intermedia, and *U. ochroleuca*, which often grow in very shallow waters, often germinate at the bottom.

Dense stands of reeds and sedges are not suitable habitats for summer growth of aquatic carnivorous plants because of shading, nor are they suitable for successful turion overwintering. The low overwintering rate of *Aldrovanda* turions was observed after the wintering site had been trodden underfoot by roe-deer. Afterwards, many of the turions germinated as late as summer.

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The paper is dedicated to my colleague Dr. Jan Kvet (Inst. Bot., Trebon, Czech Republic) on the occasion of his 65th birthday and for his whole life study of wetland plant ecology and great merits in wetland protection.

References

Adamec, L. 1995, Ecophysiological Study of the Aquatic Carnivorous Plant *Aldrovanda vesiculosa* L., Acta Bot. Gall., 142: 681-684.

Appenroth, K.J., Hertel, W., and Augsten, H. 1990, Photophysiology of Turion Germination in *Spirodela polyrhiza* (L.) Schleiden, The Cause of Germination Inhibition by Overcrowding, Biol. Plant., 32: 420-428.

Bartley, M.R., and Spence, D.H.N. 1987, Dormancy and Propagation in Helophytes and Hydrophytes, Arch. Hydrobiol. (Beih.), 27: 139-155.

Kaminski, R. 1987, Studies on the Ecology of *Aldrovanda vesiculosa* L. II. Organic Substances, Physical and Biotic Factors and the Growth and Development of *A. vesiculosa*, Ekol. Pol., 35: 591-609.

Mazrimas, J.A. 1978, *Aldrovanda*, Carniv. Pl. Newslett., 7: 102-103.

Newton, R.J., Shelton, D.R., Disharoon, S., and Duffey, J.E. 1978, Turion Formation and Germination in *Spirodela polyrhiza*, Am. J. Bot., 65: 421-428.

Winston, R.D., and Gorham, P.R. 1979a, Turions and Dormancy States in *Utricularia vulgaris*, Can. J. Bot., 57: 2740-2749.

Winston, R.D., and Gorham, P.R. 1979b, Roles of Endogenous and Exogenous Growth Regulators in Dormancy of *Utricularia vulgaris*, Can. J. Bot., 57: 2750-2759.

Nepenthes mollis (Nepenthaceae)—Rediscovered?

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On a recent trip to Borneo, one of the prime directives was to collect seed and pressed specimens of *N.* sp. from the book Pitcher-Plants of Borneo (Philipps and Lamb, 1997, pp 150-152). This species has been considered a hybrid in the past and is in the *N. maxima / veitchii / fusca* complex. We collected male specimens from G. Lumarku at 1700 m in tall dense forest on an exposed ridge line (Figure 1). After drying it for several months, I was then in a position to formally describe this species. While describing the stems and leaves I came across a drawing of *N. mollis* in Danser's monograph (Danser, 1928). It looked exactly like the pressed specimen

that I had in front of me. I then began to compare the two and found that they matched exactly, including the same hairiness, except for the following differences.

	N. mollis	*N.* sp.
Leaf Base:	Decurrent into 2 wings, 1 cm broad at the top, 4-6 cm long, gradually attenuate.	Decurrent for 1-2 cm.
Pedicels:	Without bract.	Bract originating from the base of the pedicel 3-4 mm long.



Figure 1: The intriguing *Nepenthes* from G. Lumarku, lower pitcher on the left, upper pitcher on the right.

To bring these differences into perspective, remember that the differences above are both from pressed herbarium specimens and that Danser never saw a live specimen of *N. mollis*.

In living specimens of *N.* sp. the base of the leaf is petiolate in the lower 4-5 cm with the leaf edges curled upwards. When pressed they are flattened and the leaf is narrowly lanceolate as in Danser's drawing of *N. mollis*. The leaf-sheathing on pressed plants of *N.* sp. is also flattened and looks decurrent instead. Without reference to a living plant you would be none the wiser. Could this also be the same with Danser's *N. mollis* specimen? The degree of supposed leaf decurrence and the bracts on the pedicels can be explained by natural variation within the wide range of this species. There are enough high mountains between those that contain *N.* sp. (G. Lumarku, G. Murud, Meligan Range) in the northwest and *N. mollis* (G. Kemul) in the southeast to provide a link between the two.

According to Danser, *N. mollis* reputedly lacks upper pitchers. *N.* sp. also exhibits this trait especially in the upper 70 cm of a flowering stem. Other *Nepenthes* are also known to abort pitchers at different times of the year when conditions of stress occur, i.e. during dry seasons. And to put the icing on the cake, Danser says about *N. mollis*, "It reminds one to the other species, *viz*. *N. fusca*, by its colour and its red-brown indumentum, but it differs by its quite other leaf shape and nervation, and its still denser indumentum." If my hypothesis is proved correct by recollection from the type locality, then the lower and upper pitchers of *N. mollis* would be described as follows.

Lower pitcher, abruptly incurved at the front or side from the hanging end of the tendril, 110-130 mm tall, 25-35 mm wide, ovate in the lower 1/3 becoming cylindrical and then inflated, narrowing abruptly towards the mouth with two fringed

wings over the entire length. The back of the pitcher mouth is elevated into a long neck converging towards the lid. Wings 2-3 mm wide, fringe segments filiform 4-8 mm long, 3-4 fringe segments per cm. Mouth ovate, horizontal in front, elevated strongly towards the lid with a long neck 30-40 mm long. Peristome rounded, 4-5 mm wide in front flaring widely 12-15 mm in the mid 1/3 narrowing attenuately towards the lid with ribs 0.5-0.8 mm apart, 1-1.5 mm long on the inner margin, pectinate. Inner surface of the pitcher glandular in lower 2/3 with minute elliptic overarched glands 0.15-0.2 mm long, the long axis of the glands orientated at right angles to the long axis of the pitcher, from the bottom to the top 900-2500 glands cm^{-2}, glands becoming larger and more rotund towards the bottom; the upper 1/3 glandless and pruinose. Lid triangular 35-40 mm long, 16-22 mm wide, cordate at the base, rounded at apex, the lower surface sparsely glandular with elliptic to rotund deepened and rimmed glands 0.1-0.3 mm long concentrated near the base. Lower midrib has a strongly hooked boss 2 mm long inserted at the base of the lid and a small glandular appendage inserted near the tip. Spur filiform, 8-12 mm long inserted 5 mm from the base of the lid. All outer surfaces except the peristome are covered with a dense red-brown indumentum, single hairs 1-1.5 mm long and shorter branched hairs 0.5 mm long.

Upper pitcher shortly curved at the rear from the hanging end of the tendril, 230-250 mm tall, 50-70 mm wide, infundibulate in the lower 1/2 becoming inflated then narrowing abruptly towards the mouth; without wings. The back of the pitcher mouth is elevated strongly towards the lid. Mouth ovate, horizontal in front, elevated strongly towards the lid with a long neck 60-70 mm long. Peristome rounded, 4-5 mm wide in front, flaring widely in the mid 1/3, 25-35 mm wide, narrowing attenuately towards the lid with ribs 1-1.2 mm apart, 2-2.5 mm long on the inner margin, pectinate. Inner surface identical to the lower pitcher but completely glandular. Lid identical in shape to the lower pitcher, 50-60 mm long, 30-35 mm wide, the boss 7 mm long, appendage 3 mm long; spur 25 mm long, inserted 12 mm from the base of the lid. Indumentum identical to the lower pitcher.

References

Danser, B.H. 1928, *N. mollis* in: The Nepenthaceae of the Netherlands Indies, Bull. Jard. Bot. Buitenz. 3. ser. 9, 338-340.

Phillipps, A., and Lamb, A. 1997, in: Pitcher-Plants of Borneo, 113-114, 150-152.

Editor's comment (JS): The identity of the specimens from G. Lumarku with *N. mollis* should be proven by comparison with authentic pitchered material from G. Kemul. Unless this is done, the data above cannot be taken as an emendation of Danser's original description of *N. mollis* but are only referring to north Bornean plants without doubt. These latter have previously been attributed to *N. veitchii* or

Looking Back: CPN 25 years ago

Katsuhiko Kondo wrote about the obscure origins of the hybrid *Drosera* 'Nagamoto', which was later described as *Drosera* × *nagamotoi*, i.e. *D. anglica* × *D. spatulata*: "There is a hybrid...made by Mr. Jiro Nagamoto. The parents of the hybrid were *Drosera longifolia* (*anglica*) [*sic*] as the maternal parent from Hokkaido and *D. spathulata* [*sic*] as the paternal parent from Mt. Shinoda, Osaka (the Kansai type)." The story grows because it has since been demonstrated that the Kansai parent is actually the hybrid *D. rotundifolia* × *D. spatulata*!