

CARNIVOROUS PLANTS IN IRELAND

2. *SARRACENIA PURPUREA*

by E. Charles Nelson
National Botanic Gardens
Glasnevin, Dublin 9
Republic of Ireland

Sarracenia purpurea, known in Ireland simply as the pitcher plant, is not an indigenous species, but was introduced from eastern North America last century as a garden plant. The only native carnivores are species of *Drosera*, *Utricularia*, and *Pinguicula* (Nelson, 1986).

As far as I can ascertain, the first plants of *Sarracenia purpurea* grown in Ireland came to the Botanic Gardens in Glasnevin, Dublin, in June, 1894 "direct from North America" (Nelson, 1983).

There is no record at that time of pitcher plants in cultivation in private gardens, but it is very probable that there were plants in the other Irish botanical gardens, Trinity College Botanic Garden in Dublin, and the Royal Botanic Gardens in Belfast. Before long, David Moore, who was curator of the Glasnevin Botanic Gardens developed a strong interest in pitcher plants and began to assemble a comprehensive collection of species of *Sarracenia* (I will describe Moore's work on *Sarracenia* in a later paper). It was probably David Moore who experimented with the cultivation of pitcher plants out-of-doors in a "bog garden" which was created beside the pond in Glasnevin. *Sarracenia purpurea* proved to be hardy.

Beyond that we have only a very incomplete history of the introduction of hardy pitcher plants into Ireland, but it is well known that by the end of the nineteenth century *Sarracenia purpurea* was growing "wild" in at least one Irish bog.

In the herbarium of the National Botanic Gardens, Glasnevin, there is a specimen collected by H. Levenge in 1892 from a raised bog near Lisduff in County Laois (in central Ireland) (Foss & O'Connell, 1985). Robert Lloyd Praeger (1932) made an ob-

lique reference to a site in that county where an unsuccessful attempt had been made to naturalize *S. purpurea* - the species had died out at Lisduff before 1910 according to a manuscript in the National Botanic Gardens (Foss & O'Connell, 1985).

However, I have recently discovered an earlier account of *S. purpurea* growing in the wild in Ireland. Writing in *The Garden* in 1896, Frederick William Burbidge ("Veronica") remarked:

Only two years ago three fine specimens of the North American Huntsmans' Cup (*Sarracenia purpurea*) were found in an isolated and unfrequented bog in Queen's County by a party of sportsmen. I am sure of the plant, having had leaves sent to me for examination, but how it got there is still a mystery to everybody. As a fact, I believe that *Sarracenia* is there still.

Thus by 1884, the pitcher plant was established in Laois (the official modern name for Queen's County). It cannot now be ascertained if Burbidge was reporting the Lisduff site, but it is quite likely.

Whereas the Lisduff attempt ultimately did not succeed, a second experiment did. In 1906, Benjamin St. George Lefroy brought plants of *S. purpurea*, *S. flava* and *S. drummondii* (*S. leucophylla*, ed.) from Canada, and planted them on a raised bog in County Roscommon, at a place called Termonbarry, on the edge of the flood-plain of the River Shannon. *Sarracenia flava* and *S. leucophylla* did not survive, but *S. purpurea* thrived and reproduced prolifically until it had colonized about eighty acres. Subsequently, large-scale, peat-cutting operations

have obliterated much of the colony, but Bord na Mona (the state-owned peat company) set aside thirty acres to protect this remarkable population of alien plants.

Since Lefroy's introduction of pitcher plants to Termonbarry, the species has been transplanted to several other localities in Ireland (see Foss & O'Connell, 1985; Kertland, 1968). In 1930, Dr. Keith Lamb took three pitcher plants from Termonbarry to a bog near Woodfield, Clara, in County Offaly. Here the species multiplied and now there is a substantial colony on the raised bog. Seedlings are scattered over an area of about two acres. In 1963, perturbed by the threat to the original Termonbarry colony, T.A. Barry brought some plants to Bellacorrick in County Mayo, and plants still grow there although there is no substantial evidence of spread. He also placed two plants in a bog in eastern Ireland, at Newbridge in County Kildare (Kertland (1968) referred to this as Tankardstown, but Foss & O'Connell (1984, 1985) noted it under the name Mouds Bog). The other site where *S. purpurea* is thriving is at Abbeyleix, in County Laois, where a young colony was established about 1966 by Susan, Lady de Vesci (Nelson & de Vesci, 1981). What is remarkable at this bog is the obvious lines of seedlings radiating from the original parent plants - lines perhaps resulting from the dispersal of seed by strong gusts of wind.

Pitcher plants have also been recorded in three other localities in various parts of Ireland. At Coolatore, County Westmeath, plants from Termonbarry were established by Mrs. Upton, but when last reported (by Kertland, 1968) they were not thriving. There are no recent reports of plants at Coolatore. J.O. Bollard planted some *S. purpurea* at Derrydoan, also in County Westmeath; there were eighteen clumps in 1973 but none could be traced by Foss & O'Connell (1985) in July, 1984. Lastly, J. Newell transplanted some clumps from Termonbarry to Baylough, near Athlone, County Roscommon, in 1966 but there was

no trace of any plants at Baylough in February, 1984 (Kertland, 1968; Foss & O'Connell, 1985).

The bogs on which *Sarracenia purpurea* has become naturalized in Ireland have a varied surface vegetation. Seedlings will become established on bare peat and on *Sphagnum* hummocks, and the pitcher plants seem to thrive best in the wettest areas - when bogs have a dry surface (due to artificial drainage or peat cutting) the plants lack vigour and colonies may become extinct. Foss & O'Connell (1984, 1985) have provided valuable information on the ecology of this plant at its major Irish habitats.

The survival of *Sarracenia purpurea* in Ireland is undoubtedly due in large part to the plant's ability, even in an alien environment, to successfully set viable seeds. No research has been carried out on the pollinators of the Irish plants, nor has any work been done on the insects trapped in the pitchers. Seed dispersal is not far-ranging; there is no record of *S. purpurea* "jumping" from one bog to an adjacent bog by natural means - all the known sites have a documented history of introduction by man.

While this weird plant with its strange habits has enriched the Irish landscape - to see the crimson flowers and red and green pitchers nestling among the pale *Sphagnum* and grey lichens is a remarkable experience - botanists cannot welcome the interloper wholeheartedly. It is an aggressive weed when the environmental conditions suit it and it does oust native plants. In Ireland today, undamaged, pristine bogs are very precious as so many have been damaged by commercial exploitation of the peat. The Irish peatland is a precious natural resource in a land without other extensive reserves of fossil fuel, but intact bogs are also very valuable as wilderness areas. We must now be very cautious about damaging or polluting the remaining pristine bogs by introducing vigorous alien plants. This interloper is therefore not quite as welcome as it used to be, but no-one would suggest eliminating it

(an impossible task anyway) for in the end it does enrich our already altered flora. Let's keep pitcher plants, but let's keep them under control and resist the temptation to transplant them elsewhere. The risks to the last vestiges of an Irish wilderness are far too great.

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REVIEW OF RECENT LITERATURE

Bird, D.F., Kalff, J. Bacterial Grazing by planktonic lake algae. *Science* 231: 493-495 1986.

This report describes 6 carnivorous algae that consume large quantities of bacteria in several Canadian lakes. The algae belong to the genera: *Dinobryon* and *Uroglena* with the former genus ingesting almost 30% of its weight in bacteria per day. This grazing rate is of the same magnitude as marine microflagellates that lack photosynthetic pigments and are totally dependent on external carbon sources. In fact, *Dinobryon* was more efficient than crustaceans, rotifers and ciliate communities combined in removing bacteria from these lakes. Electron micrographs showed bacterial cells inside food vacuoles.

Bopp, M. and E. Weiler, 1985. Leaf blade movement of *Drosera* and auxin distribution. *Naturwissenschaften* 72:434.

The speed and intensity of leaf folding after prey stimulus or application of $\text{NH}_4\text{H}_2\text{PO}_4$ is enhanced by application of external auxin treatment. Experiments cited here confirm that external and endogenous auxin produces folding by moving from the leaf tip to the area of prey where growth is stimulated in cells on the underside of the leaf. DES

Farkas, MJ and RA Brust, 1985. The effect of a larval diet supplement on the development in the mosquito *Wyeomyia smithii* (Coq.) under field conditions. *Can. J. Zool.* 63:2110-2113.

This study was conducted within the water-filled leaves of *Sarracenia purpurea* L. A commercial fish food was selected as the diet supplement and standardized numbers of mosquito larvae and fluid were replaced in pitchers. The supplement significantly accelerated larval development with larger, more fecund adults. DES

Joel, DM, et. al., 1985. Ultraviolet patterns in the traps of carnivorous plants. *New Phytol.* 101:585-593.

A survey of the UV patterns of a wide diversity of CP traps showed conspicuous UV patterns somewhat similar to many flowers. The patterns are based on leaf tissue, nectar and fluid pools. The results are discussed with respect to the possibility that UV patterns may attract prey to some CP.

Joel, Daniel, M., 1985. Leaf anatomy of *Caltha diioneaefolia* Hooker (Ranunculaceae)—Is this species carnivorous? *Bot. J. Linn. Soc.* 90:243-252 (15 fig.).



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