Literature Reviews

An, C.I., Fukusaki, E.-I. & Kobayashi, A. 2001, Plasma-membrane H^+-ATPases are Expressed in Pitchers of the Carnivorous Plant *Nepenthes alata* Blanco. Planta 212: 547-555.

The authors demonstrate by RT-PCR, Northern blot, and in situ-hybridisation analysis that a gene with homology to known proton pumps (from other plants, fungi, and animals) is expressed in *N. alata*. After feeding fruit flies to the pitchers, the pH of the pitcher fluid increased rapidly to decline again within 12 h. It is supposed that the acidification is due to the action of proton pumps and that it is induced in response to ammonium. The in situ hybridization experiment showed that the identified proton pump genes are expressed in digestive glands, in parenchyma cells and in sclerenchymatic bundle sheath cells and that there does not seem to be a proton pump specifically expressed only in glandular cells. On the basis of studies with specific inhibitors, the authors conclude that a plasma membrane H^+-ATPase of the head cells of digestive glands is involved in acidification of the pitcher fluid. (JS)

Eckstein, R.L. & Karlsson, P.S. 2001, The Effect of Reproduction on Nitrogen Use-efficiency of Three Species of the Carnivorous Genus *Pinguicula*. Journal of Ecology 89: 798-806.

Flowering decreases "nutrient use-efficiency" (because nutrients are removed from the plant body into reproductive structures that are detached), which in turn decreases the plants' probability to survive (ecologically speaking, they have a

reduced "mean residence time") in a nutrient-poor environment as compared to non-flowering specimens. Nevertheless, the studied species (as populations and taxa, i.e. irrespective of specific individuals) have survived millions of years (including glaciations and other ecological disasters) on this planet. Apparently, they do not worry about NUE and MRT as much as ecologists do. (JS)

Yadav, S.R., Sardesai, M.M. & Gaikwad, S.P. 2000, Two New Species of *Utricularia* L. (Lentibulariaceae) from Peninsular India. Rheedea 10: 107-112.

Two intriguing plants from India are described as new bladderwort species (*U. janarthanamii* and *U. naikii*). Both do unambiguously belong to sect. *Oligocista* (plants terrestrial with distinct entire foliar organs sometimes carrying traps, traps with simple appendages and basal mouth opening, bracts basifixed, pedicel flattened, calyx lobes not identical, seeds not flattened nor with conspicuous appendages). The unusual characteristic of both species is the lack of bracteoles, paralleled in *Oligocista* only in the Philippine species *U. heterosepala*, with which one of the Indian plants (*U. janarthanamii*) appears to be related (judging from the elongating and spreading pedicels and finely sinuate seed testa cell walls). *U. naikii* is only known from cleistogamous specimens and is thus difficult to align with any other species. The relatives proposed in the paper (*U. uliginosa* and *U. nayarii*, considered conspecific by Taylor) do not appear to represent the sister groups as they have bracteoles and different seeds. (JS)

Cheek, M. & Jebb, M. 2001, Nepenthaceae. Flora Malesiana Ser. I, Vol. 15, 161 pp. ISBN 90-71236-49-8

The Flora Malesiana area covers most (but not all) of the global range of the genus *Nepenthes*. Given this restriction, the present account contains essentially the same information as the "skeletal revision" published in 1997 (cf. CPN 27:75, 1998). Some species described since (*N. benstonei*, *N. lavicola*, *N. mira*, and *N. sibuyanensis*) are recognized. *N. angasanensis* (described in 1999) is united with *N. mikei*. *N. faizaliana* (previously united with *N. stenophylla*) and *N. philippinensis* (previously doubtful) are now considered distinct. Nineteen (of 82 recognized) taxa are illustrated (line drawings). Unfortunately, recent work on previously overlooked type specimens (Schlauer & Nepi, Webbia 55:1-5, 2000) and on Sumatran species (Clarke 2001, cf. CPN 31:9, 2002) was not considered in the present account. Molecular identification and classification methods (removing all ambiguity) would have been more useful than the selection of epitypes to stabilize the names *N. stenophylla* and *N. pilosa*. Epitypes just serve to document an interpretation of the extant original material that is considered ambiguous by the authors (and less so by others). (JS)

Kurata, S. 2001, Two New Species of *Nepenthes* from Sumatra (Indonesia) and Mindanao (Philippines). Journal of the Insectivorous Plant Society (Japan) 52:30-34; figs. on cover and back cover of issue no. 2 of the same volume.

N. pyriformis is described as a new member of the *N. inermis* group of Sumatran pitcher plants. It is closely related to *N. talangensis* (described from the same mountain) and may be a hybrid involving this species, as assumed by Charles Clarke in "*Nepenthes* of Sumatra and the Malay Peninsula" (cf. CPN 31:9, 2002).

N. mindanaoensis is the first valid name for the plants that have been called *N. petiolata* in the horticultural trade. Only recently the true *N. petiolata* (strongly pubescent and with a coarse peristome) has been rediscovered, necessitating a reconsideration/renaming of the cultivated material. *N. mindanaoensis* is compared with *N. petiolata* and *N. alata*, which are considered related species. (JS)