

A NOTE ON THE GENUS DRESSLERELLA

HUGO MEDINA AND FRANCO PUPULIN

WITH 13 SPECIES DESCRIBED to date, the genus *Dresslerella* has a wide geographic distribution, ranging from Guatemala to Bolivia, as well as a broad spectrum of ecological adaptations, with populations being found from elevations of 990 - 6600 ft (300 -2000 m). The greatest species diversity is found in Panama, with seven recorded taxa, followed by Ecuador, where six species have been recorded so far. The genus belongs to the subtribe Pleurothallidinae (subfamily Epidendroideae: tribe Epidendreae), the largest and most diverse orchid group on Earth.

With the notable exception of *Dresslerella powellii* (Ames) Luer, which forms large populations in Panama (where it is endemic), most *Dresslerella* species are found as scattered individuals in their natural habitats; their low density may be due to limited availability of pollinators or to other ecological constraints. Species of *Dresslerella* are normally restricted to wet montane and cloud forests, where they are generally found in subdued light in the lower branches of host trees. Some of the species, however, range to the warm premontane and lowlands forests, and others prefer exposed situations, where they receive plenty of sunlight. *Dresslerellas* usually grow as true epiphytes and only rarely as humus epiphytes on road banks covered by thick layers of mosses.

Plants of *Dresslerella* are generally quite small, varying in size from 1.2 to about 6 inches (3 to about 15 cm). The ramicauls are partially or completely covered by three to four pubescent to ciliate sheaths. The pubescence covers most of the plant and the flowers, and likely serves as a defense against herbivory and helps to maintain hydric balance in wet climates. The fog blown by the wind is trapped between the hairs and adheres to the plant in the form of small droplets. This may be particularly helpful for those species whose flowers are highly sensitive to dehydration. Central American species of *Dresslerella* are mostly hispid-tomentose (covered with stiff hair, forming a woolly layer on the external surface of the sepals), while the foliar and flower epidermis in Andean taxa are frequently long-hirsute. The inflorescences are commonly pendent, sometimes horizontal to suberect, and the apical leaf is always covered with thin trichomes (small hairs from the epidermis, typically unicellular). These can be short and restricted to the margins of the blade, or long-pubescent, usually covering only the adaxial surface of the leaves, but in a few cases also the inferior surface. In some of the species the leaf is tinged with purple, and this color may be almost solid in the abaxial surface of some taxa. The flowers are mostly purple to deep purple, but in some group of species a yellow background, variously spotted and/or striped with



Photo by F. Pupulin from *Vanishing Beauty—Native Costa Rican Orchids*, Vol. 1. Reproduced with the kind permission of the University of Costa Rica Press.

Dresslerella pilosissima is a rare species endemic to the Tilarán and Central Volcanic mountain ranges in Costa Rica, where it is known from a few documented collections.



©F. Pupulin

Dresslerella hispida ranges from Nicaragua, through the Central American isthmus, to Colombia, where it is usually found in tropical to premontane, warm environments.



©F. Pupulin

In *D. pertusa*, the type-species for the genus, the synsepal is deeply connate and sac-like at apex (scrotiform). As in most species of *Dresslerella*, the flowers open just a small apical window at anthesis.

red, is frequent. The sepals are usually tomentose and distinctly hirsute in some species; the hairs are usually white. The dorsal sepal may be free to deeply connate to the lateral sepals, in the latter case creating a frontal, narrow, mouth-like opening. The synsepal is always concave to deeply concave, and in many species the margins are deeply involute to create a scrotiform, sac-like structure. The membranous petals are linear to elliptic, sometimes forming a narrow apical tail, which may be clavate in some species. The clawed lip is mostly tri-lobed, variously ornamented with crests and calli. The narrow column is semi-terete, sometimes provided with median wings, and normally denticulate at apex.

Rudolf Schlechter described the first species of the genus *Dresslerella* from Costa Rica in 1923 as *Pleurothallis pilosissima* (Schlechter 1923). Two years later, Ames (1925) described the second species from Panama with the name of *Cryptoporphanthus powellii*. In 1937, Ames and Schweinfurth transferred *Pleurothallis pilosissima* to the genus *Restrepia* on the basis of similarities in gross flower morphology between the two genera. Louis O. Williams described *Pleurothallis hispida* from Panama in 1940, and in 1951 Schweinfurth described *Pleurothallis hirsutissima* from Peru, while in 1970 Dressler published the new *Pleurothallis pertusa* from Panama. Eventually, in 1976, C.A. Luer proposed the genus *Dresslerella* for three Panamanian species previously included in a broad concept of *Pleurothallis*, plus a new species. The genus, whose name honors Robert L. Dressler for his broad contribution to orchid science, is typified by *Pleurothallis pertusa* Dressler.



Plants of *D. pilosissima* may grow as true epiphytes or as humus epiphytes on road embankments, sometimes in very exposed situations.

Luer monographed *Dresslerella* in 1988 in his series devoted to the taxonomy of the Pleurothallidinae (Luer 1988). Here he proposed to divide the genus into two subgenera, *Dresslerella* and *Pilositas*, distinguished by vegetative and floral features. While the leaves of species in subgen. *Dresslerella* (including the type species of the genus, *D. pertusa*) have shortly pubescent



Even though the synsepal of *D. portillae* is deeply cymbiform (boat-shaped), the distal margins do not curve back, so the apex is not sac-like as in most of the other species in the genus.



Dresslerella cesariata, endemic to Ecuador, has the largest flowers in subgenus *Dresslerella*.



The flowers of *D. hirsutissima*, the largest and showiest in the genus, are extremely susceptible to dehydration. As the humidity of the environment slightly decreases, the delicate petals curve inward and the flower closes.

Key to the Species of *Dresslerella*

1. Dorsal sepal not clavate, petals abruptly attenuate into a filiform (sometimes clavate) tail (subgen. *Pilositas*)-----2
 2. Dorsal sepal clavate; synsepal spreading; petals clavate -----3
 3. Dorsal sepal and petals striped; the basal callus flat-----*D. pilosissima*-----4
 3. Dorsal sepal and petals spotted or blotched; the basal callus erect, acute -----4
 4. Adaxial surface of the leaf green with a large, silvery band in the middle; flowers large (synsepal *ca.* 2 cm long); central keel flanked by two lower keels -----*D. hirsutissima*-----5
 4. Adaxial surface of the leaf green; flowers small (synsepal *ca.* 1 cm long); central keel not flanked by lateral keels -----*D. lasiocampa*-----6
 2. Dorsal sepal caudate-acuminate, not clavate; synsepal saccate, with lateral margins erect enclosing the column and lip; petals attenuate, not clavate -----5
 5. Leaf broadly elliptical-suborbicular, shortly pubescent; flowers externally shortly hispid; margins of the lip erose; disc with 3 keels-----*D. sijimiana*-----6
 5. Leaf narrowly elliptic, long-pubescent; flowers externally long-pubescent; margins of the lip long-fimbriate along the middle; disc bicarinate -----*D. portillae*-----7
1. Dorsal sepal clavate, petals gradually tapering to the acute to acuminate apex (subgen. *Dresslerella*) -----6
 6. Plant large (>6 in (15 cm) tall); trichomes on the adaxial surface of sepals stellate -----*D. stellaris*-----7
 6. Plant small (<4 in (10 cm) tall); trichomes on the adaxial surface of sepals simple-----7
 7. Leaves provided with long trichomes; lateral lobes of the lip unciniate; pollinia similar in size -----*D. archilae*-----8
 7. Leaves shortly hispid; lateral lobes of the lip rounded to acute-apiculate; pollinia in two pairs of different size -----8
 8. Basal callus of the lip low, obtuse, saddle-shaped -----9
 9. Lip without basal auricles; petals elliptic-obovate -----*D. powellii*-----10
 9. Lip biauriculate at the base; petals unguiculate, linear-oblong, abruptly ovate above middle (scimitar-shaped) -----*D. hispida*-----11
 8. Basal callus of the lip erect, acute, ridge-like -----10
 10. Lip sagittate, the frontal lobe entire; petals narrowly linear -----11
 11. Dorsal sepal protruding beyond the synsepal-----*D. pertusa*-----12
 11. Dorsal sepal shorter than the synsepal -----*D. pertusa*-----13
 10. Lip pandurate, the frontal lobe dentate; petals elliptic, acuminate-----12
 12. Flower large (synsepal > 6 in (15 mm)); callus at the base of the lip simple -----*D. caesariata*-----14
 12. Flower small (synsepal <4 in (10 mm)); callus at the base of the lip trifid -----*D. cloesii*-----15

leaves and flowers with a non-clavate dorsal sepal, deeply connate to a scrotiform synsepal, species of subgen. *Pilositas* have densely, long-pubescent leaves, and a clavate dorsal sepal almost free from the cymbiform synsepal (Luer 1988). The distinction between the two subgenera has been somewhat obscured with the appraisal of new species since Luer's (1988) taxonomic revision of the genus. *Dresslerella archilae* Luer & Behar, endemic to Guatemala, falls in between the two groups, presenting leaves with long trichomes and the dorsal sepal very shortly connate at the base to the lateral sepals (like species of subgen. *Pilositas*), but, on the other side, it has a deeply concave-sacciform synsepal, and the obovate petals are not clavate, as typical members of subgen. *Dresslerella* (Luer 1995). In *D. portillae* and *D. sijimiana* (Luer 2002), the synsepal is not scrotiform, and the petals are produced distally into narrowed tails, but the latter are not clavate. *Dresslerella cloesii* (Luer 2005) is vegetatively similar to species of subgen. *Pilositas*, but the flower is close to that of *D. caesariata* Luer in subgen. *Dresslerella*.

Most of the species of *Dresslerella* are quite easy to distinguish on the basis of unique sets of vegetative and floral features.

With the exception of *D. pilosissima* (Schltr.) Luer, endemic to Costa Rica, all the other species of subgen. *Pilositas* are eminently Andean in distribution, ranging from Ecuador to Peru. *Dresslerella pilosissima* is the only species in the subgenus with striped dorsal sepal and petals, and a flat basal callus, while the other taxa have irregularly spotted flowers and erect, acute calli. *Dresslerella hirsutissima* (C. Schweinf.) Luer, *D. lasiocampa* Luer, *D. portillae* Luer & Hirtz, and *D. sijimiana* Luer have spotted flowers and leaves with white trichomes. While species of subgen. *Pilositas* have an almost spreading, *Restrepia*-like synsepal, in both *D. portillae* and *D. sijimiana* the synsepal is deeply concave, with the revolute margins enclosing the column and lip. Plants of *D. sijimiana* are distinctive in their erect habit, provided with suborbicular leaves, densely ciliate on the upper surface and along the mid-vein in the abaxial surface, with the disc between the lateral lobes of the



Dresslerella hirsutissima is widely distributed from Peru to Ecuador. In Ecuador it is restricted to the Amazonian side of the Andes in the province of Zamora-Chinchipec.



Plants of *D. hirsutissima* usually grow along rivers on the top of trees exposed to full sunlight, at 3000-3300 ft (900-1000 m) elevation.



Dresslerella lasiocampa, another species endemic to Ecuador, has for a long time been confused with *D. hirsutissima*.



Only rarely found in the southern Ecuadorian province of Morona-Santiago, *D. lasiocampa* grows as an epiphyte in the trunks of old trees, fully exposed to the sunlight, at circa 5600 ft (1700 m) elevation.

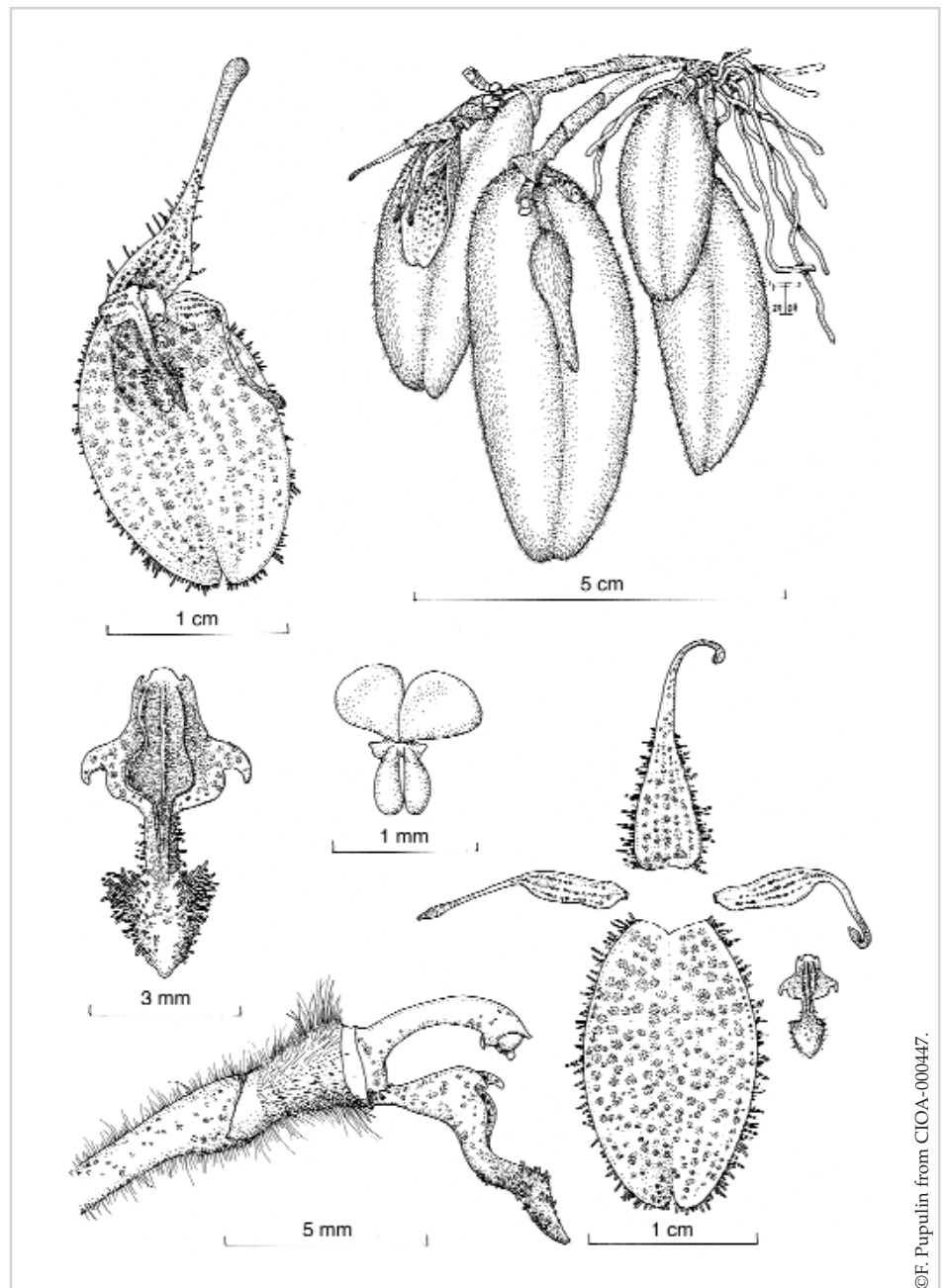


Known only from a single locality in Ecuador, *D. portillae* grows epiphytically among lichens and mosses in dense cloud and wet forests at 6000ft (1800 m) elevation.

lip provided with three keels and an erect point at the base of the central carina (a keel-shaped structure).

Dresslerella hirsutissima has been at the center of a minor taxonomic confusion. Originally described and illustrated from a specimen from Peru (Schweinfurth 1951), the species was newly illustrated by Luer (1988) in his systematic revision of *Dresslerella* on the basis of an Ecuadorean plant collected in the Province of Morona-Santiago. This plant, vouchered by Luer 4054 (SEL!), was subsequently used as the type specimen of *D. lasiocampa* (Luer 2005), and Luer considered it to be closer to *D. pilosissima* rather than to *D. hirsutissima*. In 2005, Luer published a new plate to illustrate the real *D. hirsutissima*, based on a collection by A. Hirtz from the Cordillera del Condor in southern Ecuador (Luer 2005), but the illustration was ostensibly prepared from a fragmentary specimen preserved in spirit. As the systematic monograph of *Dresslerella* by Luer (1988) is commonly used as the main source for species identification, specimens of *D. lasiocampa* have been frequently and consistently confused with *D. hirsutissima*, a species with which it is sympatric in southern Ecuador. Here we present a botanical illustration of *D. hirsutissima* prepared on a living specimen (Fig. 13) grown and flowered at Ecuagenera in Gualaceo, Ecuador. As previously noted by Luer (2005), *D. hirsutissima* may be distinguished from *D. lasiocampa* by the distinctly larger plant and flower, which is held on a comparatively shorter peduncle and pedicel; furthermore, the midlobe of the lip is deeply fimbriate and long-papillose in *D. hirsutissima*, while it is microscopically verrucose in *D. lasiocampa*. From the examination of several living specimens in cultivation at Ecuagenera, we can also note that the leaves of the highly desirable *D. hirsutissima* present a central, silvery band, fading into deep green along the margins and the central vein, a trait that is not found in any of the other species of the genus.

In subgen. *Dresslerella*, *D. stellaris* Luer & Escobar, originally described from Colombia, is unique in its stellate trichomes, while the hairs of all the other *Dresslerellas* are simple. In 1969, Rafael Lucas Rodríguez illustrated a Costa Rican plant of *D. stellaris* without locality data (Rodríguez Caballero *et al.* 1986),



Dresslerella hirsutissima (C. Schweinf.) Luer. A: Habit. B: Flower. C: Dissected perianth. D: Column and lip, lateral view. E: Lip, flattened. F: Pollinarium.

but no subsequent material of this species was recorded from Costa Rica or from any other Central American country, and its real distribution has still to be ascertained.

The other species of subgen. *Dresslerella* may be divided into two informal groups, based on the characteristic shape of the callus at the base of the lip. *Dresslerella powellii* (Ames) Luer and its sister species, *D. hispida* (L.O. Williams) Luer possess a low, obtuse callus, somewhat saddle-shaped, while all the other species have an erect, acute, ridge-like callus. Once more, *D. archilae* is anomalous in its callus, which is reduced to a low, rounded and smooth keel.



The late Rafael Lucas Rodríguez Caballero, professor at the Biology School of the University of Costa Rica, illustrated this plant of *D. stellaris*, supposedly from a plant collected in the region of Tapantí in Costa Rica. No other material of this species has been found in the Costa Rica or in other countries of the Central American isthmus.

Dresslerella powellii was originally described from central Panama, and all the additional records came from the same region, in the provinces of Panama and Coclé, where it is apparently endemic. It is most similar to *D. hispida*, described from the province of Coclé in Panama and successively recorded from Nicaragua to Colombia, from which it should be distinguished by the larger flowers with a distinctly inflated synsepal. Luer (1988) considered the widespread *D. hispida*, ranging from Nicaragua to Colombia, amply variable in vegetative size, but florally characterized by the scaphoid synsepal, without recurved margins inflated at apex. In Costa Rica, both morphs with sacciform and cymbiform synsepal are represented by several collec-

tions, and perhaps Luer's suggestion (1988) that *D. hispida* represents little more than a variation of *D. powellii* may eventually prove to be correct.

Among the species with erect, ridge-like callus, *D. caesariata* and *D. cloesii*, both endemic to Ecuador, have a distinctly 3-lobed-pandurate lip, with the margins of the midlobe erose-lacerate. They can be distinguished by the size of the flower, distinctly larger in *D. caesariata* [synsepal >0.6 in vs < 0.4 in (>15 mm vs. <10 mm)], and by the shape of the basal callus, which is simple in *D. caesariata* and trifid in *D. cloesii*. *Dresslerella elvallisensis* and *D. pertusa* (Dressler) Luer are endemic to Panama, and in both species the lip is sagittate (arrow-shaped), with the apical lobe entire and an erect, acute callus on the claw of the lip. They are easily distinguished by the relative length of the dorsal sepal, which in *D. elvallisensis* protrudes beyond the synsepal, while in *D. pertusa* is shorter than the synsepal.

Even though plants of *Dresslerella* are not commonly cultivated, we propose here an artificial key to the identification of the species of this genus in the hope it can be useful for specialized growers to give a correct name to the plants in their collections.*

Acknowledgments

We are particularly grateful to José "Pepe" Portilla Andrade and his family for the facilities they offered for this study and the unlimited access they granted to the vast orchid collection of Ecuagenera in Gualaceo, Ecuador, where most of the species treated in this article were studied. This paper was prepared as part of the project A7015, "Inventario y taxonomía de la flora epífita de la región Neotropical. 1. Orchidaceae", supported by the Vice-Presidency of Research, University of Costa Rica.

References

- Ames, O. 1925. Additions to the orchid flora of Central America with observations on noteworthy species. *Schedul. Orch.* 4: 1–62.
- Luer, C.A. 1976. *Dresslerella*, a new genus in the Pleurothallidinae. *Selbyana* 3(1-2): 1–9.
- Luer, C.A. 1988. Icones Pleurothallidarum 5. Systematics of *Dresslerella* and *Porroglossum*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 26: 1–20.

A Synopsis of *Dresslerella*

- *Dresslerella archilae* Luer & Behar, *Monogr. Syst. Bot. Missouri Bot. Gard.* 57: 140. 1995.
- *Dresslerella caesariata* Luer, *Selbyana* 2(2-3): 185. 1978.
- *Dresslerella cloesii* Luer, *Monogr. Syst. Bot. Missouri Bot. Gard.* 103: 277. 2005.
- *Dresslerella elvallensis* Luer, *Selbyana* 3(1): 2. 1976.
- *Dresslerella hirsutissima* (C. Schweinf.) Luer, *Selbyana* 2(2-3): 185. 1978.
- *Dresslerella hispida* (L.O. Williams) Luer, *Selbyana* 3(1-2): 4. 1976.
- *Dresslerella lasiocampa* Luer & Hirtz, *Monogr. Syst. Bot. Missouri Bot. Gard.* 103: 278. 2005.
- *Dresslerella pertusa* (Dressler) Luer, *Selbyana* 3(1-2): 6. 1976.
- *Dresslerella pilosissima* (Schltr.) Luer, *Selbyana* 2(2-3): 185. 1978.
- *Dresslerella portillae* Luer & Hirtz, *Monogr. Syst. Bot. Missouri Bot. Gard.* 88: 102. 2002.
- *Dresslerella powellii* (Ames) Luer, *Selbyana* 3(1-2): 8. 1976.
- *Dresslerella sijmiana* Luer, *Monogr. Syst. Bot. Missouri Bot. Gard.* 88: 103. 2002.
- *Dresslerella stellaris* Luer & R. Escobar, *Selbyana* 2(2-3): 188. 1978.

Further taxonomic information on *Dresslerella* and the species belonging to this genus may be found via Internet at EPIDENDRA, the on-line taxonomic database by Lankester Botanical Garden (<http://www.epidendra.org/taxones/Dresslerella/Dresslerella/index.html>).

- Luer, C.A. 1995. Addenda to *Dresslerella*, *Platystele* and *Porroglossum*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 57: 140—145.
- Luer, C.A. 2002. Addenda to *Barbosella*, *Dracula*, *Dresslerella*, *Lepanthopsis*, *Platystele*, *Pleurothallis*, *Restrepia*, *Scaphosepalum*, *Teagueia* and *Trichosalpinx*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 88: 97—122.
- Luer, C.A. 2005. Addenda to *Acianthera*, *Andinia*, *Dracula*, *Dresslerella*, *Lepanthes*, *Masdevallia*, and *Restrepia*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 103: 277.
- Rodríguez Caballero, R.L., D.E. Mora, M.E. Barahona & N.H. Williams. 1986. *Géneros de orquídeas de Costa Rica*. Editorial de la Universidad de Costa Rica, San José.
- Schweinfurth, C. 1951. Orchidaceae Peruviana VIII. *Bot. Mus. Leaflet*. 15: 79—109.
- Schlechter, R. 1923. Orchidaceae novae et rariores collectorum variorum in Costa Rica collectae. *Repert. Spect. Nov. Regni Veg. Beih.* 19: 289.

About the Authors

Hugo Medina is a staff researcher at the Ángel Andreetta Andean Orchids Research Center of the University Alfredo Pérez Guerrero, Ecuador. He also works with Ecuagenera, where he is responsible for pho-



The silvery bands on the leaves of *D. hirsutissima*, fading into dark bluish-green along the margins and the midvein, are unique in the genus *Dresslerella*.



In Costa Rica, *D. hispida* is restricted to the Pacific watershed of the Cordillera de Talamanca and the Central Volcanic mountain range, up to 1600 ft (500 m) elevation.



Dresslerella hispida is quite variable both in plant habit and flower color; this rose-purple form is native to the intermontane valleys in central Pacific Costa Rica.

tography and documentation of the vast orchid collections. Hugo is particularly interested in the taxonomy of Andean Pleurothallidinae. Author of several scientific articles on the Ecuadorian orchid flora, he has recently co-authored his first book, *Draculas of Ecuador*, published by the Cultural Center of the University Alfredo Pérez Guerrero in Quito.

Franco Pupulin is a Senior Research Professor at the University of Costa Rica, where he works with Lankester Botanical Garden. He is especially interested in the systematics and evolution of advanced orchid groups in subtribes Oncidiinae, Pleurothallidinae and Zygopetalinae. Franco is working on several monographic and floristic projects on Neotropical orchid floras. Author of more than one hundred scientific articles and several books on the orchids of the Mesoamerican region, he is a research Associate of the Oakes Ames Orchid Herbarium at Harvard University and the Marie Selby Botanical Gardens, and the director of the Ángel Andreetta Andean Orchids Research Center of the University Alfredo Pérez Guerrero, Ecuador.



Hugo Medina
 Ángel Andreetta Andean Orchids
 Research Center
 University Alfredo Pérez
 Guerrero, Ecuador
 E-mail: hugoamt5@gmail.com



Franco Pupulin
 Ángel Andreetta Andean Orchids
 Research Center
 University Alfredo Pérez
 Guerrero, Ecuador
 Lankester Botanical Garden
 University of Costa Rica
 Harvard University Herbaria
 Cambridge, MA, U.S.A.
 Marie Selby Botanical Gardens
 Sarasota, FL, U.S.A.
 E-mail: fpupulin@cariari.ucr.ac.cr



Dresslerella cesariata is only known from the provinces of Zamora-Chinchipec and Morona-Santiago in southern Ecuador, where the plant grows in dense, humid forest, at 3900 - 5900 ft. (1200-1800 m) elevation.



Plants of *D. elvallensis* are truly pendent epiphytes. The leaves, ciliate only along the margins, are commonly striped and suffused with purple.



The flowers of *D. elvallensis* are unique in subgenus *Dresslerella* for their dorsal sepal that extends beyond the synsepal.