They belong to the following subgenera: (1) Subgenus *Isoloba* (*P. lusitanica* and the *P. crystallina/hirtiflora* group); (2) Subgenus *Temnoceras* (*P. alpina*, *variegata*, *ramosa* and probably *algida*); (3) Subgenus *Pinguicula* (*P. balcanica*, *corsica*, *dertosensis* (*submediterranea*), *fiorii*, *grandiflora*, *leptoceras*, *longifolia*, *macroceras*, *mundi*, *nevadensis*, *villosa*, *vallisneriifolia*, *vulgaris* and two or three yet unidentified species).

Several species (e.g. *P. algida*, *variegata*, *ramosa* and *villosa*, but also *P. dertosensis*, *P. mundi* and the *P. longifolia* group) are somewhat difficult to associate within their subgenus and will possibly require taxonomical refinements on the section level. Recently S.J. Casper identified new chromosome numbers in the *P. crystallina/hirtiflora* group which might lead to nomenclatural modifications. The taxonomical value of *P. bohemica* and *P. fontiqueriana* is controversial.

All above named species are presented by color slides, their distribution and habitat conditions are described and their taxonomical relationships are discussed.

The long-term cultivation of the (sub)alpine and (sub)arctic *Pinguicula* species is rather difficult for the following reasons: (1) They are much less resistant to fungal infestations than the tropical species; (2) While it is easy and cheap to create dry - or wet - (sub)tropical climate conditions, the creation of a cool climate with high air humidity is difficult and expensive; (3) In many species the hibernaculum stage lasts considerably longer than the vegetation period. If the summer growing conditions are not optimal the plants form weak hibernacula which easily decay. This is particularly the case if the plants are kept too warm and/or if they lack sufficient air humidity and ultraviolet light; (4) In the temperate growth type the flowering period is usually short and if growing conditions are not adequate from the very beginning no flowers and/or no seeds are produced.

Cultivation guidelines are presented which have proven to be successful for over 20 years.

Atlanta Botanical Garden's Conservation Program

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Officially incorporated in 1976 on land belonging to the City of Atlanta in Piedmont Park (the city's largest communal park), the Garden's mission is to develop and maintain plant collections for the purposes of display, education, conservation, research and enjoyment. ABG is a private, non-profit botanical garden overseen by a Board of Trustees, with over 40 staff, upward of 300 volunteers, and a 10,000-strong membership base. The centerpiece of the Garden is the Dorothy Fuqua Chapman Conservatory. Opened to the public in 1989, the Conservatory covers 16,000 square feet. The collections focus on under-represented and endangered plant groups, including Old World desert collections, Old World island palms that follow an island biogeographical theme, and other conservation collections including tropical conifers, orchids, cycads and carnivorous plants. ABG also houses a collection of poison dart frogs from South America.

ABG's Conservation Program encompasses a number of regional and international projects. Based on a hands-on and project-driven approach, ABG strives to work directly with local landowners, to bring as many of the relevant agencies, botanical institutes and organizations into collaboration, and to disseminate the staff's horticultural and botanical expertise to as wide a field as possible. One of its major goals is to use low-cost restoration and recovery techniques.

ABG plays an active role in the monitoring, restoration and conservation of the unique and species-rich bog communities that are found throughout the Coastal Plain and Southern Appalachian Mountains of the southeastern USA. Impacted by agricultural runoff, land conversion, soil erosion, drainage, herbicide use, invasive exotic species and the exclusion of many processes, such as fire, many of these plant communities have been reduced to small, fragmented plots of land. Bog habitat restoration involves controlling invasive woody species, both native and non-native, which eventually shade out the herbaceous layer. Restoring the herbaceous layer provides the fuel to 'carry' the fires that are associated with maintaining these open, nutrient-poor, and species diverse habitats. Controlling woody species can

be achieved through full-scale and/or selective burning and involves cutting back shrubs and trees in the winter or summer and scorching the resprouting stems with a simple, clean and highly effective propane-fuelled flame-thrower. However, years of anti-fire/anti-smoke propaganda, symbolized by 'Smokey the Bear', has produced a fear and intolerance of fire, and smoke easements are now hard to secure in many states.

Historically, these habitats would have been maintained through beaver activity. Many bogs, especially low-lying sites suitable for conversion to agriculture, have had drainage ditches or drainage tiles installed to lower the water table. ABG recreates beaver activity to restore and maintain the site's hydrology and soil structure. This is carried out with the minimum of soil disturbance so as not to create ruderal sites where weedy species can take hold. A simple, but effective restoration technique is to dam up ditches using the organic debris accumulated from clearing the site. This slows the entry of water into the bog, reducing erosion, and limiting the amount of silt deposited over the bog.

ABG carries out a number of restoration projects with the Georgia Plant Conservation Alliance (GPCA) which is a network of state, federal and private agencies and public gardens working to conserve endangered plant species and ecosystems in Georgia. ABG's tissue culture laboratory propagates rare and endangered native and non-native species. It also raises funds for the Conservation Program through the development and propagation of unusual and horticulturally interesting plant forms and cultivars. These include an all red form of the Venus flytrap 'Akai Ryu' (developed by ABG staff member, Ron Gagliardo) and an all green form of the Gulf Coast purple pitcher plant (Sarracenia purpurea subsp. venosa var. burkii).

Recent View on the Biology and Protection of *Aldrovanda vesiculosa*

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The free-floating aquatic *Aldrovanda vesiculosa* is unique within Droseraceae. It features active traps the structure and mechanism of which are comparable to those of *Dionaea*. The physiology of the rapid trap movement has not yet been fully understood. *Aldrovanda* is a thermophilous species spread from temperate to tropical zones in Europe, Asia, Africa, and Australia. Yet, its occurrence has always been sparse and irregular. In temperate countries, apical winter buds (turions) are formed in autumn. They overwinter on the bottom, float up to the water surface in spring, and resume the growth. Populations in Africa, tropical Asia and Australia richly flower and set seeds but they do not form turions and grow throughout the year. Temperate populations flower rarely in warmer seasons but flowering results mostly in production of abortive seeds.

Recent data on its distribution in Africa and Asia are not available (except for Japan - last site) and only a few recent sites are known from Australia. In Europe, it occurred more frequently and was recorded at about 150 sites in the last two centuries. It has declined dramatically in the last 30 years, vanishing from Germany, France, Italy, and Slovakia, and the number of its sites has decreased to about one-tenth. Two artificial sites are in Switzerland where it was successfully introduced in 1908. In all European countries, it has had a status of "critically endangered species" and has been under strict state protection. Yet, this has not helped much!

Aldrovanda is highly sensitive to competition with filamentous algae and higher aquatic plants that form denser stands. Fast apical growth and vegetative propagation by branching shoots are the only way to overcome the competition. The most important ecological requirements of *Aldrovanda* include: a) free-CO_2 concentration >0.1 mM as the plant is a strict CO_2 user; pH may be within 5.0-7.6; b) a medium humic acid concentration (2-30 $mg.l^{-1}$); c) high biomass of plant litter from reeds or sedges; d) water surface free of a dense biomass of submersed or floating macrophytes; e) transparent water free of suspended matter or phytoplankton; f) relative irradiance >20% of full sun; g) relatively warm water in summer (optimum 25-28 °C); h) shallow water (0.15-0.6 m, but summer minimum 5-10 cm); i) abundant