LITERATURE REVIEW

Karlsson, P.S. Seasonal patterns of nitrogen, phosphorus and potassium utilization by three *Pinguicula* species. Funct. Ecol. 2(2): 203-210 1988.

In Scandinavia, *P. alpina* grows on calcareous soils, *P. villosa* on nutrient-poor bogs and *P. vulgaris* is widely distributed. Flowering plants allocate about 45% of nutrients to sexual reproduction in *P. alpina* which is the lowest and about 65% in *P. villosa* which is the highest. In general, flowering plants lost a larger fraction of their nutrient pool than non-flowering (68% versus 42%).

Muravnik L.E., The slime gland ultrastructure in *Pinguicula vulgaris* (Lentibulariaceae) in the course of their development and function. Bot. Journ., Leningrad, 73: 1523-1535, 1988. (Russian.)

The continual secretion in slime (stalked) glands is realized by means of Golgi apparatus, a highly developed endoplasmic reticulum. Polysaccharide mucilage component is transferred into the slime layer of the secretory cells, which serves as a storage before mucilage discharge into the gland surface through the discontinuities of the cuticle. The stimulation of the leaf by protein substrate does not exert any effect on the slime glands, in contradiction to the sessile (digestive) glands (see previous papers of the same author: Vassilyev and Muravnik, Bot. Journ. 71: 1050-1059, 1986; Muravnik, Bot. Journ. 73: 24-33, 1988, (Russian, English summary)).

Naeem, S. Resource heterogeniety fosters coexistence of a mite and a midge in pitcher plants. Ecol. Monogr. 58(3): 215-227 1988.

Darlingtonia californica, the California pitcher plant traps insects and the decomposing mass becomes food for two competing insect species. *Sarraceniopus darlingtoniae,* a slime mite, and larvae of *Metriocnemus edwardsi,* a midge, consume food at different rates. The midge larvae consumed resources at a greater rate and the densities of the two species are negatively correlated. There is a tempororal and spatial heterogeneity in resources. Coexistence of the two species occurs when resource levels are above expected levels. Differences in population desities occur when resources are less than expected.

Ownbey, BO and WR Smith, 1988. New and noteworthy plant records for Minnesota. Rhodora 90:369-377.

Among several new plant records for the state was *Utricularia resupinata.* They are approximately 100 miles from the nearest sites in Thunder Bay and in Wisconsin. They were found in Lake County in flower in mid-August.

Santos, E. 1986. O genero *Drosera* L. no Brasil. I-Una nova especia. Bradea 4:305-308. (In Latin and Portuguese).

A new species of sundew, *Drosera pumile,* is described from Mato Grosso in Brazil. It resembles *D. bravifolia* but has a taller, even more hirsute peduncle, different stipule morphology, and leaves with petioles and of spathulate shape. A line drawing is included in the paper.

Thor, Goran The genus *Utricularia* in the Nordic countries, with special emphasis on *Utricularia stygia,* a new species and *U. ochroleuca.* Nord J. Bot. 8(3): 213-225 1988.

This paper describes the genus *Utricularia* in the Nordic countries with emphasis on the above named species. The author describes all species with two different taxonomic keys: one using only the four-armed hairs called quadrifids found inside the bladders and the other by the flowers. The length of the spur and its angle defines the above two species and distinguishes it from *U. intermedia. U. stygia* as a new species differs from *U. ochroleuca* by having a darker yellow, larger, almost flat lower lip and slightly larger number of teeth with bristles on each leaf segment. *U. ochroleuca* has paler, smaller flowers with a lower lip which is almost flat but later the margins become deflexed.