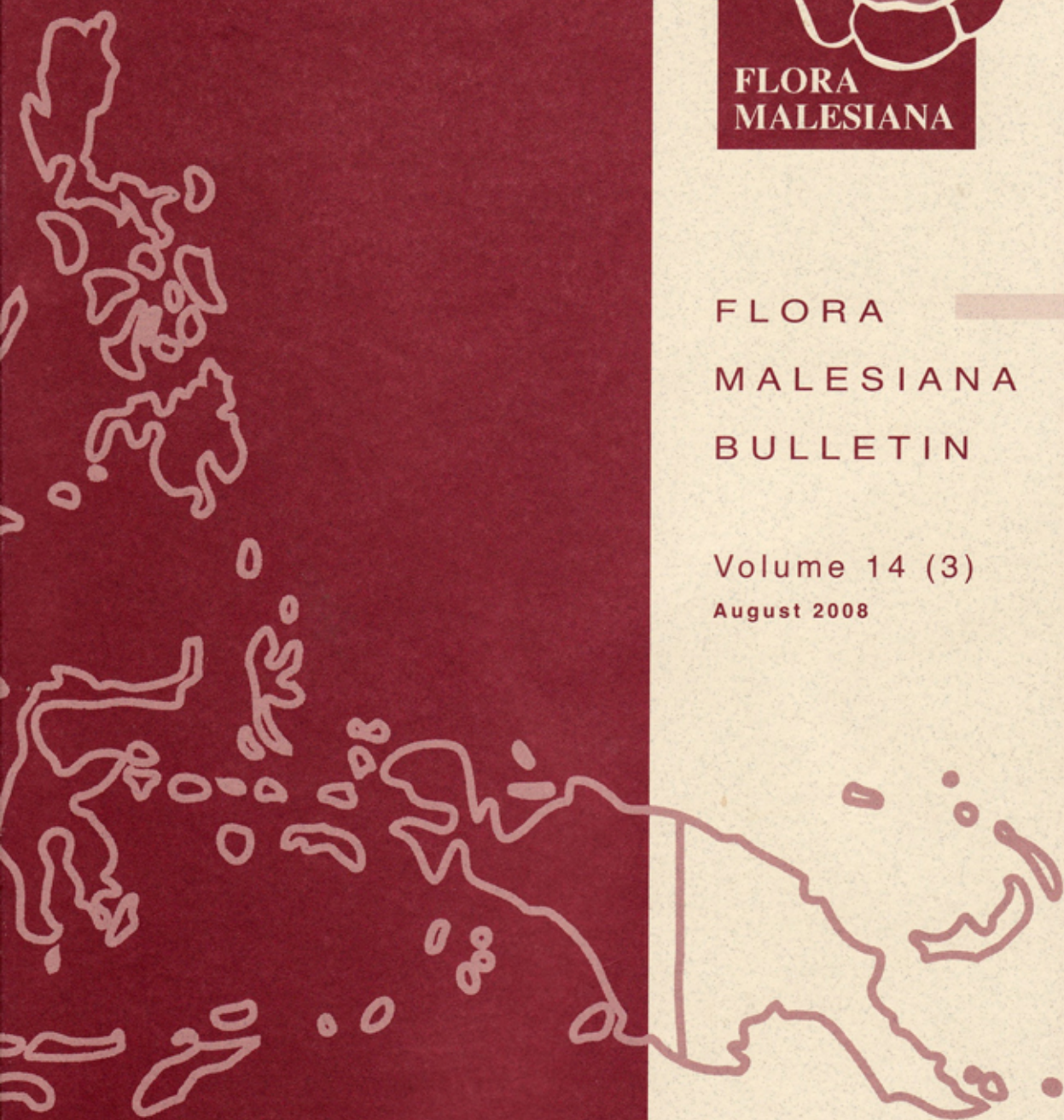




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IX. THE REDISCOVERY OF RAFFLESIA SCHADENBERGIANA (RAFFLESiaceae)

J.F. BARCELONA¹, P.B. PELSER², A.M. TAGTAG³,
R.G. DAHONOG⁴ & A.P. LILANGAN⁵

Presumed to have gone extinct (Heaney & Regalado, 1998; Barcelona et al., 2006), *Rafflesia schadenbergiana* Göpp. ex Hieron. (Rafflesiaceae), the *Rafflesia* with the largest flowers in the Philippines, c. 70 cm diam., has emerged again 125 years after it was first discovered and collected during the Schadenberg-Koch expedition on Mt Párag near Mt Apo (Mindanao) in 1882. For a long time the species, locally known as 'bó-o' by the Bagobo tribe of Mindanao (Merrill, 1923), was only known from the type specimen which has been attributed erroneously to Hieronymus (Meijer, 1997; Nais, 2001), but correctly to Schadenberg & O. Koch (Merrill, 1923) (K, WRSL iso?, n.v.).

Despite concerted efforts by botanists (Heaney & Regalado, 1998; Nais, 2001) and *Rafflesia* enthusiasts to find *R. schadenbergiana* on Mt Apo in recent times, it remained elusive. Nais (2001) reported that this species was found on nearby Mt Matutum in 1990, but an examination by the first author in 2002 of the bud that was collected from this population (preserved in the collections of Central Mindanao University) led to the conclusion that it is not *R. schadenbergiana*, but rather a small-sized *Rafflesia* species. Unfortunately, the bud was too deteriorated to determine if it represents one of Philippine's small-flowered *Rafflesia* species or a new taxon. More recently, Lays (2006) reported to have encountered a population of *R. schadenbergiana* in the South Cotabato Province of Mindanao in 1994. Although pictures of a bud were taken, flowering specimens were not found and no collections were made (Lays, pers. comm.).

In April 2007, Mr. N. Antoque, a resident of a village at the foot of Mt Kitanglad in Bukidnon Province, brought the existence of large senescent *Rafflesia* flowers to the attention of the first author, who concluded that this population, about 150 km NNW of the type locality, represented *R. schadenbergiana*. The *Rafflesia* grows parasitically in a large host liana (*Tetrastigma* sp.) in an approximately 5 by 10 meter remnant forest patch between the margin of a kaingin (slash-and-burn area) planted with corn and other vegetables and the adjacent river. In this area, three buds and three developing fruits in different stages of

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Fig. 1. Open flower of *Rafflesia schadenbergiana* (Barcelona et al. 3357, PNH). The child in the photograph is Roel Laque Jr., son of the owner of the farm where *R. schadenbergiana* was rediscovered.

development, 16 senescent flowers, and four dead buds were found. Fresh, open flowers were not found at that time, but when we returned to the site in June 2007, we were able to collect a newly opened flower (Fig. 1). Despite a three-day search in similar habitats in the area, only this single population of *R. schadenbergiana* was found and it relied on a single *Tetrastigma* plant.

The overall floral size and morphology, wart ornamentations on the perigone lobes and diaphragm, ramenta density, morphology, and size class, and the number of anthers and disk processes of the flowers observed very well conform with the type of *R. schadenbergiana* as previously described (Hieronymus, 1884, 1885a, b; Meijer, 1997; Nais, 2001). The open flower (Barcelona et al. 3357, PNH) measured 70 cm diam., was 22 cm tall, and weighed c. 5 kg. Its perigone lobes were 20–23 by 22–26 cm. On one perigone lobe there were c. 33 large warts mostly horizontally disposed and sparsely interspersed by smaller ones. The diaphragm was 33 cm diam. and had a 15 cm wide aperture. The disk was 18 cm diam. and had about 50 laterally compressed processes. The perigone tube was devoid of windows. The immature buds collected (Barcelona 3344 with Antoque, and Barcelona et al. 3358, PNH) were c. 13 cm and 16 cm in diameter. Larger buds (up to 23 cm) were also observed, but were not collected. The smallest senescent flower (Barcelona et al. 3342, PNH) measured 52 cm diam. whereas the largest, more deteriorated one had bud scales that measured up to 23 by 13 cm, perigone lobes up to 22 by 25 cm, and up to 63 disk processes, more than what was mentioned in the protologue (i.e. 50 processes). A more detailed and updated description of *R. schadenbergiana* will be provided in a separate paper (Barcelona et al., in prep.).

Rafflesia schadenbergiana is included in the National List of Threatened Philippine Plants in the 'critically endangered' category (Department of Environment and Natural Resources (DENR) Administrative Order, 2007-01), which underlines the importance of establishing a conservation action plan for this species. At the time of writing, initial steps to protect the *R. schadenbergiana* population and its habitat are being taken by local residents, the local government, DENR, and the Department of Tourism. Several avenues are taken to achieve this, one of which is to have the area designated as Critical Habitat by the DENR Secretary as provided for by the Philippine Wildlife Act of 2001 (R.A. 9147). A Critical Habitat designation provides a protective status to areas outside the Protected Areas declared under Republic Act No. 7586 or the National Integrated Protected Areas System Act (NIPAS) of 1992. *Rafflesia schadenbergiana* grows outside the Mt Kitanglad Range Natural Park Protected Area and is actually located on public land that is currently covered by a Community-Based Forest Management (CBFM) Agreement. Under this agreement, beneficiaries are allowed to use the area for settlement and agricultural purposes. As a first step towards giving the area the status of Critical Habitat, the DENR-Region 10 recently carried out habitat assessment and community consultation. The rediscovery of *R. schadenbergiana* at the foot of Mt Kitanglad also emphasizes the significance of this mountain range as a candidate for designation as an Important Plant Area (IPA). This is a protective status for areas comprising the most important areas for plant diversity in the world and is a part of the Global Strategy for Plant conservation endorsed at the Convention on Biological Diversity in 2002. Having such high conservation value, *R. schadenbergiana* is a key plant species that could serve as emblem of plant conservation for Mt Kitanglad and for the region.

In order to assure the continued existence of the *Rafflesia* after the demise of its host plant, available technology for inoculation of the seeds to other potential host plants must be explored. This, however, has only very occasionally been successful (Veldkamp, 2007). Because only one extremely small and highly endangered population of *R. schadenbergiana* is known, applications for collecting permits for display and educational or scientific purposes, should be very critically evaluated.

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