



## ***Polianthes longiflora* Rose (Agavaceae)**

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### **INTRODUCTION**

We assume that most of the readers of this journal are acquainted with *Agave* (century plants), on which we have written several articles: Chazaro, 1997; Chazaro, Acevedo & Mostul. 1998; Chazaro & Mostul. 1999; Chazaro, 2001; Chazaro & Valencia, 2003; Chazaro, Valencia & Vázquez 2004; Chazaro, Valencia, Machuca & Vázquez, 2004; Chazaro, Vázquez & Valencia. 2004; Chazaro, Vazquez & Vargas 2005a; Chazaro, Lomeli, Valencia and Vargas. 2005b; Chazaro, Valencia, Lomeli and Vargas 2006; Chazaro, Lomeli & Valencia. 2007; Chazaro, Vazquez, Valencia, Acevedo, Valenzuela & Nieves. 2009; Hernandez, Flores & Chazaro, 2007; Vazquez, Chazaro, Flores, Hernandez & Vargas, 2007.

But we guess that very few people know other genera in the Agavaceae family, such as *Calibanus*, *Manfreda*, *Polianthes*, *Beschorneria*, or *Hesperaloe*.

The aim of this article it is provide information in one species of *Polianthes*.

### **RESULTS**

*Polianthes* it is a small genus of Mexican herbaceous plants, the distribution of which spans from Chihuahua state in the north, to Oaxaca state in the south (Garcia & Lott, 1994), i.e., the mountains of the Western Sierra Madre, in Chihuahua, Durango, Nayarit, Zacatecas and Jalisco the diversity centre (Solano & Feria., 2007).

It is poorly known. Mabberley erroneously (1987) cited only 2 species, when Rose (1903) had described 8 species. Since then. Conzatti (1936) had reported also the same 8 species as Rose. Later on, Espejo & Ferrari (1993), as well as Garcia & Lott (1994), reported 12 species of *Polianthes*.

An update and more accurate information is provided by Solano & Feria, (2007), they reported 15 species, 14 of them wild, and one only in cultivation.

- 1.- *Polianthes bicolor* E. Solano & García-Mend.
- 2.- *P. densiflora* (B. L. Robins.) Shinnery
- 3.- *P. geminiflora* (Lex.) Rose
- 4.- *P. graminifolia* Rose
- 5.- *P. howardii* Verh-Willm.
- 6.- *P. longiflora* Rose

- 7.- *P. montana* Rose
- 8.- *P. multicolor* E. Solano & P. Dávila
- 9.- *P. nelsonii* Rose
- 10.- *P. oaxacana* García-Mend. & E. Solano
- 11.- *P. palustris* Rose
- 12.- *P. platyphylla* Rose
- 13.- *P. sessiliflora* (Hemsl.) Rose
- 14.- *P. tuberosa* L.
- 15.- *P. venustuliflora* E. Solano & Castillejos.

Because they usually thrive in remote areas and have ephemeral flowers that appear in the peak of the rainy season, most species are poorly known.

As stated by the late R. McVaugh (1989): “Many of the localities that he (Rose) visited (in 1897) are still relatively inaccessible, at least during the rainy season when these bulbous plants are in flower, and partly as a result of this, the eight new species of *Polianthes* that he (Rose) described are not much better known now than they were in 1903”.

Some people however, might be familiar with *P. tuberosa* L., the “tuberose”, that as been known in cultivation in Europe since 1605, and nowadays is widely planted as ornamental and for the essential oils used in perfumes, around the world; however it has never been found as a wild plant (Thiede, 2001).

Joseph N. Rose (1862-1926), one of the greatest botanist ever existed, in August and September



***Polianthes longiflora*** on the market, Etzatlán, Jalisco, 25 jul. 2009 (photo: Raúl López V).



1897, with zoologists Edward Nelson and Edward Goldman, in a historical trip, crossed the Western Sierra Madre on horse and on foot, from northern Nayarit, southern Durango, southern Zacatecas to northern Jalisco (McVaugh, 1972). In this trip J. N. Rose collected several *Polianthes* that turned it out to be new species, such as *P. palustris* Rose, *P. durangensis* Rose, *P. montana* Rose, *P. platyphylla* Rose, *P. graminifolia* Rose (Rose, 1903).

108 years ago, J. N. Rose, accompanied by Robert Hay, returned to Jalisco, on 24th and 25th August, 1901, collecting plants in the neighbourhood of Guadalajara city, and bought a bunch of "nardos" or "azucenas" at the market of this town. These plants became the type of *Polianthes longiflora* (J. N. Rose No. 6290, US). Quoting him: "This species was found in great abundance during the later part of August, 1901, in the market at Guadalajara, it is brought in by the Indians from a great distance, and sold as "nardos", the Spanish name for the common tuberose" (Rose, 1903).

56 years later, on 24th August 1957, the late Rogers McVaugh, from the University of Michigan, bought, plants of *Polianthes longiflora* from a roadside vendor south of Santa Cruz de las Flores, Tlajomulco county, with which he prepared as herbarium specimens 16319 and 16320. (McVaugh, 1989).

Chazaro et al. (1992), mentioned *Polianthes longiflora*, among the 101 species of succulent plants growing at Cerro Viejo, giving just the common name (azucena) and the flowering month (August).

Up to then, no one botanist had collected *P. longiflora* in habitat, until Raymundo Ramirez-Delgadillo, from the Botanical Institute, University of Guadalajara found it in 1991, on the northern slopes of Cerro Viejo volcano (see Cedano et al., 1993) and also Jose A. Machuca, from Zapotitan, Jocotepec county, found it also in 1991 on the southern slopes of Cerro Viejo volcano while he was doing a floristic study of this mountain (see Chazaro & Machuca, 1995).

#### **Voucher specimens:**

- Between la Cruz de Romero and the fork to Mascota, county of Talpa de Allende, 29 July 1991, Col. Raymundo Ramírez- D. 2167 (IBUG herbarium).

- Cerro Viejo, by way of the ravine (barranca in Spanish) Honda, SW of San Miguel Cuyutlan, county of Tlajomulco, 5th August 1991, 1900 m. Col. Raymundo Ramírez D. et al. 2507 (IBUG herbarium).

- Machuca & Cházaro 6713 18th-August -1991 2250m alt. Cerro Viejo, NW Potrerillos Jocotepec County In bloom Herbario IBUG

- Machuca & Chazaro 8043 10th-August 1997 1470m alt. Km.34.8 Rd Ameca-Talpa Guachinango In bloom.

- Machuca s/n 21st-August 2005 1470m alt. Km.34.8 Rd Ameca-Talpa Guachinango In bloom.. Wet meadows surrounded with oaks, we found *Donnellsmithia juncea* (Sprengel) Mathias & Constance, *Odontotrichum palmeri*; *Euphorbia sphaerorhiza* Benth. *Cyperus* sp and *Cuphea* sp there.

- Machuca 8036 10th-August 1997 1457m alt. Ejido Santa Rosalía Etzatlan In bloom.

- Machuca s/n 21st-August-2005 1457m alt. Ejido Santa Rosalía Etzatlan In bloom. Potrero Presa la Mezcalera, with *Tigridia* sp; *Commelina* sp. (brown fl.) *Ipomoea* sp. *Calochortus* sp.

- Machuca s/n 21st August 2005 1700m alt. NW Cerro los Tubos San Marcos In bloom.

- Machuca s/n 21st August 2005 1458m alt. Potrero La Sidra Antonio Escobedo In bloom.  
- Machuca s/n 21st-August-2005 1524m alt. SW Mixtlan (Rd) Mixtlan In bloom.  
- Machuca 8045 10th August 1997 1480m alt. Km.65 rd Ameca-Talpa Atenguillo In bloom.  
- Machuca 8046 10th August 1997 1480m alt. Km.70 rd Ameca-Talpa Atenguillo In bloom.  
- Machuca 8047 10th August 1997 1500m alt. Rd to Volcanes Atenguillo In bloom.  
Wet lawns with *Pinaropappus roseus*, *Milla biflora*, *Mimosa aculeaticarpa* and in neighbouring oakwood.

- Machuca s/n 21st August 2005 1799m alt. Rd to Volcanes-Cuautla Cuautla In bloom.  
- Machuca & Chazaro 8055 10th August 1997 1500m alt. Rd to Volcanes-Cuautla Cuautla In bloom.  
- Machuca 8083 17th August 1997 E. Las Trojes Jocotepec In bloom.  
- Machuca s/n 21st August 2005 1797m alt. 500 m. before Cuautla (Cuautla) In bloom.  
- Machuca 8091 24th August 1997 1800m alt. Cruce Ameca-Quila-Lagunillas San Martín Hgo. In bloom.

Near extinction in this village, associated with *Commelina* sp. (brown fl.) *Tagetes lucida* (Santa Maria) *Ludwigia repens*, *Donellsmithia juncea*, *Mimosa* sp., also present.

Machuca 8107 24th August 1997 El rincón de las Taunas Chiquilistlan In bloom.

Wet meadows with *Calochortus* sp. (violet flower), *Crotalaria* sp., *Donellsmithia juncea*, *Eryngium* sp., *Tagetes lucida*, *Manfreda* sp., among others, surrounded with pine and oak woods.

- Machuca 9222 20th August 2003 1741m alt. Path to Cajititlan (Lagunillas) Jocotepec In bloom.

- Machuca 9226 21st August 2003 1999m alt. NE Potrerillos Jocotepec In bloom.

Associated with *Tagetes lucida* Cav. (Santa Maria), *Tagetes filifolia* (anise), *Commelina* sp. (blue fl.); *Ipomoea* spp., *Cyperus* sp., *Donellsmithia juncea*, *Salvia* sp., *Eryngium* sp., *Manfreda* sp.

### Other collections:

1.- Paseo del Pedregal Las Palmas, County of Tonalá, Jal., 2nd Sept. 2007 (fl. and fr.), 1550m alt., Cols. M. Cházaro B. & Ricardo Millán G.8773 (IBUG and XAL).

2.- Path between Cruz de Romero and crossing to Mascota, County of Talpa de Allende, 29th Jul. 1991, Col. Raymundo Ramírez D. 2167 (IBUG).

3.- Cerro Viejo, passing through barranca Honda, SW of San Miguel Cuyutlan, County of Tlajomulco, 5th Aug. 1991, 1900 m alt. Col. Raymundo Ramírez D. et al. 2507 (IBUG).

4.- Ayutla, County of Ayutla, 4th Aug. 1972, Col. Carlos Luis Díaz Luna 3390 (GUADA).

### STATE of MICHOACÁN

5.- Laguna de San Gregorio, County of Santa Clara del Cobre, 2700 m alt., 19th Jul. 1988, Col. J.M. Escobedo 1485 (IEB)

6.- Llano de Zanziro, County of Erongaricuaró, 2400 m alt., 2nd Aug. 1990, Cols. E. García y cols. 2933 (IEB).

7.- about 2 km N. of Loma Caliente, County of Morelia, 2200 m alt., 6th Sept. 1991, Cols. E. García y H. Díaz B: 3909 (IEB).

In the Sierra Las Vigas SO of Potrerillos a large population of *Polianthes longiflora* grows there,



on September 4th, 2003, we found 5 plants at a height of 1924m.. José Guadalupe Rojas, a villager tells; “ **twenty years ago these areas were like a white sheet, so much lilies, at that time they were plentiful. Now they are disappearing.** ”

Here, it is associated with: *Hilaria cenchroides* “hay plant“, *Tagetes filifolia* “anis“, *Ipomoea stans* “brush”.

## FINAL CONSIDERATIONS

In August the flowers of “lily” are traditionally harvested for their delicate beauty and their perfume, which has been known for a long time by the farmers of Jalisco State, and used for religious, decorative purposes and for sale on markets and along the roads where they are sold in bunches. This activity is a tradition in Etzatlan, Tenamaxtlan and Las Trojes, this last one in the municipality of Jocotepec. The inflorescence is cut leaving the tubercle, so this has no negative effects on the many populations, but in zones where extensive animal breeding is practiced, the effects are devastating.

22 villages were found in 16 municipalities in the centre of Jalisco and 3 in the state of Michoacán. The altitudinal range goes from 1470 to 2700 m.. The flora community where it grows is an inferred prairie, in 11 locations surrounded by *Quercus* woods, in 7 with a tropical deciduous wood and in one with a wood of *Pinus-Quercus*. Another important characteristic is the bad drainage, having periods of flooding, the soil being of a clayish type. All the soils where the plant is found correspond with the type “chromic vertisol“, with the characteristic that when they are dry they crack and when they are wet they extend.

In the municipality of Jocotepec, we found the largest number of villages: 5; follows Tenamaxtlan with 3, Atenguillo with 2, Tlajomulco de Zúñiga with 2, Antonio Escobedo, Atengo, Ayutla, Chiquilistlan, Cuautla, Etzatlan, Guachinango, Mixtlan, San Marcos, San Martin Hidalgo and Tonalá with a single village.

As a constancy and in the same order, we met a larger number of plants in these municipalities. In the municipality of San Martin Hidalgo, only 3 plants were found, for what we can affirm that the checked plants decrease year by year, reason for which measures should be taken to avoid that people end with this *quasi-endemic* species of Jalisco.

The meadows where the “lily” grows have an important fodder utility for the breeding of dairy cows or of double usage (meat - milk). Because without any control, it decimates the populations of *Polygonum longiflorum*, while the prairies owing thanks to their high recuperative power. Having served as food for the cattle, the foliar zone of the area disappears and does not allow it to photosynthesise, so, its reserves of nutriment run out and the bulb loses its capacity to regenerate in two or three years. The species of grasses which are found associated with the lily are : *Echinochloa colonum* (L) Link., *Paspalum dilatatum* Poir., *Paspalum notatum* Fluegge, and *Setaria verticillata* (L) Beauv. These species are considered as excellent forage plants, for their high resistance to the aridity and specially *P.notatum* for its high capacity to withstand the trample of the cattle.

In the Sierra of Quila near the crossing of Quila-Ameca-Lagunillas-San Martin Hidalgo, we were able to find only 3 plants half eaten by cows, another place in similar conditions is in the Sierra Las Vigas, municipality of Jocotepec and in Lagunilla, municipality of Tlajomulco de Zúñiga.



***Polianthes longiflora*** on the market Etzatlan, Jalisco, 25 jul. 2009 with M. Cházaro B. and Ignacio Contreras V. (photo: Raúl López V).

Uncountable locations exist which would constitute a perfect habitat for the lily, e.g. in the municipalities of Tápala, Concepción of Buenos Aires, Manzanilla, and Tuxcueca, but none were found there until now; in this region the extensive cattle breeding is traditional as well as the agricultural activity itself, and maybe for that reason, the plant became scarce or disappeared. Finally, it is necessary to note that in the municipalities of Zapopan, Magdalena, Juanacatlan, Tenamaxtlan, Etzatlan and Atengo, in Jalisco, exists a long tradition in the sale of lily bunches during August-September, especially for adorning religious altars and houses. It becomes necessary to estimate the impact of this activity in the field on the populations. An investigation realized in Tenamaxtlan indicates that at the crossing of Juanacatlan and South of Tenamaxtlan this plant went out because of people, for that reason, it is necessary to protect representative areas with a large population to avoid the same thing occurring and to avoid the possible extinction of the species in this region.

This investigation included several villages to help identify the species. One was realized in 1997 in the municipality of Zapopan (Mesa of San Juan ex hacienda of Milpilla). Another was made in the plain north east of San Simón, Municipality of Magdalena, on September 12th, 2004 and the last one in Potrero "El Llano" of Mezquitera in the municipality of Juanacatlan, Jalisco, on August 6th, 2006. In both places a remarkable *Polianthes* was found but with characteristics different from *P. longiflora*, involving *P. pringlei*; for its acicular leaves, this species is not so much appreciated by the cattle and protects itself partially because of its resemblance with Corn seedlings (*Zea mays*), it is more common in Magdalena.

Because it has a restricted distribution area, Jalisco State and plateau of Tarasca, Michoacán, according to this study, we consider that it must be placed in the status of rare and in danger of extinction species in the quoted villages. Actually, in the Mexican Official Standard (NOM-059-





*Polianthes longiflora* in habitat, Mexico.  
(Photo : Antonio Machuca).

ECOL-2001) it gets the category of Special Protection. After 19 years of search for the “nardo” during July, August and September by the authors, at most of the Jalisco territory, mainly carried it out by J. A. Machuca, we now know it occurs at 16 counties of this state, namely: Antonio Escobedo, Atengo, Atenguillo, Ayutla, Chiquilistlan, Cuautla, Etzatlan, Guachinango, Jocotepec, Mixtlan, San Marcos, San Martin Hidalgo, Talpa de Allende, Tenamaxtlan, Tlajomulco de Zúñiga y Tonalá,

no doubt that also occurs in other counties, however we do not have vouchers to prove this assumption yet.

There are 3 counties in Michoacán state: Santa Clara del Cobre, Erongaricuaro and Morelia, from whence *Polianthes michoacana*, described by Cedano et al. (1993) made 3 collections. It was regarded as a synonym of *P. longiflora* by Solano & Feria (2007) a taxonomic opinion we share, since the morphological differences given by them are not enough to separate them.

This herbaceous plant, which has the common name of “azucena” or “nardo”, thrives on inundated grasslands formerly oak-forest, between 1470 and 2700 m. The white, attractive and pleasant aromatic flowers are cut by the local people to be used as decoration at home and also with religious purposes brought to the churches, and are sold at the villages markets and sometimes along the roads.

On 25th July 2009, we found and purchased plants of “nardo” at Etzatlan village, offered at the market by a women vendor.

*Polianthes longiflora*, it is in the status of special protection by the federal government (SEMARNAT, 2002).

Text & photos: M. Cházaro, J. A. Machuca-Nuñez, R. López-Velazquez

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