

THE SYSTEMATIC POSITION OF THE EAST  
MALESIAN GENUS *HOLLRUNGIA* K. SCH. WITHIN  
THE PASSIFLORACEAE

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In 1888 K. SCHUMANN described a new, monotypic genus of the *Passifloraceae* from Papua, *Hollrungia aurantioides* K. Sch. (*Bot. Jahrb.* 9: 212). Its generic distinction was largely ascribed to the peculiar sessile, cap-shaped, undivided stigma ("tellerformige Narbe") and a 3-angular ovary.

HARMS, who elaborated *Passifloraceae* for the first and second editions of the "Pflanzenfamilien", provided a figure of a section of the flower and a cross-section of the ovary (l.c. 3, 6a: 86, fig. 25 E-F. 1893, and 21: 495, fig. 218 E-F. 1925), maintaining Schumann's observation that *Hollrungia* possesses an androgynophore which brings it alongside *Passiflora*, but differing from that genus by the undivided cap-shaped stigma. This kind of stigma is rare in the *Passifloraceae* and Harms recorded it in the family only for two other, monotypic African genera *Crossostemma* and *Schlechterina*.

For a long time *Hollrungia* was known only from the type collection (*Hollrung* 62) which was unfortunately destroyed at Berlin during the second world war. However, many new collections were made since then, although sometimes referred to *Adenia* or *Passiflora* by sight identification, and the spotting of *Hollrungia* in the Moluccas induced me to publish some records (*Reinwardtia* 1: 480. 1952) and suggest a closer affinity with *Adenia*, not *Passiflora*.

Recently Dr. J. Hutchinson suggested to me to examine the genus more closely and this was made easy by excellent material from the Solomon Is. collected by Dr. Whitmore n. BSIP 4071, with both flowers and bud. This was supplemented by a fruiting specimen Brass 3283 found under *Adenia* sp.

This examination led to the fairly surprising result that *Hollrungia* has only seemingly an androgynophore: the staminal tube formed by the halfway connate filaments closely envelops the gynophore but is not at all adnate. Furthermore, it has appeared that only in the bud stage and young flowers the stigma appears as a fleshy, more or less solid cap, but that in later stages it expands into 3 short, distinct lobed stigmas, faintly reminiscing to the unfolding of a cauliflower. Schumann had obviously only buds and very young flowers at his disposal which served for Harms's drawings. Obviously the flowers of *Hollrungia* are protandrous, because in these young flowers the anthers are sometimes already opened. Protandry is also known to occur in *Passiflora*. Fig. 1-5.

In another new collection, Brass 27422 from Misima I., east of New Guinea, essentially the same structure was encountered, but here the ripe stigmas are not what Harms called "foliaceous" stigmas, those just mentioned, but are brush-shaped or cristate similarly as Harms figured for *Adenia obtusa* (cf. l.c. 21: 489, fig. 223B). Fig. 6. Also here the stigma appears in bud as an almost solid cap, but unfolds later. Fig. 7.

It seems to me that two different species are concerned. The great trouble appears now that we are in the dark about the question how the mature stigma would be in the type species, *H. aurantioides* K. Sch.

Anyway, it appears clearly that *Hollrungia* has the closest affinity with *Adenia* and not with *Passiflora*, although in the herbarium preliminarily identified specimens are found under all three generic names.

Then I paid attention to occurrence of tendrils. As I noted (l.c.) the Moluccan specimen Beguin 1535 has small tendrils in the inflorescences, that is, in the bifurcation of the cymose inflorescence, replacing so to say the central flower in the first, main dichasial fork, similarly as is found in several other genera of the family, e.g. *Adenia*, *Triphostemma*, etc. Such tiny tendrils one can also find sometimes in *Passiflora*, e.g. in the Malesian species *P. horsfieldii* and *P. moluccana* where they occur between the two main branches of the inflorescence and a common peduncle is virtually absent. Killip, in his monograph of the American species, also noted the occasional occurrence of such tendrils: "in a few species tendrils terminate peduncles and in one species some of the tendrils are axillary and some develop from a flowerless fork of a bifurcate peduncle".

Besides the inflorescencial tendrils, both in *Adenia* and in *Passiflora* axillary tendrils occur and they are often accrescent and develop into strong, woody tendrils. If I am right in assuming that Brass 12880, an older, fruiting specimen from New Guinea, is a *Hollrungia*, than also this genus would share this character. As is well-known in climbing plants with tendrils, the latter are often very unfrequently collected and do not appear to be present in all sheets. Many collectors do not pay sufficient attention to such organs in lianas where they appear often lower down, and escape attention when only flowering tips are harvested. I find it for this reason premature to use the absence or presence of axillary tendrils to discriminate between *Hollrungia* on the one hand and *Adenia* and *Passiflora* on the other.

Also in the fruit *Hollrungia* cannot well be distinguished from the other genera; its fruit is indehiscent, but this can occur also in *Passiflora* and *Adenia* pro parte.

The seeds of *Hollrungia* are trabeculate and winged (by the dried aril?); whether here a distinctive character can be found must be decided by more ample field observation and a closer study in the other two genera.

A vegetative character which seems worthy of notice is the fact that *Hollrungia* has glands on the petiole, as in *Passiflora*, whereas in the *Adenias* known to me from Malesia, the leaves possess always

two, almost saccate, auriculiform lobes at the base of the blade. But *Adenia* is a very large genus outside Malesia and I felt it beyond the scope of the present survey to check this for all species.

A similar remark I have to make about the sexuality of the flowers: in *Hollrungia* the flowers are bisexual, but in Malesian *Adenia* they appear to be (always?) unisexual.

In order to synthesize my observations I have arranged the characters in the following key to the three genera:

*Key to the genera*

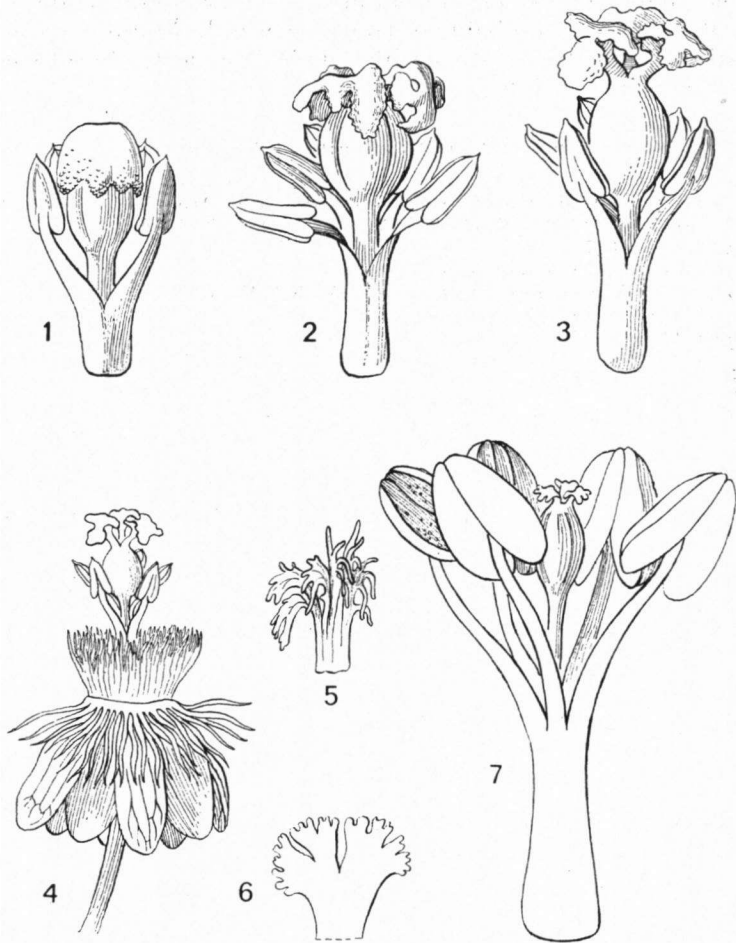
1. Androgynophore. Corona, a complicated structure. Flowers bisexual. Styles distinct; stigmas globular or club-shaped. Glands on petiole. Leaves with basal nerves . . . . . **Passiflora**
1. Gynophore. Stamens in staminal tube. Styles distinct or indistinct, but stigmas not club-shaped or globular.
  2. Flowers bisexual. Leaf not with (subtri- or quintuplinervous) basal nerves. Two nectaries on margin of petiole. Inflorescence or tendrils axillary or supra-axillary; also a serial bud. Small tendrils sometimes in inflorescence. Corona double, a complicated body of appendages and fringes. Filaments ribbon-like, halfway connate in tube, attached dorsally at incision of sagittate-oblong, blunt anthers. Styles 3, distinct, though thick and short, each bearing a lobed, flabby stigma or 3 more or less brush-like branched, short sessile stigmas (in bud stigma seemingly a cap-shaped solid body). Moluccas; New Guinea; Misima; Solomons . . . . . **Hollrungia**
  2. Flowers (mostly? always?) unisexual. Leaf typically with basal nerves. Nectaries paired at underside of leaf-base, often saccate and auricle-like. Tendrils axillary; small ones in inflorescence. Inflorescence axillary. Corona single, simple, consisting mostly of 5 scales, rarely fringed. ♀ Styles and stigma as in *Hollrungia*, not as in *Passiflora*. ♂ Stamens said to be basifixed, not deeply sagittate, often narrow and apiculate . . . . . **Adenia**

As to the specific discrimination I believe it premature to describe new species and I have accordingly marked the provisional taxa with the letters A, B and C. The material is distinctly heterogeneous, but this is in part due to the stage of collecting; fruiting specimens have thicker and larger leaves and more prominent nervation than those of flowering tips. Besides, lianas are often tricky plants as to leaf-shape which is very obvious in *Adenia* and has led to many superfluous names in that genus. Long ago I collected in the Anambas Is. a complete plant of an *Adenia* of which the lowest leaves were butterfly-shaped and the upper ones ovate-elliptic with all transitions between; this is preserved as a whole in the Bogor Herbarium.

I have the impression that the taxon indicated by the letter A is the same as the type, *H. aurantioides* K. Sch., of which the type specimen is lost. I base this suggestion on the fact that leaves and flowers are about of the same size and shape as those given in the type description;

only the pedicels are longer, but those of the type were taken from buds which may account for their shortness! Abundant topo-type material might lead to a considered decision. Probably taxon C is a distinct species, but whether this holds for B is uncertain as no open, mature flowers in various stages are known.

In order to enable herbarium curators to unearth the *Hollrungia* material which, as said before, is partly filed under incertae sedis of *Passiflora* and *Adenia*, the provisional key to the species is followed by an alphabetical-numerical enumeration of specimens known to me.



Figs. 1-5. *Hollrungia* sp. C. (Whitmore BSIP 4071)

1. Ovary and stamens from bud,  $\times 5$ ; 2. ditto, from just opened flowers,  $\times 5$ ; 3. ditto, in full anthesis,  $\times 5$ ; 4. ditto, flower,  $\times 2\frac{1}{2}$ ; 5. segment of inner corona, lateral view,  $\times 5$ .

Figs. 6-7. *Hollrungia* sp. A. (Brass 27422)

6. Unfolded stigma,  $\times 10$ ; 7. Sexual organs from semi-mature flower,  $\times 5$ .

Provisional key to taxa of *Hollrungia*

- A. Leaves elliptic, blunt. Inflorescences axillary. Flowers c. 8–10 mm long. Mature stigma in anthesis consisting of 3 obconical brushes without 'naked' styles. New Guinea; Misima I. Fig. 6–7.
- B. Leaves ovate-oblong to oblong-elliptic, acute to acuminate, with mucronate tip. Flowers obviously smaller, but no mature flowers available. Inflorescences slightly to distinctly supra-axillary. Moluccas (Ternate I.); New Guinea.
- C. Leaves oval, rounded, 10–12 by 5–7 cm, apex suddenly short-mucronate. Inflorescences from nearly axillary to distinctly supra-axillary. Flowers probably of same size as in B. Mature gynoecium with 3 distinct styles each with a flabellate (leafy) lobed stigma. Solomon Is. Fig. 1–5.

Enumeration of specimens of *Hollrungia*

Beguín 1535: B.

Brass 3283: C, published as *Passiflora moluccana* in J. Arn. Arb. 30: 44. 1949;

5239: not seen; 12880: B; 27387: A; 27422: A; 27551: A.

Carr 12905: B; 14876: B.

Clemens 2153: A; 5435: not seen.

Hollrung 62: not seen, type of *H. aurantioides* K.Sch.

Schram BW 6106: A.

Whitmore BSIP 4071: C.