

MIGUEL ÁNGEL SOTO ARENAS
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Miguel Ángel Soto was born in the city of Torreón, Coahuila, on July 12, 1963. In that city he studied elementary and secondary school at the Colegio Cervantes (1969-1978) whilst he finished high-school at the Universidad Autónoma del Noreste (1978-1980). Parallel with his first studies, Miguel Ángel became involved in the world of plants. His parents loved plants and he inherited great part of this culture. Living in a semi-arid region allowed him to get to know closely one of his favorite groups of plants, about which he acquired ample knowledge: the cacti and succulents. In spite of living in the desert, Miguel Ángel already knew and cultivated his favorite plants, the orchids. Numerous visitors came to his house, even journalists from the local communication media, to see his orchid house.

Later on, Miguel Ángel moved to Mexico City to follow university studies; he majored in Biology at the Faculty of Sciences /UNAM) from 1982-1987. When he finished the credits, he began to write his undergraduate thesis on the orchids of Bonampak, Chiapas. It is suitable to point out that in those times Bonampak was a very remote place, of difficult access and with great extensions of the poorly known Lacandon Jungle. From there, Miguel Ángel and Jorge Meave had to flee in view of the apocalyptic scenes generated by the eruption of the “El Chichón” (or Chichonal) volcano. Miguel Ángel was a perfectionist and, maybe because of this, he did not finish that thesis, although he did publish an article on that results of that sojourn in the heart of the Lacandon Jungle: Soto Arenas, M.A., (1986), *Orquídeas de Bonampak, Chiapas*. *Orquídea* (Mex.) 10(1): 113-132. Miguel graduated some-time later with a new thesis topic, this

time on the genus *Lepanthes*. He wrote the thesis with Gerardo Salazar, and their work served as the basis for the publication of the book: *The genus Lepanthes Sw. in Mexico*, where they published 32 new species, doubling the number of known species for Mexico.

Between finishing his undergraduate studies and finishing his thesis, Miguel Ángel developed numerous projects and publications on orchids. During this period, Miguel spent his days between the Ecology Laboratory (of the Faculty of Sciences, UNAM) and the AMO Herbarium since its inauguration (at that time it was located in La Herradura, in the outskirts of Mexico City, at Eric Hágsater’s house), and his innumerable field trips. He also traveled to the main herbaria of the United States and Europe, studying all the Mexican material on orchids; these voyages being very fruitful in the search of types of numerous species native to Mexico.

Miguel taught some undergraduate courses of the biology, in the Faculty of Sciences, UNAM. Among them: Bio-geography on 10 times (from 1983-1993), General Ecology twice (1987-1988), Systematics (1999), and Natural Resources (2000-2001). He was also professor of the field biology: “Phytogeography of the Montane Cloud Forest of the Sierra Madre in the South of Guerrero” (1983-1984) and “Sinecological Analysis of the Montane Cloud Forest of the State Park of Omiltemi, Guerrero.” (1984-1985).

He directed or co-directed around ten students both of undergraduate as well as graduate levels. Some of them received recognitions for the quality of their thesis; like Rodolfo Solano Gómez whose thesis “The Genus *Stelis* Sw. (Orchidaceae: Pleurothallidinae) in México” (E.N.E.P. Iztacala, UNAM, written in 1993 in co-direction with E. Hágsater, AMO Herbarium) earned an Honors Mention in the Undergraduate

¹ Translation by Carlos Ossenbach.

Thesis Contest of the Botanical Society of Mexico. Similarly, Mariana Hernández Apolinar received First Place in the Undergraduate Thesis Contest of the Botanical Society of Mexico with the thesis "Population Dynamics of *Laelia speciosa* (HBK) Schltr. (Orchidaceae)" (Faculty of Sciences, UNAM, written in 1992 with the co-direction of Irene Pisanty). In October of 1993 he organized very successfully the 5th Latin American Meeting of Orchidology in Xalapa, Veracruz, with the participation of the best known specialists and scholars of orchids of tropical America. In this event an important international exhibition of orchids was also held and of which he was President of the Organizing Committee (Exporquídea Xalapa '93). Miguel Ángel was Vice-President of the Latin American Orchidology Commission (C.L.O., 1991-1993) and President of the same in 1993.

Miguel Ángel was admitted into the Post-Graduate Program in Ecology of the Ecology Institute in 1994. He approved all the credits and passed the doctoral candidacy examination. However, due to his perfectionism, he postponed sitting for his graduation examination until he had the publications he considered were necessary. The thesis he developed was titled "Evolution in *Vanilla* (Orchidaceae): Phylogeny, biogeography and evolution of characters" and he prepared it under the direction of Dr. Elena Álvarez-Buylla (Laboratory of Molecular Genetics and Evolution, Ecology Institute, UNAM). Miguel Ángel's studies on vanillas were not limited to the aspects mentioned in the title of his thesis, since, for example, he also included the study of diversity, genetic variation and the uses historic of the vanillas. From this work interesting results derived, such as the routes and dates of the human dispersion of the cultivation of *Vanilla planifolia* around the world. Unfortunately he did not see the publication of the formal description of several new species and varieties of this genus, like *Vanilla costarricensis* (ined), *V. cribbiana* (ined), *V. dessleri* (ined), *V. martinezii* (ined), *V. sarapiquíensis* (ined), *V. pompona* subsp. *grandiflora* (Lindl.) Soto Arenas (ined), and *V. espondeae* (ined). which are now published in this issue of Lankesteriana, and the corresponding species are included in his contribution to Flora Mesoamericana, which had already been delivered to the editors at Missouri

Botanical Gardens.

From his studies on vanillas the following were published or were left to be published:

- Soto Arenas, M.A. (2006). La vainilla: Retos y perspectivas de su cultivo. (Vanilla: Challenges and Perspectives of its cultivation). *Biodiversitas* 66: 1-9.
- Soto Arenas, M.A. (in press) A new species of *Vanilla* from South America. *Lankesteriana*.
- Soto Arenas, M.A., & R.L. Dressler. (in press) A revision of the Mexican and Central American species of *Vanilla* Plum. ex Mill: Conspectus of morphological and molecular data. *Lankesteriana*.
- Soto Arenas, M.A., K.M. Cameron & E. R. Álvarez-Buylla. (in preparation) Phylogenetic analysis of *Vanilla* Plum. ex Mill. (Orchidaceae: Vanillinae) from congruent morphological and molecular data.
- Soto Arenas, M.A. & P. Cribb. (in preparation). Annotated checklist, identification guide, and a proposal for a new infrageneric classification of the genus *Vanilla* Plum. ex Miller (Orchidaceae, Vanillinae).
- Soto Arenas, M.A. & E. R. Álvarez-Buylla. (in preparation) Notes on the floral biology of Mexican *Vanilla* (Orchidaceae) and the evolution of pollination systems in the genus.
- Soto Arenas, M.A. & E. R. Álvarez-Buylla. (in preparation) Bio-geographic history of the Pan-tropical genus *Vanilla* and the history on the Gondwanic tropical biota.
- Soto Arenas, M.A., J. Cibrián, A., E. R. Álvarez-Buylla, P. Delgado & D. Piñero. (in preparation) Intraspecific variation of *Vanilla planifolia*: what morphology, isozymes, RAPD's, and nuclear DNA sequences indicate.

Miguel Ángel was one of the most knowledgeable people on the orchid flora of Mexico and, in general, of all of Tropical America. He described, alone or as co-author, many new orchids, among many others are: *Phragmipedium xerophyticum*, *Barkeria fritzhaltbingerii*, *Rossioglossum hagsaterianum*, *Sobralia macdougalii*, *Stanhopea dodsoniana*, *S. whittenii*, *Stelis greenwoodii*, *Elleanthus teotepecensis*, *Encyclia calderoniae*, *E. rzedowskiana* and *Oncidium leleui*. Also, he formalized the intra-specific systematization

of *Laelia anceps*, and reclassified (alone or as co-author) numerous species of different genera, among them *Barkeria*, *Elleanthus*, *Rhynchostele*, *Prosthechea*, *Dichromanthus*, etc. He had ample knowledge on the Pleurothallidiinae (*Stelis*, *Acianthera*, *Pleurothallis*, etc.). According to the Missouri Botanical Garden database (W3TROPICOS), there are more than 160 species and sub-species described by him, including new descriptions and reclassifications of some previously published taxa.

Miguel collected more than 11,000 different samples (collection numbers) of plants in Mexico, Guatemala, Costa Rica, Panama and Brazil, which include almost 150 type collections. The main set of his collections as well as his collecting notebooks and personal notes are deposited in the AMO Herbarium (Chinoín Institute, Mexico City). Miguel was a tireless traveler and few people knew the natural habitats of orchids like he did. This is one of the reasons why he was one of the authors that wrote most in the book “The Orchids of Mexico”, and personally supervised its design and edition; the work describes a journey through the ecosystems of Mexico and its orchids, including cultural and conservation chapters. Together with the digital Catalogue (CD) of The Orchids of Mexico it is the most complete popular work there is about Mexican orchids.

One of his already classic works was the publication: Updated Listing of the Orchids of Mexico [*Orquidea (Mexico City.)* 11: 231-275 (1989)]; this list was the basis of the most recent lists about the orchids of Mexico. Jointly with Federico Halbinger he coauthored the book *Laelias of Mexico*, which is one of the most widely cultivated genera by those fond of orchids. Miguel Ángel was executive editor of the journal *Orquidea (Mexico City.)* from 1985 to date. He was also executive editor of some volumes of the *Icones Orchidacearum (Mexico)*, which is probably the best technical reference of the Mexican orchids. He had two other volumes in preparation. Other issues deal with the genus *Epidendrum* throughout the neotropics.

Also, Miguel Ángel collaborated with several of the great current orchideologists including Robert Dressler, Gerardo Salazar, Eric Hágsater, Germán Carnevali, Mark Chase, Cássio van den Berg, Mark Whitten, Phil Cribb, and Ed Greenwood, among

many others. Miguel’s publications are a mandatory reference for orchid scholars, but are also very useful for bio-geographers and evolutionists of the flora of the Neotropics. Due to his great work as a botanist, several species have been dedicated in his honor like: *Lepanthes sotoi* Archila, *Maxillaria sotoana* Carnevali et Gómez-Juárez, *Mormodes sotoana* Salazar, *Stelis sotoana* R. Solano, and some others that are being published in this issue of Lankesteriana.

Miguel was a conservationist since an early age; for example, he was one of the most participative students in the creation of the Reserve of the Pedregal of San Ángel in Mexico City. More recently, he published one of the most complete works on the current situation of orchid conservation in Mexico and participated in many forums related with the conservation of orchids. He was a prominent member of the “Orchid Specialist Group, Species Survival Commission, IUCN” (1993-1997; 1998-2009) and a member of the “Conservation ex-situ Committee” of the same commission (2000-2003). He also participated as counselor of various government agencies like SARH (Ministry of Agriculture and Water Resources), SEDESOL (Ministry of Social Development), SEMARNAT (Ministry of Natural Resources), CONABIO (National Commission of Biodiversity), establishing the most important criteria for the national orchid conservation strategies of Mexico.

Miguel Ángel was a botanist who loved plants and this was reflected in his very good hand in cultivating various families, among which stand out the Crassulaceae, the Cycadaceae and of course, orchids. He was able to form the most important collection of live plants of Mexican orchid species, much of which is now located in the live collection at AMO Herbarium. From the cultivated plants and the field samples, he helped form a DNA bank for research in molecular biology of almost 500 orchid species, and in addition 500 *Vanilla* samples.

In collaboration with E. Hágsater and Cássio van den Berg, he was preparing a phylogeny of the genus *Epidendrum* based both on molecular data as well as morphological and on the vegetative architecture; for that he had sequenced more than 300 species from throughout the neotropics, mostly collected by Hágsater and cultivated at AMO, always careful to have voucher specimens prepared.

He stood out for his attitude, always cooperating with hobbyists and other biologists, which led him to share his knowledge in his field trips, in numerous sessions of the Mexican Orchid Association, and with farmers, particularly those that cultivate vanilla in the states of Veracruz, Oaxaca and Chiapas. He was a proficient lecturer at conferences and scientific seminars, he delivered more than 150 conferences in universities, in botanical gardens, and in botanical and horticultural associations.

Those of us who had the good fortune of having access to his field notebooks, could observe the encyclopedic knowledge he had about the flora and vegetation of Mexico. His acute vision allowed him to find orchids even when driving the car at high speed or in the darkness of the closed forest canopy. It is suitable to point out that he performed as a human altimeter, since he could calculate very exactly the altitude where we found ourselves by only looking at the vegetation around us.

Nora Esponda, the associate secretary of Instituto Chinoín, worked with Miguel for 25 years and developed a close friendship/professional relationship, and describes him as passionate in his work and everything he did, his conversations, his friendship, he was also fun, and worked late into night, sending mails and instructions in the early morning. She claims he

described himself as “neurotic and ill-tempered”, but she never saw him loose control, his character was strong but affable, very demanding of himself, but also very sensitive.

His sister Miriam describes him as a great Chef, it was Miguel who invited the family over for Christmas or some special occasion. He enjoyed cooking a chicken in “mole”, or a leg of venison with herbs in white wine for his friends. His specialty, vanilla ice-cream, was delicious. He moved back to Torreón a couple of years ago in search of tranquility to continue writing about orchids of Mexico, and spend much more time with his parents and two sisters. He had recently traveled with his sisters on a month-long trip through the Huasteca region of San Luis Potosí, Veracruz and into Chiapas; they were amazed how well he knew the country and the most spectacular landscapes. A couple of weeks before his assassination, he had discovered what appeared to be a new species of Pine-tree, on an excursion with his sister Miriam and other friends.

His tragic death occurred on August 27, at his home in Torreón, Coahuila. Miguel Ángel Soto was a controversial character, but without a doubt, he was an extraordinary human being who leaves behind a great void that will be very difficult to fill. We all miss him.