

# Studies on Schismatoglottideae (Araceae) of Borneo XXXXV: The flowering and fruit development of *Schismatoglottis tectorata*

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## ABSTRACT

The flowering and fruit development of *Schismatoglottis tectorata* (Schott) Engl. is illustrated.

## KEY WORDS

Acroscopically      splitting      spathe,  
basiscopically, mediascopically

## INTRODUCTION

*Schismatoglottis tectorata* (Schott) Engl. is a facultative rheophyte (**Figure 1**) widespread and often locally common on Borneo, and with a distribution disjunction on Gunung Ranai (Pulau Ranai, Natuna islands, Riau Archipelago, Indonesia). *Schismatoglottis tectorata* is a highly distinctive species, one of about five *Schismatoglottis* species in which

the petiolar sheath is reduced to a very short thickened collar, and the protective role of the sheath is taken on by the cataphylls which alternate with the foliage leaves (Hay & Yuzammi 2000; Boyce & Wong 2013) – **Figures 7 & 8**. In nature the leaves variable with respect to width and markings of the leaf blades, even within a single population (**Figures 2–6**), although inflorescences do not vary significantly (**Figures 12 – 17**).

The spathe of *S. tecturata* differs from all other described *Schismatoglottis* species in the manner in which it senesces: only the marginal and distal parts of the spathe limb wither after anthesis, while the remainder persists well into infructescence. This is in marked contrast with almost all other *Schismatoglottis* in which the spathe limb is deciduous from its junction with the persistent lower spathe, with the point usually marked by a constriction (**Figures 9 – 11**). It is evident that the withering portion of the spathe in *Schismatoglottis tecturata* is homologous with the spathe limb in other *Schismatoglottis*.

*Schismatoglottis tecturata* also differs from all other species, including those sharing the similar shoot module morphology, by the manner in which the persistent spathe protecting the infructescence splits acroscopically to expose and liberate the ripe berries (**Figures 34 – 38**) – all other *Schismatoglottis*, where known, have the lower spathe splitting mediascopically (**Figure 39**) or basiscopically (**Figure 40**).

Here we provide a photo essay of the process of anthesis, spathe senescence, infructescence development, and fruit release in *Schismatoglottis tecturata*.



Figure 1



Figure 2

**Figure 1.** *Schismatoglottis tectorata* (Schott) Engl. in habitat, central Sarawak. Although on a river bank the plants are well-above the normal maximum flood-zone, although in exceptionally wet periods they would be subject to spathe flow.

**Figures 2 – 6.** *Schismatoglottis tectorata* (Schott) Engl. showing typical variation in leaf blade proportions and markings.



Figure 3



Figure 4



Figure 5



Figure 6

**Figures 2 – 6.** *Schismatoglottis tectorata* (Schott) Engl. showing typical variation in leaf blade proportions and markings.

**Figure 7.** *Schismatoglottis tectorata* (Schott) Engl. Detail of the very short petiolar sheath – the curving reddish brown collar at the base of the left hand petiole. The decomposing brown tissue enclosing the right hand petiole is a degrading cataphyll.

**Figure 8.** *Schismatoglottis tectorata* (Schott) Engl. Overall view of the petiole bases. The brown cataphyll surrounding the petiole of most recently-emerged leaf is clearly visible.



Figure 7



Figure 8



Figure 9

**Figure 9.** *Schismatoglottis tectorata* (Schott) Engl. Inflorescence at pistillate anthesis

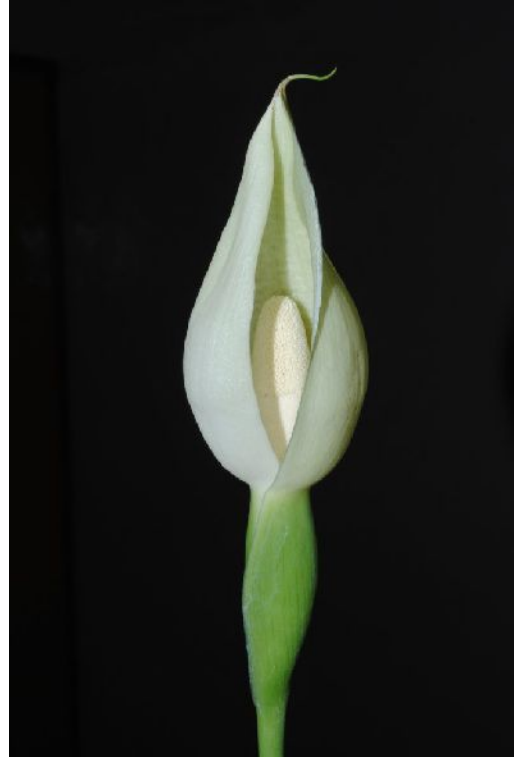


Figure 10

**Figure 10.** *Schismatoglottis* sp. The typical constriction separating the persistent lower part and the deciduous limb is readily seen.

**Figure 11.** *Schismatoglottis* sp. Spathe limb being shed during staminate anthesis.

**Figure 12.** *Schismatoglottis tectorata* (Schott) Engl. Inflorescence at late pistillate anthesis. The two insects are *Colocasiomyia* (Diptera).



Figure 11



Figure 12



Figure 13

**Figure 13.** *Schismatoglottis tectorata* (Schott) Engl. Inflorescence at late pistillate anthesis with nearside spathe artificially removed to display the spadix.



Figure 14

**Figure 14.** *Schismatoglottis tectorata* (Schott) Engl. Inflorescence at late pistillate anthesis showing detail of the basal two thirds of the spadix.

**Figure 15.** *Schismatoglottis tectorata* (Schott) Engl. Spathe artificially removed to better display the ring of large staminodes at the base of the pistillate flower zone.

**Figure 16.** *Schismatoglottis tectorata* (Schott) Engl. Spadix at pistillate anthesis.



Figure 15



Figure 16



Figure 17

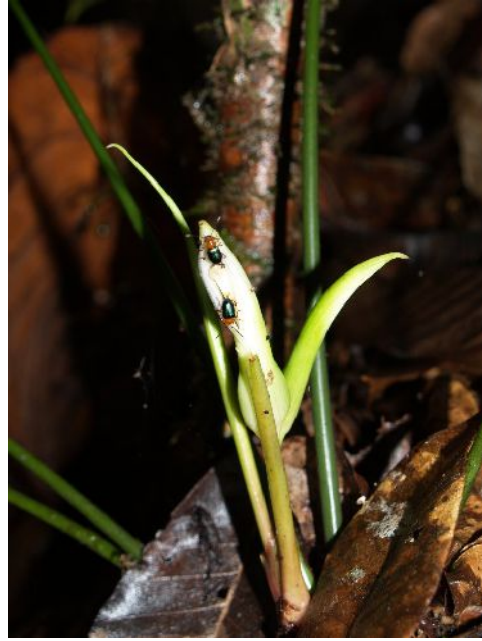


Figure 18

**Figure 17.** *Schismatoglottis tectorata* (Schott) Engl. Spadix at late staminate anthesis. Note the change in the appearance of the staminate flowers as compared with the same flowers in **Figure 16**. Note, too, that the spadix appendix is now clearly differentiated.

**Figure 18.** *Schismatoglottis tectorata* (Schott) Engl. flowering in habitat. The beetles are Chrysomelidae plundering the inflorescences for pollen.



Figure 19



Figure 20



Figure 21



Figure 22

**Figures 19 & 20.** *Schismatoglottis tectorata* (Schott) Engl. inflorescence at early staminate anthesis. Note that the margins and distal portion of the spathe limb is beginning to darken (compare with **Figures 9 & 12**).

**Figures 21 & 22.** *Schismatoglottis tectorata* (Schott) Engl. inflorescence at late staminate anthesis. The spathe margins and distal portion of the spathe are now beginning to degrade.

**Figures 23 – 25.** *Schismatoglottis tectorata* (Schott) Engl. inflorescence post staminate anthesis. The degradation of the spathe margins and distal portion of the spathe is now quite clear. Note in **Figure 25** that the tissue at the horizon of the still green spathe and the degraded margin is now dead.



Figure 23



Figure 24





Figure 25



Figure 26

**Figures 26 & 27.** *Schismatoglottis tectorata* (Schott) Engl. in habitat with post-anthesis inflorescences. Note the dry tissue along the margins and the distal part of the spathe. Compare the position of this degraded tissue with the spathe limb being shed in **Figure 11**. It is plausible that the green portion of the spathe in *S. tectorata* is the equivalent of the lower spathe in other *Schismatoglottis* species, as exemplified in **Figure 11**.

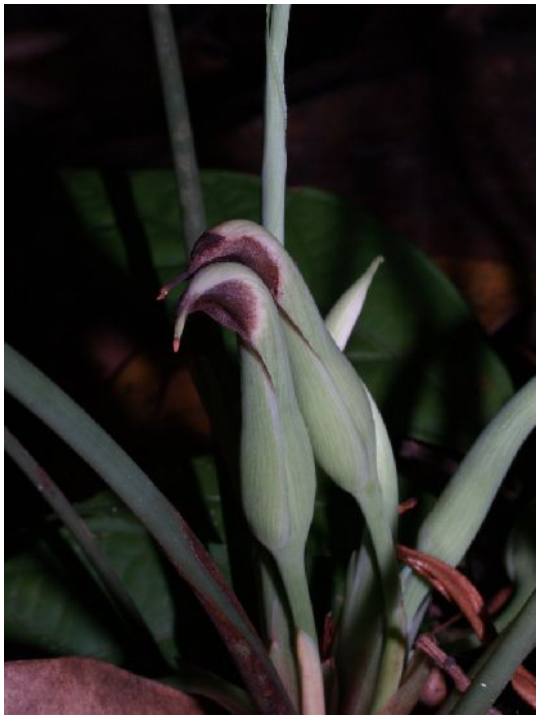


Figure 27



Figure 28



Figure 29

**Figures 28 & 29.** *Schismatoglottis tectorata* (Schott) Engl. in habitat with post-anthesis inflorescences. In this instance persistent wetness has resulted in the rotting (deliquescing) of the spent parts of the spathe. Note that the basal part of the spathe is now swelling owing to the developing fruits. Note, too, that the persistent portion of the spathe has become green.



Figure 30

**Figures 30 – 33.** *Schismatoglottis tectorata* (Schott) Engl. in habitat with developing infructescences. The scar left by the shedding of the margins and distal portion of the spathe is clearly visible in **Figure 33**.



Figure 31



Figure 32



Figure 33



Figure 34

**Figure 34.** *Schismatoglottis tectorata* (Schott) Engl. Splitting of the spathe at fruit ripeness. Note that the spathe has turned brown.

**Figure 35.** *Schismatoglottis tectorata* (Schott) Engl. Spathe, split from the peduncle/sopathe insertion, with the spathe walls curling acroscopically. Compare this with the mediascopically (**Figure 39**) and basiscopically (**Figure 40**) splitting of spathes.



Figure 35

**Figures 36 – 38.** *Schismatoglottis tectorata* (Schott) Engl. Further movements of the spathe wall reveal and enable release of the ripe berries.



Figure 36



Figure 37



Figure 38

**Figure 39.** *Schismatoglottis* sp. Inflorescence splitting mediascopically.

**Figure 40.** *Schismatoglottis* sp. Inflorescence splitting basiscopically.



Figure 39



Figure 40

## References

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