

results in a constant breeze. The night humidity provides all the moisture the plant requires. The main threat to this plant's survival is air pollution.

Mount Casibito in the Dominican Republic is the home for *P. casabitoana*. Another epiphyte nourished by night humidity, it is similar in habit and ecology to *P. lignicola*, although twice as big. The plant has sword shaped leaves and white flowers. *P. casabitoana* is found in much deeper shade than *P. lignicola*, although direct sunlight is tolerated as well.

Features of the Genus *Pinguicula* from México

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Features of the Mexican *Pinguicula*'s will be discussed here in combination with colour slides taken in habitat during several field trips. Due to many recent publications of new species, half of the genus's number (38) occur in the mountains of México. This has given the author a growing motivation to study these plants as he has done for the last ten years.

Geographical ranges of species and their habitats will be the main topics of the lecture, followed by a discussion of features different between herbarium specimens and living plants in taxonomy.

New Discoveries and Habitats of *Pinguicula* in México

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Editor's note: Dr. Lau was unfortunately not able to attend the conference; we are nonetheless printing the abstract he submitted before the conference.

Having to contend with the epithet "King of Cactus", my first botanical outreach and love, I also added in the list of plant families attractive groups of plants like orchids, bromeliads, passion flowers, gesneriads, palms, cycads, agaves, Mexican asclepiads, crassulaceas and finally *Pinguicula*.

In 1974 in the course of climbing the highest mountain in the State of Oaxaca, Cerro Zempoatepetl, we climbed over very steep walls that were covered by a beautiful, yellow moss, probably related to *Sphagnum*. Out of the moss protruded a *P. moranensis*-related flower of deep red color, the only really red *Pinguicula* of a group that is almost always purple, growing at 2300 m altitude underneath pine and oak trees on almost perpendicular rocks and sheer walls. It was years later that Franz Fuchs from Linz, Austria, visited us and was aghast at looking at a wall in my garden that was covered with this plant. Several years ago, at a conference in Birmingham, England, the plants were sold for 16 Pounds Sterling a piece, which surprised me. Dr. Franz Speta has published the plant under the name *P. laeana*. When we continued on the road from Cerro Zempoatepetl to Zaragoza, we examined a huge rock in a curve of the dirt road. One of our boys spotted a strange-looking *Pinguicula* that was not *P. laeana*. Without alpine equipment we could not reach it and had to give up the discovery.

Santa Maria Yucuhiti, close to Santiago Nuyoo, Oaxaca, there is a locality on which one large triangular granitic rock has three different *Pinguicula* species, one on each wall. To get there, one has to pass the altitude of 3000 m. The area is often shrouded in fog. A most beautiful form is covering the south-east side densely, leaves as well as flowers with long spur, and another red color. Some of the flowers tended towards purple. Old leaves of oak covered some of the plants. The north side was covered with a *P. moranensis* form, the South West side showed another difficult to define species - ?*P. mirandae* - with flowers that are white with light purple edges. The winter rosette is quite small, almost invisible, but when the rainy season begins, in May-June, they triple in size, and become covered with tiny flies. Not far away, near Yosundua, there grows a very thin-leaved *Pinguicula* which forms new plants at the

leaf-tips. I have not seen yet the flower. During hibernating season you can still see the old, dry leaves attached to the winter rosette.

On the road from Jalapa de Diaz to Ayautla, we saw yellow blotches of plants far away on the steep walls. Oaxaca has many surprises in store. With my binoculars I could recognize that these were *Pinguicula*, but of a very large size, growing in groups, together with *Agave* and *Tillandsia streptophylla*, in the hot tropical sun, fully exposed. We climbed the steep hill and I took these most beautiful pictures from different angles. What amazed us were the undersides of the large leaves that revealed that insects are also caught, on the reverse of the leaves. In habitat they grow at about 350 m altitude. The walls are yellow with large populations of this *Pinguicula* that was published recently under the name *P. gigantea*.

P. orchidioides I found in abundance in the Sierra de Juarez, Oaxaca. It is also easy in cultivation, preferring cool conditions.

On the difficult dirt road to Dulces Nombres, beginning at Santa Engracia in Tamaulipas, at an altitude of about 2000-2500 m is the habitat of *P. cyclosecta*. These plants cover the rocks and hills completely.

Gypsum hills have always been a major attraction in finding new species. Near Juxtlahuaca in Oaxaca State there is a solid gypsum hill about 1500-2000 m above sea level, close to a very deep lake. When the rainy season starts, there are thousands upon thousands of narrow-leaved *Pinguicula heterophylla*. The flowers have purple edges. They are difficult in cultivation. Near Concepcion Papalo, Oaxaca State, and near Canoas, Durango, at 2700 m on clay I came upon other *P. heterophylla* forms.

Another gypsum region is close to Zaragoza, Nuevo Leon, at 1500 m. There are tiny plants with quite succulent leaves, the flower being larger than the individual plant, white in color. I have only photos in the sterile condition. It is called *P. immaculata*. Near Novillo, Tamaulipas, on a very remote hill in clayish soil, underneath pine trees, there grows a *Pinguicula*, which I supposed is *P. lilacina*. I have never found traces of the plant during the dry season and wonder whether this is an annual. The same is true with a new discovery in the Pine Ridge area of Belize. This latter one is now under discussion and investigation. This little white flowering *Pinguicula* grows together with *Utricularia hispida* and *Drosera brevifolia*. The area is 1000 m high on bog soil condition.

One of the most attractive landscapes all over Latin America is the Sierra Obscura of Chihuahua. Getting there is almost impossible. The weather has to be dry. Once being there in 1972, it was a breathtaking view. Almost all plants, even nolinias, grow hanging, as there is no level ground. On the same permanently moist wall with a yellowish, chalk like soil with *Tacitus bellus* (*Graptopetalum bellum*), there grows a most attractive *Pinguicula*. We have never been able to cultivate this *Pinguicula*, not even in their own substrate. A friend in Australia, Mr. Bond, tried it on tissue culture and succeeded. As far as I know, this beautiful *Pinguicula* was never yet described. Elongated brownish leaves and light purple flowers give it a distinctive look within the genus.

P. reticulata is easy in cultivation, growing in semi-desert conditions near Ascension at 2300 m altitude, a very easy bloomer. The State is Nuevo Leon.

One *Pinguicula* I found in the Sierra Huichol in Nayarit which I do not know. Discussions about this plant would be appreciated, as it is a plant that you cannot ignore.

In the region around Buenavista in San Luis Potosi State I found plants which I tentatively identified as *P. takakii*. Between strange-looking specimens of *Selaginella*, near Buenavista, S.L.P. *P. gypsicola* abound.

A most beautiful *Pinguicula agnata* grows at 3000 m altitude on granite rocks on the Cerro del Viejo, border of Tamaulipas and Nuevo Leon.

The desert of the Sierra Salamanca is another locality of *P. esseriana* populations in semi-shade.

In the Sierra de Tamaulipas are large occurrences - albeit hard to reach on foot - of a *Pinguicula* (?*P. rotundiflora*) which is very easy to grow and flower. The flowers are on long pedicels, very abundant, almost white with a trace of purple.

Most of the *Pinguicula* populations are confined to 2000 - 3000 m altitude from the Chihuahua-Sonora border to Oaxaca (and Chiapas, continued in Guatemala and Belize), and from Jalisco on the West to Tamaulipas in the Northeast. Botanists will certainly discover still more species in Mexico heretofore unknown and undescribed.