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Pitcher Plants of the Old World

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Nepenthes aristolochioides M. Jebb & Cheek

Original description; Jebb, M., & Cheek, M., 1997, *Blumea* 42: 22

The specific epithet alludes to the resemblance of the pitchers of this species, in their shape and colour, to the flowers of *Aristolochia*, a genus of non-carnivorous vines (Figures 1 and 2). *Nepenthes aristolochioides* does not have any synonyms or infraspecific taxa.

Nepenthes aristolochioides is known from only three locations within the Kerinci Seblat National Park, located in the province of Jambi, West Sumatra. The type population occurred on Mount Tujuh, but is now virtually extinct there due to extensive poaching by *Nepenthes* enthusiasts. In 2007, just one *N. aristolochioides* plant was observed on Mount Tujuh (E'En Endatno, pers. comm.). The two remaining populations occur on separate peaks that are much more remote and less well known. Both populations consist of just a few dozen individuals (Stewart McPherson, pers. observ.), making the total number of surviving plants in the wild critically small and at extreme risk of total extinction.

Nepenthes aristolochioides occurs from 1800–2500 m altitude, and is predominantly found growing in mossy cloud forest on ridge sides and mountain slopes where humidity and precipitation are high. It grows terrestrially or occasionally as an epiphyte, in mossy, lower and upper montane forest and scrub, often rooted in dense moss and leaf litter on the ground or on the branches and trunks of trees. It grows in dappled shade or strong sunlight, and forms a branched stem up to 7 m long that climbs and scrambles through surrounding vegetation. *Nepenthes aristolochioides* naturally hybridises with *N. singalana*.

The lamina is linear or lanceolate, up to 20 cm long and 5 cm wide. The apex of the leaf is acute or obtuse, and the base is attenuate, amplexicaul and slightly decurrent. The stem, lamina, midrib and tendril are yellowish green. Most parts of the foliage are glabrous, except for the developing pitchers and midrib, which may be lined with silver hairs

Figure 1 (facing page) and Figure 2 (following pages). Upper pitchers of *N. aristolochioides* plants growing at one of the two remaining populations in the Kerinci Seblat National Park.





up to 2 mm long. *Nepenthes aristolochioides* is unusual in that the lower and upper pitchers are comparable in shape.

The lower pitchers are produced in small numbers and only by seedlings and young plants prior to the production of a climbing stem. The lower traps are up to 7 cm tall and 3 cm wide, and the upper pitchers are up to 13 cm tall and 5 cm wide. In both pitcher types, the bottom half to three quarters of the trap are narrowly infundibular, being slightly broader in the lower pitchers (Figures 3 and 4). The top section of both pitcher types is bulbous and inflated, with a flattened front face, upon which the small, circular, orifice-like pitcher opening is located. This opening is up to 4 cm in diameter, and is unusual among *Nepenthes*, in that it is positioned almost vertically except in the lowermost pitchers (see Nerz, 1998). Wings up to 9 mm wide, fringed with filaments up to 10 mm long, often run down the front of the lower pitchers, but are usually reduced to narrow ridges in the upper pitchers, or are not discernable at all.



Figure 3 (above). A rare example of a lower pitcher of *N. aristolochioides*.

The peristome is up to 15 mm wide and protrudes into the pitcher, rolling back on itself to form an inward-projecting rim reminiscent of the entrance to a lobster pot. There is usually a gap in the peristome up to 5 mm wide immediately below the lid. The peristome is lined with ribs up to 0.8 mm high, spaced up to 0.6 mm apart. The peristome protrudes externally for up to 2 mm. The lid is elliptic or sub-orbicular, up to 4 cm long, 3 cm wide, and lacks an appendage. The lid is positioned immediately above the pitcher opening and casts shade over the entrance of the trap; the dark colouration on the underside of the lid makes the lid almost opaque. The spur is unbranched, up to 10 mm long, and is positioned immediately behind the lid.

Both pitcher types have similar colouration. The exterior of the trap is pale, yellowish green, lightening slightly from the base of the trap towards the top, and is liberally patterned with interconnected, dark red or purple blotches. The interior surface is a pure, light yellow or creamy white. The walls of the pitchers are thin and semi-translucent,



Figure 4 (above). An intermediate/upper pitcher of a *N. aristolochioides* plant growing in lower montane forest – typical habitat for this species.

particularly towards the top of the trap, allowing sunlight to brightly illuminate the interior of the pitchers. The opaque red blotches on the pitcher exterior are visible from the interior when the pitcher is in sunlight. The peristome is consistently dark red or purple. The upper surface of the lid is yellowish green, finely flecked with dark red, and the underside of the lid is generally coloured completely dark red or purple.

The unusual structure of the pitchers of *N. aristolochioides* enables this species to exploit a complex and specialised light-trap mechanism that is found only in *N. klossii* and species of carnivorous plant from unrelated genera, such as *Darlingtonia californica*, *Sarracenia minor* and *Sarracenia psittacina* (see McPherson, 2006, and the *Trapping Processes* chapter). The trapping process of this species is also unusual since the fluid within the pitchers is viscous, often completely coating the inner surface of the traps, especially in upper pitchers which are buffeted by wind. Small, flying insects readily become affixed to this film-like coating and are often caught and killed as a result. The trapped prey slowly slip down into the pitcher interior where they are digested in the fluid below.

The inflorescence is a raceme, to 30 cm long. The peduncle is up to 15 cm long and the rachis also to 15 cm long. Flowers are borne singly on pedicels up to 10 mm long with a simple bract. Tepals are ovate and less than 4 mm long. The rachis of the female inflorescence is usually shorter (Clarke, 2001).

Nepenthes klossii is the only other *Nepenthes* to which the pitchers of *N. aristolochioides* bear any similarity, but despite their superficial likenesses, these species are not closely related (Nerz, 1998), having evolved independently. *Nepenthes aristolochioides* is easily distinguished from *N. klossii* by the size of its pitchers, particularly the upper pitchers, which are half the size of those of *N. klossii* and generally far less robust. The species is also predominantly glabrous, whereas *N. klossii* is partly characterised by the dense indumentum of hairs that covers the foliage of mature plants. The pitchers of *N. aristolochioides* lack any appendages

on the lower surface of the lid, whereas those of *N. klossii* generally have two appendages. In *N. aristolochioides*, the spur is positioned just behind the lid, whereas in *N. klossii*, the spur is located at the top or at the back of the pitcher, away from the lid. Finally, the leaves of *N. klossii* are petiolate, whereas those of *N. aristolochioides* are not. *Nepenthes aristolochioides* is unlikely to be confused with any other species of *Nepenthes*.

Nepenthes aristolochioides is among the most critically imperilled of all *Nepenthes*. There is little local or governmental interest in protecting *N. aristolochioides* in the wild, and the demise of the type population is especially disheartening, since this plant is among the most remarkable and interesting of all *Nepenthes*. Poaching is the sole reason for the decline of the population on Mount Tujuh – the habitat of the plant remains otherwise intact – and has been made possible by the lack of effective infrastructure in the Kerinci Seblat National Park. The two remaining populations of *N. aristolochioides* are small and vulnerable, but at slightly less risk from poaching since they are remote and lie within the habitat of the Sumatran Tiger, making them rarely visited. The survival of *N. aristolochioides* in the wild depends upon the protection of the remaining populations of this plant, and the status of these populations will need to be monitored closely in the future.