliptic, 6–25 × 3–16 cm, apex acuminate, base cuneate; *secondary veins 8–16 pairs*. Inflorescence axillary or terminal; peduncle 3–15 mm long, glabrous or pubescent; flowers 3–45. Fruits globose or ovoid, 3.5–8 × 5–7 cm; surface yellow with lenticels.

References. Jongkind (2022: 122).

Specimens. *Remis, M.J.* 109.

Landolphia mannii Dyer ex Dewèvre
Large lianas. Leafy stems with lenticels; glabrous to pubescent. Leaves glabrous; petiole 4–13 mm; blade narrowly ovate or ovate, (2.5)5–25 × (2)3–8 cm, apex acute to acuminate,

base rounded; secondary veins 6–18 pairs. Inflorescence terminal; peduncle 10–30 mm long, glabrous or pubescent; flowers numerous. Fruits globose to pear shaped, 10–25 × 8–25 cm; surface yellow to red, smooth or bumpy.

References. Jongkind (2022: 130).

Specimens. Not yet collected in Sangha Trinational.

Landolphia owariensis P.Beauv.
Large lianas. Leafy stems with or without lenticels; glabrous to pubescent. Leaves glabrous to pubescent abaxially; petiole 1–12 mm; blade ovate or rarely obovate, (2)5–28 × (1)3–11 cm, apex acute to acuminate, base cuneate or rounded; secondary veins 6–23 pairs. Inflorescence terminal, sometimes on tendrils; peduncle 10–15 cm, glabrous; flowers numerous. Fruits globose to ovoid, 2.2–15 × 1.8–15 cm; surface yellow, orange, red or purple.

References. Persoon *et al.* (1992: 153), Jongkind (2022: 138).

Specimens. *Fay, J.M.* 8662; *Harris, D.J.* 1058, 1883, 2212, 2556.

Landolphia robustior (K.Schum.) J.G.M.Pers.
Large lianas. Leafy stems with lenticels; glabrous. Leaves glabrous; petiole 4–18 mm; blade elliptic or narrowly elliptic, 5–24 × (2)3–8.5 cm, apex acuminate, base cuneate to rounded; *secondary veins 6–8 pairs*. Inflorescence axillary; peduncle less than 1 cm, glabrous; flowers 1–20. Fruits ellipsoidal to obovoid, 1.7–7 × 1.4–4.3 cm; surface cream to orange with brown lenticels.

References. Persoon *et al.* (1992: 172), Jongkind (2022: 143).

Specimens. *Harris, D.J.* 1795, 4460, 4508, 5401, 5520.

Landolphia villosa J.G.M.Pers.
Large lianas. Leafy stems with lenticels, *densely hirsute*. Leaves pubescent, more so at midrib; petiole 0.4–20 mm; blade elliptic to obovate, 4–33 × 2–12 cm, apex acuminate, base cuneate to cordate; secondary veins 5–13 pairs. Inflorescence terminal; peduncle 0–0.5 cm, pubescent; flowers 3–40. Fruits ovoid to obovoid, 6–20 × 4–14.5 cm; surface red, yellow or orange, with bumps.

References. Persoon *et al.* (1992: 195).

Specimens. *Harris, D.J.* 1381, 5219.

Motandra A.DC.
Lianas reaching 40 m in length with white latex in all parts. Stems without tendrils. Leafy stems with lenticels, pubescent. *Colleters present halfway up the petiole or at base of blade.* Leaves subopposite or opposite; blade obovate to elliptic; *domatia present as tufts at base*

of at least some secondary veins; tertiary venation inconspicuous, reticulate. Inflorescence terminal. Fruits two paired follicles, longitudinally dehiscent.

References. de Kruif (1984: 5), Jongkind (2022: 160).

Motandra paniculata (Poir.) I.M.Turner
Liana reaching 40 m in length. Leafy stems with lenticels, densely pubescent. Colleters halfway along petiole or at base of blade. Leaves subopposite or opposite, pubescent; petiole 3–10 mm; blade obovate, rarely elliptic, 3–14.5 × 1.5–5 cm, apex acuminate, base rounded; secondary veins 4–8 pairs, with tuft domatia present at the apex of some or all. Inflorescence terminal, 2–15.5 × 1.5–7(–9) cm; peduncle 2.5–10 cm, pubescent. Fruits two follicles spreading away from each other at base, with lenticels, pubescent, conical, longitudinally dehiscent.

References. de Kruif (1984: 5), Jongkind (2022: 160).

Specimens. *Harris, D.J.* 2324, 4839, 5452, 5494, 5626.

Oncinotis Benth.
Lianas reaching 25–50 m in length with white latex in all parts. Stems without tendrils. Leafy stems with lenticels, pubescent to glabrous. Colleters present halfway up the petiole, at the base of the blade, or absent. Leaves opposite; blade obovate, ovate or elliptic; secondary veins 3–10, *domatia present in the axils of at least some secondary veins as tufts or pits, rarely absent*; tertiary venation reticulate. Inflorescence terminal. Fruits two paired follicles, conical, longitudinally dehiscent.

References. Jongkind (2022: 166).

1a. Stems, petioles, venation, and sometimes blade covered in dense, ramified, reddish brown hairs, hairs > 1.5 mm long _____ *O. hirta*
1b. Stems, petioles and blade glabrous to lightly pubescent, hairs < 1.5 mm long _____ 2

2a. Pit domatia present, or no domatia present; petiole and blade glabrous _____ 3
2b. Tuft domatia present; petiole and blade glabrous to pubescent _____ 4

3a. Leaves obovate _____ *O. pontyi*
3b. Leaves elliptic to ovate _____ *O. glabrata*

4a. Petiole 5–12 mm long; leaves narrowly obovate _____ *O. tenuiloba*
4b. Petiole 9–30 mm long; leaves obovate _____ *O. gracilis*

Oncinotis glabrata (Baill.) Stapf ex Hiern
Liana reaching 50 m in length. Leafy stems with lenticels; glabrous. Colleters absent. Leaves glabrous; petiole 5–20 mm, deeply channelled with petiole pit gland arising from centre; *blade elliptic to ovate*, 4–14 × 1.5–7.5 cm, apex acuminate, base rounded to slightly cuneate;

secondary veins 5–10 pairs, pit domatia present or rarely absent in axils of secondary veins. Inflorescence 2.5–12.5 × 1.5–5 cm. Fruits curved paired follicles, 10–29 × 1.2–6 cm.

References. Jongkind (2022: 167).

Specimens. *Harris, D.J.* 2614, 5266, 5622.

Oncinotis gracilis Stapf
Lianas reaching above 30 m in length. Leafy stems with lenticels; pubescent. Colleters present or absent. Leaves pubescent; *petiole 9–30 mm*; blade obovate, 2–15.5 × 1–5 cm, apex acuminate, base cuneate; secondary veins 3–10, tuft domatia present in axils. Inflorescence 2–7.5 × 1.5–4.5 cm. Fruits narrow cylindrical paired follicles, 8–30 × 0.4–0.8 cm.

References. de Kruif (1985: 17), Jongkind (2022: 169).

Specimens. *Harris, D.J.* 443.

Oncinotis hirta Oliv.
Liana reaching 25 m in length. Leafy stems with lenticel; *densely covered in ramified hairs*. Colleters present or absent. Leaves pubescent, more or less densely; petiole 5–14 mm; blade obovate or elliptic, 4–14.5 × 2–10 cm, apex acuminate, base rounded; secondary veins 5–10 pairs, densely pubescent, with tuft domatia in axils. Inflorescence 3.1–10.7 × 1–5.5 cm. Fruits narrow cylindrical paired follicles, 6.3–24 × 0.4–1 cm.

References. Jongkind (2022: 169).

Specimens. Harris, D.J. 2235.

Oncinotis pontyi Dubard
Liana reaching 50 m in length. Leafy stems with lenticels; glabrous. Colleters present or absent. Leaves glabrous; petioles 6–25 mm; *blade obovate*, apex acuminate, base attenuate to cuneate; secondary veins 3–10 pairs, with pit domatia present or absent in some axils. Inflorescence 3–11.5 × 1.5–8.5 cm. Fruits narrowly cylindrical paired follicles, 12–28.5 × 0.4–2.6 cm.

References. Jongkind (2022: 172).

Specimens. Not yet collected in Sangha Trinational.

Oncinotis tenuiloba Stapf
Liana reaching 30 m in length. Leafy stems with few lenticels, glabrous. Colleters absent. Leaves glabrous except for domatia below; *petiole 5–12 mm*; blade 6–15 × 2–6 cm, narrowly obovate, apex acuminate, base acute; secondary veins 3–6 pairs, with tuft domatia present at the axil of some. Inflorescence 2–6.5 × 1–4.4 cm. Fruits narrowly cylindrical paired follicles, 10.5–30 × 0.4–1.3 cm.

References. Omino (2002: 209).

Specimens. *Harris, D.J.* 2889.

Orthopichonia H.Huber
Lianas reaching 30 m in length with white latex in all parts. Stems with tendrils. Leafy stems without lenticels, glabrous. Colleters absent. Leaves opposite; blade elliptic to ovate; *secondary veins 30–50 pairs, closely spaced; blade with black dots on abaxial surface*. Inflorescence axillary or rarely terminal. Fruits globose berries.

References. Vonk (1989: 31), Jongkind (2022: 173).

Orthopichonia barteri (Stapf) H.Huber
Liana reaching 30 m in length. Leafy stems without lenticels, glabrous. Leaves glabrous; petiole 6–12 mm, with deep channels running along the adaxial side; blade elliptic to ovate, 4–12 × 1.5–8 cm, apex acuminate, base cuneate; secondary veins 30–50 pairs, closely spaced; blade with black dots on abaxial surface. Inflorescence singular or in sets of 4, peduncle 0.5–3 mm; flowers 10–80. Fruits globose berries, 1.5–10 × 1.5–10 cm.

References. Vonk (1989: 31), Jongkind (2022: 173).

Specimens. *Gentry, A.* 62569; *Harris, D.J.* 1195.

Pycnobotrya Benth.
Lianas reaching 40 m in length, with white to yellow latex in all parts. Stems without tendrils. Leafy stems with or without lenticels, glabrous to pubescent. Colleters absent. Leaves opposite; petiole inserted on swollen pads at the stem; blade elliptic; *secondary veins numerous, > 50 pairs*. Inflorescence axillary and terminal. Fruits two elliptical follicles.

References. Jongkind (2022: 198).

Pycnobotrya nitida Benth.
Lianas reaching 40 m in length. Leafy stems with or without lenticels, glabrous to pubescent. Leaves glabrous to pubescent; petiole 2–7 cm, inserted on swollen pads at the stem; blade elliptic, 5–15 × 1.5–5 cm, apex acuminate, base cuneate; *secondary veins numerous, > 50 pairs*. Inflorescence 3–15 × 2–20 cm; peduncle 1–5 cm; flowers numerous. Fruits two elliptical compressed follicles, 4.5–7 × 3–4.5 × 0.5–1.5, green or brown when ripe.

References. Jongkind (2022: 198).

Specimens. *Fangounda, J.* 527; *Fay J.M.* 8327, 8425; *Gentry, A.* 62714, 62754; *Harris, D.J.* 221, 1573, 3328, 4058, 5454, 5865, 7816; *Ndolo Ebika, S.T.* 258, 838.

Saba (Pichon) Pichon
Lianas reaching 60 m in length with white latex in all parts. Stems with tendrils. Leafy stems with white lenticels, glabrous or covered in dense prostrate hairs. Colleters absent. Leaves

opposite; blade orbicular, obovate or ovate, 5–25 × 4–18 cm; secondary veins 8–13 pairs. Inflorescence usually terminal or rarely axillary or on the tendrils. Fruits berries.

References. Leeuwenberg & van Dilst (1989: 190), Jongkind (2022: 209).

Saba comorensis (Bojer ex A.DC.) Pichon
Liana reaching 60 m in length. Leafy stems with white lenticels, glabrous or covered in dense prostrate hairs. Leaves glabrous or covered in dense prostrate hairs; petiole 7.5–22 mm; blade orbicular, obovate or ovate, 5–25 × 4–18 cm, apex often obtuse to acute or rarely acuminate, base obtuse to subcordate; secondary veins 8–13 pairs. Inflorescence with many flowers; peduncle 5–30 cm. Fruits globose to ellipsoid, red or orange.

References. Leeuwenberg & van Dilst (1989: 190), Jongkind (2022: 209).

Specimens. *Harris, D.J.* 1057, 1652, 1808, 1882; *Ndolo Ebika, S.T.* 929.

Strophanthus DC.
Lianas reaching 12–100 m in length or sometimes shrubs with white, clear or yellow latex, rarely absent. Stems without tendrils. Leafy stems with lenticels, glabrous or hispid. *Colleters intrapetiolar, conical in pairs or numerous per axil.* Leaves opposite or in whorls of 3 or 4; blade elliptic, ovate or slightly obovate; secondary veins 2–10 pairs, anastomosed; tertiary venation reticulate. Inflorescence terminal or rarely axillary. Fruits two longitudinally dehiscent follicles.

References. Jongkind (2022: 217).

1a. Leaves and stems hispid with hairs of > 1.5 mm _____ *S. hispidus*
1b. Leaves and stems glabrous or sparsely pubescent with hairs < 1.5 mm _____ 2

2a. Tertiary venation conspicuous _____ *S. sarmentosus*
2b. Tertiary venation inconspicuous _____ 3

3a. Leaves 5–18 cm long; intrapetiolar colleters 2 or 4 per axil _____ *S. gratus*
3b. Leaves 2–9.5 cm long; intrapetiolar colleters 4 to 8 per axil _____ *S. preussii*

Strophanthus gratus (Wall. & Hook.) Baill.
Liana reaching 25 m in length or rarely a shrub; latex white. Leafy stems with lenticels, glabrous. *Colleters interpetiolar, 2 or 4 per axil.* Leaves opposite or in whorls of 3 or 4; glabrous; petiole 5–25 mm; blade elliptic, *5–18 × 1.4–10 cm*, apex acuminate, base rounded; secondary veins 4–10 pairs; tertiary venation inconspicuous. Inflorescence with 3–30 flowers. Fruits two follicles, 19–35 × 2–4 cm.

References. Jongkind (2022: 218).

Specimens. Not yet collected in Sangha Trinational.

Strophanthus hispidus DC.
Liana reaching 100 m in length or rarely shrub; clear, orange or white latex. Leafy stems with lenticels; *hispid with hairs > 1.5 mm*. Colleters interpetiolar, two per axil. Leaves opposite; hispid with most hairs on midrib; petiole 0.5–7 mm; blade elliptic to ovate, 3–20 × 1–12 cm, apex acuminate, base rounded; secondary veins 6–9 pairs; tertiary venation conspicuous. Inflorescence with 1–65 flowers. Fruits two follicles, 20–50 × 3.2–5 cm.

References. Jongkind (2022: 218).

Specimens. Not yet collected in Sangha Trinational.

Strophanthus preussii Engl. & Pax
Liana reaching 12 m in length or rarely shrub; latex clear or white. Leafy stems with lenticels, glabrous. *Colleters interpetiolar, 4–8 per axil.* Leaves opposite; glabrous; petiole 2–10 mm; blade elliptic to ovate, *2–9.5 × 0.6–8 cm*, apex acuminate, base rounded to cuneate; secondary veins 3–8 pairs; tertiary venation inconspicuous. Inflorescence with 1–50 flowers. Fruits two follicles, 10–25 × 1–3 cm.

References. Beentje (1982: 125), Jongkind (2022: 224).

Specimens. *Harris, D.J.* 5461.

Strophanthus sarmentosus DC.
Liana reaching 40 m in length or rarely shrub; latex white or clear. Leafy stems with lenticels, glabrous or rarely lightly puberulous. Colleters interpetiolar, two per axil. Leaves opposite or in whorls of 3 or 4; glabrous to lightly puberulous; petiole 1–20 mm; blade elliptic to ovate, 1.5–12 × 0.4–6 cm, apex acuminate, base cuneate or rounded; secondary veins 2–6 pairs; *tertiary venation conspicuous*. Inflorescence with 1–5 flowers. Fruits two follicles, 12–30 × 1.5–3 cm.

References. Beentje (1982: 131), Jongkind (2022: 227).

Specimens. *Harris, D.J.* 1766, 1767.

Tabernaemontana Plum. ex L.
Lianas reaching 50 m in length with white latex in all parts. Stems without tendrils. Leafy stems without lenticels, glabrous. *Stipules interpetiolar forming collar around stem*; colleters absent. Leaves opposite, leaves of a pair equal or unequal; blade elliptic, narrowly elliptic or obovate; secondary veins 4–9 pairs; tertiary venation inconspicuous; *black dots on underside of blade*. Inflorescence terminal. Fruits two mericarps free or fused at base.

References. Leeuwenberg (1991: 26), Jongkind (2022: 237).

Tabernaemontana eglandulosa Stapf
Liana reaching 50 m in length. Leafy stems without lenticels, glabrous. Stipules interpetiolar forming collar around stem. Leaves glabrous to slightly pubescent below; petiole 5–60 mm;

blade elliptic, narrowly elliptic or obovate, 7.5–20 × 3–10.5 cm, apex acuminate, base cuneate; secondary veins 4–9 pairs; tertiary venation inconspicuous; black dots on underside of blade. Inflorescence branched 1–3 times with 3–12 flowers; peduncle 3–50 mm. Fruits two free or fused mericarps, ovoid to subglobose, 3–8 × 2–7 cm, yellow or orange.

References. Leeuwenberg (1991: 26), Jongkind (2022: 237).

Specimens. *Harris, D.J.* 3317, 3585, 4756.

Vahadenia Stapf
Lianas reaching 50 m in length with white latex in all parts. Stems with tendrils. Leafy stems without lenticels, glabrous to lightly puberulous. *Stipules interpetiolar, semicircular, caducous*: colleters absent. Leaves opposite; blade elliptic, 2–19 × 0.5–12 cm; secondary veins 6–10 pairs; tertiary venation reticulate. Inflorescence axillary or terminal. Fruits indehiscent berries.

References. Haegens (1994: 323), Jongkind (2022: 251).

Vahadenia laurentii (De Wild.) Stapf
Liana reaching 50 m in length. Leafy stems without lenticels, glabrous to lightly puberulous. *Stipules interpetiolar, semicircular, caducous.* Leaves glabrous; petiole 2–25 mm; blade elliptic, 2–19 × 0.5–12 cm, apex acute, base cuneate; secondary veins 6–10 pairs. Inflorescence with 1–50 flowers; peduncle 3.6–20 cm. Fruits globose, pear-shaped or obovoid, smooth, yellow to orange.

References. Haegens (1994: 323), Jongkind (2022: 251).

Specimens. *Harris, D.J.* 7, 1021, 1552, 5672, 8545.

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Appendix. The 46 species treated in the keys, comprising the 32 that have been recorded and the 14 expected to occur in the Sangha Trinational, Cameroon, Central African Republic, and Republic of the Congo

Species	Found or expected
Alafia benthamii (Baill.) Stapf	Expected
Alafia caudata Stapf	Found
Alafia erythrophthalma (K.Schum.) Leeuwenb.	Expected
Alafia landolphioides (A.DC.) K.Schum.	Expected
Alafia lucida Stapf	Expected
Alafia multiflora Stapf	Found
Alafia schumannii Stapf	Expected
Ancylobothrys amoena Hua	Expected
Ancylobothrys robusta Pierre	Found
Ancylobothrys scandens (Schumach. & Thonn.) Pichon	Found
Baissea axillaris (Benth.) Hua	Found
Baissea gracillima (K.Schum.) Hua	Found
Baissea leonensis Benth.	Expected
Baissea major (Stapf) Hiern	Found
Baissea multiflora A.DC.	Found
Baissea subrufa Stapf	Found
Baissea welwitschii (Baill.) Stapf ex Hiern	Expected
Clitandra cymulosa Benth.	Found
Cyclocotyla congolensis Stapf	Found
Cylindropsis parvifolia Pierre	Found
Dictyophleba lucida (K.Schum.) Pierre	Found
Dictyophleba ochracea (K.Schum. ex Hallier f.) Pichon	Found
Landolphia dewevrei Stapf	Expected
Landolphia foretiana (Pierre ex Jum.)	Expected
Landolphia incerta (K.Schum.) J.G.M.Pers.	Found
Landolphia jumellei (Pierre ex Jum.) Pichon	Found
Landolphia landolphioides (Hallier f.) A.Chev.	Found
Landolphia mannii Dyer ex Dewèvre	Expected
Landolphia owariensis P.Beauv.	Found
Landolphia robustior (K.Schum.) J.G.M.Pers.	Found
Landolphia villosa J.G.M.Pers.	Found
Motandra paniculata (Poir.) I.M.Turner	Found
Oncinotis glabrata (Baill.) Stapf ex Hiern	Found
Oncinotis gracilis Stapf	Found
Oncinotis hirta Oliv.	Found
Oncinotis pontyi Dubard	Expected
Oncinotis tenuiloba Stapf	Found
Orthopichonia barteri (Stapf) H.Huber	Found
Pycnobotrya nitida Benth.	Found
Saba comorensis (Bojer ex A.DC.) Pichon	Found
Strophanthus gratus (Wall. & Hook.) Baill.	Expected
Strophanthus hispidus DC.	Expected
Strophanthus preussii Engl. & Pax	Found
Strophanthus sarmentosus DC.	Found
Tabernaemontana eglandulosa Stapf	Found
Vahadenia laurentii (De Wild.) Stapf	Found