

REVIEW STATUS THE NEPENTHES (NEPENTHACEAE) FROM JAVA INDONESIA

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ABSTRACT

Recent status of the distribution of Genus *Nepenthes* is investigated here. The literature studied from Java, Indonesia was conducted based on the morphological description, collected observation in the Herbarium Brawijaya University (H Bio Unibraw) Malang and Herbarium Bogoriense (BO), Bogor Indonesia. The present study shows that there are three known species namely *Nepenthes gymnamphora* Reinw.ex Ness, *Nepenthes mirabilis* (Lour.) Druce and *Nepenthes adrianae* Spec. Nov.

Keyword: *Nepenthes*, Java, Indonesia

INTRODUCTION

Nepenthes is a carnivorous plant of tropical countries. Java island of Indonesia was divided to four Province: Jawa Barat, Banten, Jawa Tengah and Jawa Timur. Prior to Dansers monograph (1928) there were only two species of *Nepenthes* (Nepenthaceae) known from Java: highland endemic *N. gymnamphora* Reinw.ex Ness and the lowland widespread from Java-South-East Asia *Nepenthes mirabilis* (Lour.) Druce to lowland widespread West-Java (Danser, 1928; Backer and Bakhuizen Van Den Brink, 1968; Cheek & Jebb, 2001). As far as we know since that date no specialized survey has been made to check on the status of the genus in Java therefore survey of *Nepenthes* was carried out and some important habitats for the species were discovered on Mt. Slamet; Java: Rawa Danau (Banten), Mt. Telomoyo, Mt. Merapi, Mt. Lawu, Mt. Semeru, Mt. Arjuno and Sumatra Island.

MATERIALS AND METHODS

The study is based on the information from literature review, the examination of the herbarium material from Herbarium Bogoriense (BO), fresh material and the Herbarium material from Herbarium Biology Unibraw (H. Bio Unibraw), forest in Java. Study done from the collection made by the author, details and descriptions from dried material, except for floral and fruit sizes, which were based the dehydrated (boiled in water) material. Methods and terminologies followed were from Danser (1928), Davis and Heywood (1963); Cheek and Jebb (2001) and De Vogel (1987).

RESULTS AND DISCUSSION

Nepenthes mirabilis (Lour.) Druce

Flora of Java. (1968) 166-167 . Sem. Nas. (2005) Biologi UGM. Bull. Jard. Bot Buiten (1928). Ser. III, Vol. 9: 249-438. Flora Malesia (2001) 15: 1-57. *Nepenthes* of Sumatra. (2006) 52-53.

Terrestrial shrub or climber, scandent or creeping to 10 m tall. Climbing stem, terete- cylindrically, 0.5-14 mm diam, internodes 1.5-16 cm long, green. Rosette erect and climbing. Leaves thinly chartaceous, rarely membranous or thickly chartaceous; sessile in the rosette, winged petiole in the climbing plant; elliptic-lanceolate, 15-40 by 4-10 cm; base slightly auriculate-acute, midrib red, longitudinal veins 4-5 pairs each side, margin with distance hairy, green-red, tendril 18-18.5 cm, discontinue arises from the apex, with a loop in the climbing plant. Rosette and lower pitchers green or green with red blotched; ovoid in the lower plant, narrowly in the middle and cylindrically to the upper part, glandular zone until 0.5 pitcher size, with two fringed hairs at the wings, 2 cm wide, mouth red ovate- oval; peristome broad, through 3

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cm wide, teeth prominent; lid horizontal, elliptic-orbicular, base cordate, spur 0.3 cm long, simple and rather tri-branched. Upper pitcher green, sometimes with red blotched, varies in color, infundibulate in the lower part, narrower ovoid in the middle and cylindrically to upper part; wings reduced to ribs spur 0.6 cm long all other parts similar as lower pitcher. Inflorescences raceme and monopodial-like peduncle 15 cm long, rachis 30 cm long; pedicel 1.5 cm long without bracteole. Flower solitary or lowest ones sometime in the pairs; perianth-lobes 5-8 mm long; tepal 0.7 cm long, orbicular-elliptic. Staminal cone glabrous; ovary densely-white hairy. Fruit 1.5-3.5 cm long.

Distribution: West Java: Batavia (Jakarta), Priangan (Bandung), Tjiamis (350 m a.s.l) species extinct, authentic specimen of *N. phyllamphora* var. *platyphylla* Bl., maybe in Banten at know around Rawa Danau (Danser, 1928, Batoro, 2005). Thailand and Indochina to Micronesia (Palau) and Australia; **Malesia:** through except northern Philipinnes and eastern Nusa Tenggara (Cheek and Jebb, 2001).

Habitat: lowland to lower mountain, local, marches, usually most abundant in disturbed swampy or grassland situation. Altitude 150 m - rarely 1500 m a.s.l.

Vernacular Name: Jawa: Kantong Semar, Paku sorok, Lawah lakbok; (Malaysia): Priok krah; Sumatra: Tjaloeng beru, Akar ketakong.

***Nepenthes gymnamphora* Reinw.ex Ness**

Flora of Java. (1968) 166-167. Sem. Nas. (2005). Biologi UGM. Bull. Jard. Bot Buiten. (1928). Ser. III, Vol, 9: 249-438. Flora Malesia (2001) 15: 1-57. *Nepenthes* of Sumatra (2006) 38-39.

Terrestrial climber, scandent, often creeping in the base, 1.5 m-8 m tall. Stem of the basic terete-cylindrically, redish green, rosette or erect, 4-7 mm in diameter, internodes 1-10 cm long buds inconspicuous.

Leaves thinly coriaceous, chartaceous sessile or subpetiolate; rosette leaves usually highly reduced, narrowly-oblong to oblanceolate-elliptic, 5-5 by 1-1.3 cm apex acute, base sessile. Stem leaves narrowly elliptic 10-26 cm long, apex acute, base attenuate 5-12 mm wide, usually with a petiole-like part 4-5 cm long. Rosette and lower pitcher ellipsoid green-redish to purple with dark red blotched, ovoid in the lower part and gradually cylindrical to the upper part; with two fringed hair at the wings. Wings reddish hairy, mouth rounded broad and sloping peristome thin, teeth distinct; lid oval, horizontally, red blotched; spur branched.

Upper pitcher rarely produced, subcylindrical, ovoid 6-19 by 1.7-4.5 cm, slightly inflated in the lower, rarely slightly infundibular, the lower part and gradually cylindrical to the upper part, wings reduced to ribs. Male inflorescence 35-50 by 4 cm, peduncle 20-24 cm long, 3-4 mm diam at the base; partial peduncles 2-flowered; raceme not opposite the successive leaves, 25-50 cm; flower mostly in pairs on common peduncle 20 cm long, rarely solitary; rachis 15 cm long, pedicel 1 cm, sometimes with bracteole. Inflorescence from peduncle base to lower surface of the tepals pubescent with brown, inclined, simple hairs 0.5-0.6 mm long, androphore minutely puberulent. Perianth lobes 4-6 mm long, staminal cone hairy at least the base. Ovary densely brown pubescent. Fruit 1.5-3.5 cm. Seeds filiform 6-15 mm long.

Distribution: Java: East Java: Mt. Semeru (location Besuksat riverbank good grows and associate fern, most, shrub and herb; in open habitat of sandy soil, Bromo Tengger Semeru National Park), Mt. Arjuno, Mt. Lawu, Mt. Ijen, Mt. Darawati near Pujon Malang (Danser, 1928; Batoro, 2005); Yogyakarta: Mt. Merapi with 1000-1500 m a.s.l; Central Java: Mt. Slamet, Mt. Telomoyo 1000-1500 m a.s.l; Mt. Careme, Petoengkriana, Mt. Dieng, Mt. Prahoe, Mt. Sumbing, Mt. Gombong, Mt. Oenganran; Mt. Boetak, Mt. Merbabu, Mt. Kukusan, (Danser, 1928; Batoro *et al.*, 2005); West Java: Mt. Salak, Mt. Boerangrang, Mt. Cisalak, Mt. Gede, Cibereum & Cipanas, Mt. Pangrango, Mt. Soenda, Mt. Gombong, Tjadasmalang, Mt. Karang, Mt. Semboeng, Telaga Bodas, near Bandung, Mt. Papandayan, Mt. Djaja, Mt. Mandalagiri, Mt. Patoeha, Mt. Guntur, Mt. Wajang, Mt. Manglajang (Danser, 1928; Cheek and Jebb, 2001) and Mountain forest: North Sumatra, West Sumatra, Jambi (1100-2000 m a.s.l) (Hernawati and Akhriadi, 2006).

Habitat: Mountain forest (1000-2750 m a.s.l)

Vernacular Name: Kantong Semar, Sorok radjah mantri, Kolotjiko, Gantong Semar, Kalok ceko, Kandong Smar, Paku sorok

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Nepenthes adriani (Figure 1)

Epiphytic shrub or climber terete to 30-200 cm tall (habitat epiphytic, caulis, terete 30-200 cm longis). Inflorescences raceme, peduncle 16 cm long (inflorescentia racemes, pedunculus 16 cm longis), covered dense pubescent white hairs, strigose.

Type: Indonesian, Central Java, Purwokerto, Baturaden, Slamet Mountain, Adrian 1 & 2 (Holotype H. Bio Unibraw, Isotype BO).

Epiphytic. Climbing 30 cm-2 m in length, woody-herbaceous, green to orange-red, 0.6-0.8 in diameter, internodes 1-9 cm long, terete-triangular. Stem of the basic terete-triangular 5-9.7 mm diameter, internodes 1-9 cm long. Climbing terete and slightly angular, 0.6-0.8 cm in diameter, part of this stem which angular formed midrib, covered like tomentose internode 2.5-9 cm long, green to orange-red, covered with field like tomentose. Leaves: coriaceous, sessile, lanceolate-spathulate to oblanceolate 15-24 cm by 3-5 cm, apex acute, acuminate, cordate at the base, clasping and decurrent the stem for 2/3 its diameter, margin integer, indumentum glabrous or density pubescent hairs. Midrib large, terete on below and flattened on the upper, red to pink, longitudinal veins 4-5 on each side of the midrib, pinnate veins reticulate and inconspicuous; apex obtuse-rounded, margin entire. Tendril insertion usually sub-apical 5-21 cm long, 1-4 mm in diameter, terete green and orange-red less or more long as the leaf, curved downwards. Rosettes and lower pitcher: shortly incurved at the base, ovate, conical to wards, the mouth or more ellipsoidal with two fringed wings 2-4 mm wide, running from top to bottom, the fringed segments filiform 3-6 mm long green pink, glandular region covers ellipsoid portion of the inner surface. Mouth round oblique rounded to elliptic, peristome cylindrical or slightly expanded 1.5 cm wide. Teeth distinct papery and spear shaped, variable in length. Lids ovate to orbicular cordate at the base 4.5 by 3.2 cm, apex rounded, green to pink with appendage. Near the base lid with the collum biggest red near base lid. Spur dorsiventrally flattened 0.6 mm by 1 mm long, divided into 3-4 apex branched acute. Upper pitcher: Tendril more long than leaf and pitcher, shortly incurved from the longing, tendril, 15-16 by 3-4 cm, rounded at the base, ovate conical to wards. The mouth ellipsoidal the well developed. Lower 0.3-0.5 cm ovoid contracted at the hipe, cylindrical above, wings reduced to rib, to short wings 16 cm-1 mm, but sometimes a few fringe elements persistence. Colour of pitcher reddish green to purple. Glandular zone, small spread in the central and the margin to midrib lid. Inflorescence: a raceme 22 cm long, peduncle 16 cm long 0.2-0.5 mm in diameter opposite the leaf, green, smooth, mostly thicker belows, rachis 7-7.5 cm long. Partial peduncles with one flower has lower pedicels 1.5-2 cm long, terete. Upper pedicels 0.5-1 cm long terete without bracteole, covered dense pubescent white hairs. Tepal 4-5 orbicular-oblong-linear 5 by 2 mm united in base, apex obtuse to acute, covered pubescent white hairs, sometimes tepals reduction. Staminal collum orbicular with for angular 1 cm by 6 mm more long than tepal. The anthers included, which are situated in one whorl and an apical group.

Distribution: It has been know only from three collections made from the Slamet Mountain region in the Baturaden Purwokerto, Central Java Province of Indonesia.

Habitat: Extrem epiphytes in lower to highest mountain forest is about 950-2000 m a.s.l.

Derivation: The specific epithet refers to Adrian, an Indonesian *Nepenthes* observer and enthusiasm.

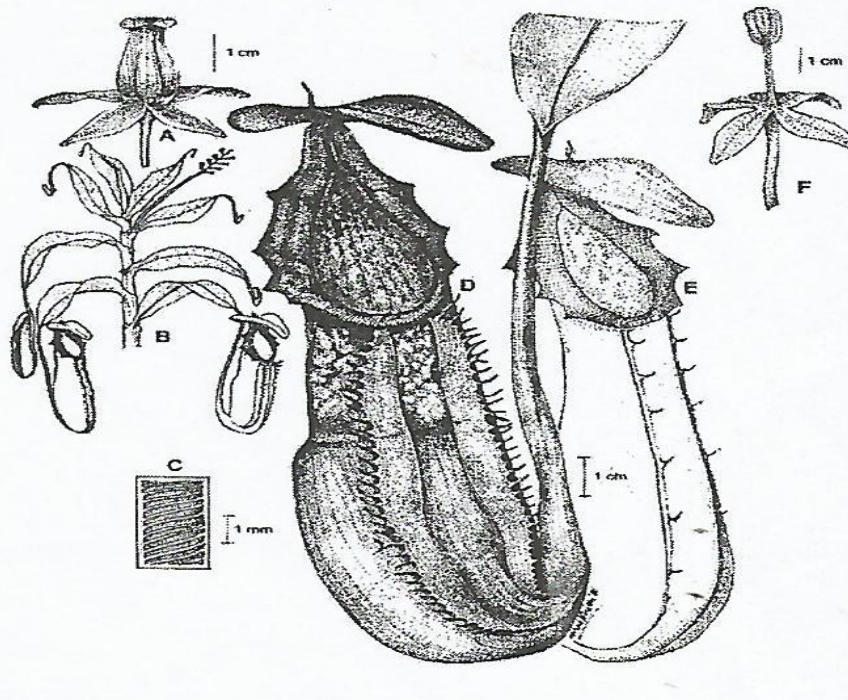
Vernacular Name: Kantong Semar, Priuk Monyet.

Specimen Examined: Indonesia. Central Java Province, Purwokerto, Baturaden, Slamet Mountain 1050 m.a.s.l, February 2004, Adrian 1 (Holotype H Bio Unibraw), 2. Isotype (BO). Backer 294 (BO), spesimen under name *N. gymnamphora*, Backer 420 (BO). *Nepenthes gymnamphora*: Steenis 5624 (BO), Slooten 461 (BO), Posthumus 1815 (BO), and Adrian 5 (BO). *Nepenthes singalana*: Bunnemeijer 4028 (BO), Bunnemeijer 2692 (BO), Schiffner 1990 (BO), R.E.Holtum 28102 (BO). *Nepenthes spathulata*: Liefinck 7 (BO), Liefinck 8 (BO), Liefinck 11 (BO), Toxopeus 18 (BO) and Jacobs 8212 (BO).

Note: The species is closely related to *Nepenthes spathulata* Danser and *Nepenthes singalana* Becc., of Sumatra Island and the two Java species *Nepenthes gymnamphora* Reinw.ex Nees. The later species has wide spread in Java Mountain. *Nepenthes adriani* found as the individual plant with scatered distribution. It is habitat situated on lower mountain forest, grow as epiphytic in Sarangan tree (*Castanea organtea* Bl.) Panggang ayam and Cirep. The characters of this species is extrem epiphytic, endemic only Slamet

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Mountain, small and single flower. This species threatened in the wild, because some local peoples around Mt. Slamet collect this species for ornament plants, so conservation efforts are needed before this plant going to extinct. With his hesitation Dansers his Monograph identified this specimen as *Nepenthes gymnamphora*, Danser wrote: *Nepenthes gymnamphora* varies not much. I will draw attention to the occurrence of specimens with 1-flowered pedicels among the majority the plant with 2-flowered ones (the number Backer 420 & 25927, Bakhuizen Van den Brink Jr. FIL 2551, Lam 80 J). These generally have larger and wider pitchers and a broader peristome. Perhaps this is distinct form, but more and better leamaterial must be at hand to decide upon this question. A very remarkable plant is Backer 294 from Mt. Slamet; it has coarser stem, larger and almost short-petioled leaves, with a more than 1 cm decurrent base, inferior (only known) larger, up to 17 cm high, with an expanded peristome, which is up to 20 mm broad and very obtuse lid. There is even some resemblance with *N. merrilliana* and *N. mirabilis* one sometimes in pairs, *N. andrianii* always one, its terrestrial scandent or creeping but *N. andrianii* being proportionately epiphytic.



A

Nepenthes adrianii Batoro et al. spec.nov.
A. Female Flower B. Habit with lower pitcher and female inflorescence
C. Detail of peristome, internal view D. Lower pitcher, frontal view
E. Upper pitcher F. Male flower. Drawn by Ahmad Arifin (2005)

Figure 1: *Nepenthes adrianii* Spec. Nov.

Conclusion

Geographic distribution of the *Nepenthes* in Java i.e. West Java, Banten, Central Java and East Java. The present study at Java shows that there are three known species namely *Nepenthes gymnamphora* Reinw.ex Ness; *Nepenthes mirabilis* (Lour.) Druce, spread in West Java, Banten and one new species from Mt. Slamet, Batu Raden Purwokerto, Central Java is *Nepenthes adrianii* Spec. Nov.

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