NEW SITE OF *Rhizanthes infanticida* Bänziger (RAFFLESIACEAE) WAS DISCOVERED IN WEST SUMATRA

Lokasi Baru *Rhizanthes infanticida* Bänziger (Rafflesiaceae) Ditemukan di Sumatera Barat

Herwig Zahorka

Jl. Bondongan, Puri Mas C 27 Bogor 16131
e-mail: zahorka.herwig@gmail.com
Manuscript received February 15, 2010; accepted March 15, 2010

Abstract

Tiga kuncup *Rhizanthes infanticida* ditemukan pada bulan Juli 2007 di hutan dipterokarpa Gunung Malintang 'Massive', Pasaman Barat, Sumatera Barat pada ketinggian 1.100 m dan 1.200 m dpl. Kuncup terbesar telah mekar dua cupingnya yang ujungnya seperti cacing yang mirip dengan *Rhizanthes lowii.*

Keywords: *Rhizanthes infanticida*, West Sumatra, new site

INTRODUCTION

Genus *Rhizanthes* is one among three genera in Rafflesiaceae family. All three genera are obligate parasites of the genus *Tetrastigma* in Vitaceae. Not many specimens are well preserved and the original locality mostly destroyed.

All *Rhizanthes* are obligate parasites nearly exclusively of the genus *Tetrastigma* and because pollination, dispersal of the seed and germination, are extremely difficult, flowers of the few species known are extremely rare. Flowers of the genus *Rafflesia* are occasionally still found in SE Asia, though no new species, varieties only (Zahorka, 2003). Species of *Rhizanthes*, however, seem even much rarer and according to Meijer (1997) have not been reported from Java since 1940. However, the Institute of Ecology, Pajajaran University Bandung, reported a *R. zippelii* found in 1980 in Mt. Tilu forests, Java (Whitten *et al.*, 1996). Meijer (1997) discovered a *R. lowii* in Kinabalu National Park Sabah in 1994, and de Wilde also discovered one in North Sumatra in 1972.

Before Bänziger and Hansen (2000), only two species of *Rhizanthes* are recognized, both are parasitic and nearly exclusively on *Tetrastigma papillosum* (Blume) Planch. They are native to Sumatra, Peninsular Malaysia, Borneo and Java only. The two species are: *Rhizanthes lowii* (Becc.) Harms and *Rhizanthes zippelii* (Blume) Spach. (Zippeli was a German collector at Buitenzorg - now Bogor - during the early nineteenth century.)

Bänziger (1995) argued that there is only one species, *R. zippelii,* in this genus, though Meijer (1997) doubted this assumption. However, Solms-Laubach (1901) warned not to rush to conclusions about the taxonomy and relationships of parasitic plants, whose real ancestry could be hidden in the strong reductions and adaptations required for them to survive as parasites.

The botanist Charles Davis at Harvard University, Boston, recently proved this foresighted view by

tracing the phylogenetic descent of the Rafflesiaceae by means of genetic analysis. According to that statement, *Rafflesia* descended from the family of the Euphorbiaceae. During a long period of evolution, *R. arnoldi* accommodated itself greatly to its host and even took over some of its genes. That is why it is so difficult to unveil the genetic descent and the relationships of the Rafflesiaceae.

After critically re-evaluating and recombining old and new chararcters, comparing the geographical distribution Bänziger and Hansen (2000) revised this genus (with deceptive flower) into four recognized species: *R. zippelii* (Blume) Spach, *R. infanticida* Bänziger et Hansen *R. deceptor* Bänziger et Hansen and, *R. lowii* (Beccari) Harms. Although the differences between the four species are relatively small and having slightly overlapping characters of the specimens however they considered that establishment of proper rank would give better chances in conservation. Information on the original collecting localities of *Rhizanthes* species would contribute better understanding of this species.

LOCATION OF *Rhizanthes infanticida*

the *Rhizanthes* bulbs were discovered on July 19 2007, on the way back from an expedition to the Crater Lake Laut Tinggal on Mt. Malintang on a steep eastern slope in undisturbed dipterocarp forest with some *Lithocarpus* trees at an elevation of between 1,100 and 1,200m asl. The Malintang Massive is covered by dense virgin forests. It sits in the northern part of West Pasaman District (Regency) in West Sumatra, bordering North Sumatra in the north. The Subdistrict is Kecamatan Lembah Malintang.

To obtain the geographical coordinates of the stand by GPS was not possible because of the dense canopy. Interpolated data from the coordinates of three GPS measurements made around the stand at distances from two to 7 km resulted in the estimation that the *Rhizanthes* stands at approximately N 00° 28′ 07.8″ and E 99° 41′ 15.0″ (Fig. 1).

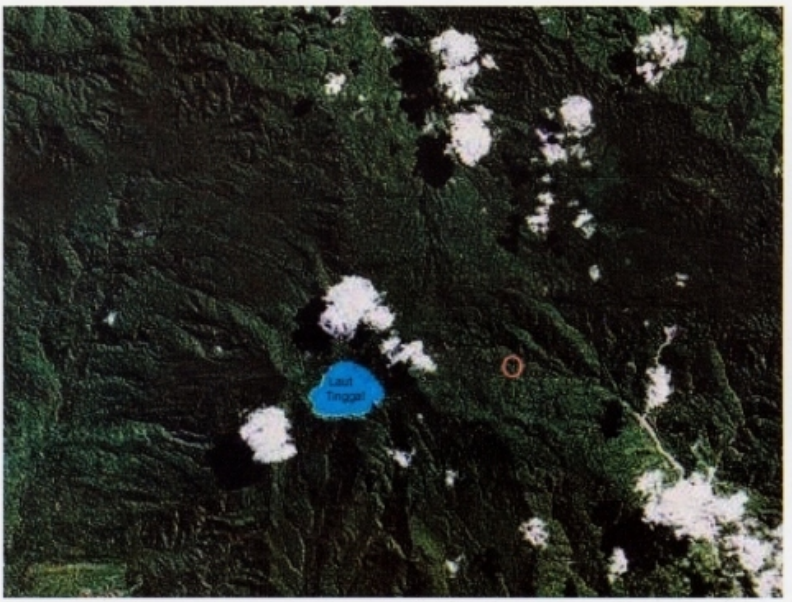

Fig. 1 Satellite image. The Malintang massive around the crater lake Laut Tinggal in West Pasaman, West Sumatra, is covered with dense virgin rainforest. The circle shows the approximate location of the new *Rhizanthes* stand

The distance as the crow flies from Laut Tinggal to the *Rhizanthes* stand is roughly 2 km east (however a six-hour walk) and is 18 km north from Paraman Ampalu. The closest village accessible by 4-wheel drive is Rabi Jonggor, 12 km as the crow flies SSE of the stand. From there, it is a two days trek on foot.

DESCRIPTION OF THREE *Rhizanthes infanticida* BUDS

The three wine-red and cream-colored buds (Fig. 2-4) growing along a root line had a diameter from about 4-8 cm, the two smaller ones nearly spherical, with scales at the bottom. All three showed the cupula at base, the bracts, and the 16 valvate perigone lobes. At the top of the biggest bud, the dark globular column was revealed, showing a small depressed apex c. 1 cm wide at its top and a dark brown stigmatic ring below the apex, indicating probably a female flower.

Fig. 2. Two of the three *Rhizanthes* buds, diameter four and eight cm. Both show the cupula at base and the 16 valvate perigone lobes. At the top of the bigger bud, the dark globular column is revealed, showing a small-depressed apex c. 1 cm wide at its top and a dark brown stigmatic ring below the apex, indicating that it is probably a female flower.

Fig. 3. At one side of the big bud, two perianth lobes with their long narrow bayonets were already exposed. The size of the larger worm-like apical appendage was about 3 cm by 1mm. The bigger perigone lobe was c. 3 cm long and c. 2 cm wide. Both lobes were free from each other and smaller at the base. The smaller of the two lobes was probably not fully developed yet.

Fig. 4. The third bud with a c. 6 cm diameter showed red-brown scales at the bottom and its 16 perigone lobes had not expanded yet.

The host of the buds was a *Tetrastigma Papillusum* Blume Planch root.

ADDITIONAL REMARKS

The dispersal of the seed of the Rafflesiaceae is still a mystery. Some authors assume the soles of animals carry it out. My supposition is ants can distribute the seeds because ants have an intimate relation to the *Tetrastigma* plants. Ants, who harvest nectar from the glands, are usually permanent fixtures on *Tetrastigma* plants.

ACKNOWLEDGEMENTS

I am grateful to Dr. Irawati (Bogor Botanic Garden) and to Dr. Harry Wiriadinata (Herbarium Bogoriense) for important taxonomic support.

REFERENCES

Bänziger, H. 1995. Ecological, morphological and taxonomic studies on Thailand's fifth species of Rafflesiaceae: *Rhizanthes zippelii* (Blume) Spach. *The Natural History Bulletin of the Siam Society* 43: 337-365.

Bänziger, H. and B. Hansen. 2000. A New Taxonomic revision of a deceptive flower, *Rhizanthes* Dumortier (Rafflesiaceae). The Natural History Bulletin of the Siam Society 48: 117-143.

Harms, H. 1935. Rafflesiaceae. In: Engler, A. and Prantl, L. (Hrsg.). *Die Natuerlichen Pflanzenfamilien. 2.* Aufl., Bd. 16b: 243-281. Berlin.

Meijer, W. 1997. Rafflesiaceae. in *Flora Malesiana, vol. 13, Series I–Seed Plants*: 1-42. Rijksherbarium/Hortus Botanicus, Leiden.

Solms-Laubach, H., 1901. Rafflesiaceae. In: Engler, A. (Hrsg.). *Natuerliches Pflanzenreich, Bd.* 5: 1-19. Berlin.

Whitten, T., R.E. Soeriaatmadja and S.A. Afiff, 1996. *The Ecology of Java and Bali*. Periplus, Singapore.

Zahorka, H. 2003. Expedition in das Innere der Insel Borneo entdeckt neuen Rafflesia-Standort. *Der Palmengarten* 67/2: 19-27.

Zahorka, H. 2007: Knospen von *Rhizanthes* (Rafflesiaceae) – eine spannende Entdeckung in West-Sumatra. *Der Palmengarten* 71/2: 132-134.

Zahorka, H., H. Wiriadinata and L.R. Rabenstein 2008: Botanic expedition to the mysterious *Laut Tinggal* in the remote cloud forests of West Sumatera, Indonesia. *Folia Malaysiana* 9(1): 51-60.