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# *Pleurothallis silvae- pacis*, a new species



ADAM P  
KARREMANS  
and MELANIA  
MUÑOZ GARCÍA  
describe and illustrate  
*Pleurothallis silvae-pacis*,  
a new species found  
at the Bosque de Paz  
Biological Reserve  
in Costa Rica

COSTA RICA is well-known for its outstanding programmes aimed at conserving the local flora and fauna. The country has a large number of protected areas spanning vast expanses of public property. In fact, the National Parks and Wildlife Refuges of Costa Rica, managed by the government, oversee more than a quarter of the country's land mass. Private conservation efforts are also evermore common in Costa Rica. The Bosque de Paz Biological Reserve is a good example of this. Although it is known mainly for its mountain lodge, which is an eco-tourism destination, it also has a small research centre, with a botanical library, herbarium and dissecting equipment.

The reserve is a mosaic of primary and secondary forest (primary forests are those on land that has never been cleared for farming, secondary forests grow on land that was once cleared). Both types are quite rich in members of the *Orchidaceae*, which are commonly observed on fallen trees and branches along the trails. The orchids have been replanted and made into a garden. Plants have been identified and tagged, preserved as dried specimens and spirit-preserved flowers, photographed, and botanically characterized. Phenology has been recorded for almost a decade (Muñoz & Kirby 2007).

Some plants are, however, impossible to identify at the specific level, and require further study. This is done in cooperation with researchers at Lankester Botanical Gardens, a research centre of the University of Costa Rica committed to the description of the orchid flora of the country. As Bogarín (2010) has shown in his analysis of the new orchid findings from Costa Rica in the last two decades, it is not surprising to discover new species while preparing local floras, especially in groups such as *Pleurothallidinae*. One such species found at Bosque de Paz was found to be a novelty and is described as follows.

***Pleurothallis silvae-pacis***

**Karremans, sp. nov.**

*Pleurothallidi wigginsii* C. Schweinf. affinis, sed foliis longioribus, inflorescentia minore, floribus roseis, petalis 1-nervatis, labello ovato-triangulari minore differt. Type: Costa Rica. Alajuela: Valverde Vega, Bajos del Toro, Hacienda Río Toro, Bosque de Paz Biological Reserve, 1,500–2,000m. Flowered in cultivation in the orchid garden, 25 November 2010, *A.P. Karremans 3069* (holotype, CR; isotype, JBL-Spirit).

The Bosque de Paz reserve is a mosaic of primary and secondary forest, and epiphytic orchids are often observed

**Description**

Epiphytic, caespitose herb, up to 20cm tall. **Roots** slender. **Ramicaul** cylindrical, erect to suberect, up to 18cm long, enclosed by a closely adpressed sheath which covers the first third of the ramicaul, with a few sheaths at the base. **Leaf** horizontal to sub-horizontal, coriaceous, narrowly ovate to acuminate, 8–10cm long, 2.5cm wide, the base sessile, cordate. **Inflorescences** single flowered, produced in succession and emerging from a papyraceous spathe, 14–16mm long, forming a fascicle of old inflorescences with time. **Floral bract** 3–4mm long. **Pedicel** 8–9mm long. **Ovary** cylindrical, 3–4mm long. **Flowers** with greenish-rose sepals, veins rose, the petals and lip dark rose, the column whitish-green. **Dorsal sepal** ovate-acuminate, obtuse, 9.2mm long, 4mm wide,

three-veined. **Lateral sepals** connate into a ovate-acuminate synsepal, 7.5mm long, 3.7mm wide, four veined. **Petals** linear-acuminate, somewhat falcate, acute, margins serrulate, 6.7–6.9mm long, 1.4–1.5mm wide, one-veined. Lip thick, ovate, acute, 3–3.2mm long, 1.7mm wide, the base reflexed as a claw, hinged to the column foot, the lamina provided with a basal glenion, below it rises a conspicuous peak, the apical third of the lamina provided with shallow lateral sinuses. **Column** thick, 1.2–1.3mm long, the foot thick-bulbous, papillose; stigma and anther apical. **Pollinia** two, 0.75mm long, provided with inconspicuous caudicles, and a hard, bubble-like viscidium. **Distribution** only known from Costa Rica, on the Caribbean watershed of the Cordillera Volcánica Central, just north of the Central Valley.

**Habitat and ecology** epiphytic in pre-montane rain forest.

**Phenology** the plant has been recorded in flower from September to March.

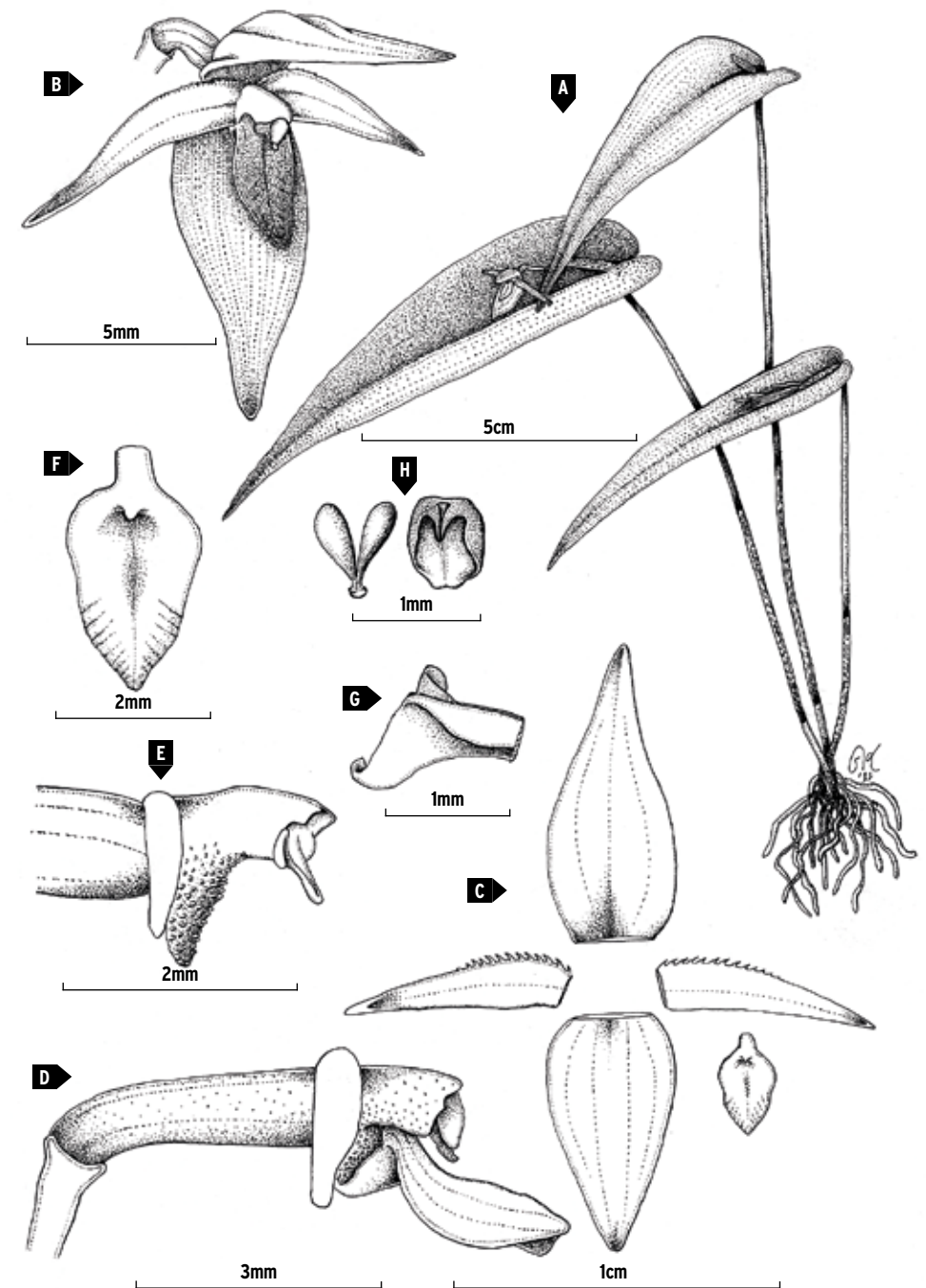
**Etymology** from the Latin *silva* (forest) and *pax-pacis* (peace) honoring the Bosque de Paz (Forest of Peace) Biological Reserve, where the type specimen was collected.

**Paratypes** Costa Rica. Alajuela: Valverde Vega, Bajos del Toro, Hacienda Río Toro, Bosque de Paz Biological Reserve, 1,500–2,000m. *BdP 06-242* (BdP, BdP-Spirit).

**Distinguishing characteristics**

*Pleurothallis silvae-pacis* is superficially similar to *P. wigginsii* C. Schweinf. described from the highlands of north-central Andes in Ecuador. The new species can be distinguished by the longer leaves, the shorter inflorescence, the rose-colored flowers, the one-veined petals, and much shorter, ovate-triangular lip

**PLEUROTHALLIS SILVAE-PACIS KARREMANS**



A Habit B Flower C Dissected perianth D Column and lip, lateral view E Column F Lip G Base of the lip, lateral view H Pollinarium and anther cap



## It proved difficult to find the closest relatives of this new species of *Pleuroballis*

(Luer 1998). *Pleuroballis imitor* Luer from Costa Rica is also somewhat similar, particularly in plant habit and dimensions of the inflorescence, however, the inflorescence is said to be a two-flowered raceme, the flowers of that species are yellow, the dorsal sepal is erect and flat, and smaller than the synsepal, and the petals have entire margins (Luer 1998). The inflorescence, flower disposition and pollinaria structure suggest affinity with *Pleuroballis eumecocaulon* Schltr., a species allocated to genus *Ancipitia* Luer (Luer 1989; 2004).

### Similar species

At first it was quite difficult to find the closest relatives of this species, even though its general features suggested affinity with *Acronia* (a synonym of *Pleuroballis*) section *Macrophyllae-Fasciculatae* Luer, a group characterized by cordate leaves, single flowered fasciculate inflorescence, spread-out petals, a short column and a bulbous, papillose column foot (Luer 2005).

However, morphologically its closest relative is *P. wigginsii*. The latter was first placed in genus *Pleuroballis* sect. *Abortivae* (Luer 1986), subsequently assigned to *Pleuroballis* subsect. *Acroniae* series *Amphygia* (Luer 1998), and eventually transferred to the genus *Acronia* sect. *Amphygia* (Luer 2005). Fellow members of *Pleuroballis* sect. *Abortivae* (*sensu* Luer 1986) were instead transferred to the genera *Ancipitia* Luer (Luer 2004) and



The rose-coloured flowers of *Pleuroballis silvae-pacis*

*Tigivesta* Luer (Luer 2007), while the closely related, *P. imitor*, was placed in *Acronia* section *Acronia* (Luer 2005).

Incidentally, the genus *Acronia*, as recently reconsidered by Luer (2005), is made up of a mix of species and groups formerly belonging to *Pleuroballis* sections *Abortivae*,

*Macrophyllae-Fasciculatae* and subsection *Acroniae* of section *Pleuroballis*. It is logical to think that, after reconsidering the relevance of certain morphological characters in the segregation of phyletic groups, the author, Luer, changed his mind about how certain species are related. This is especially

the case in *Pleuroballidinae*, where the occurrence of parallelism and convergence is common, proven by the DNA-based results obtained by Pridgeon *et al.* (2001).

### Distinction and difference

In the *Pleuroballis-Acronia* complex whether the characters currently used should award sectional distinction at all, let alone generic distinction, is still up for debate. Sections *Macrophyllae-Fasciculatae* and *Amphygiae* differ basically in the relative length of pedicels, the size and orientation of the petals, and the relative size of the small column (Luer 1998). They both differ from section *Acroniae* in the single-flowered inflorescence versus a raceme (Luer 1998). *Ancipitia* differs from all groups of *Pleuroballis* and *Acronia* in its flattened ramicauls, which are strongly 2-edged. However, *P. eumecocaulon* and its relatives have almost cylindrical ramicauls and are certainly not 2-edged. Their general floral morphology, especially lip shape and pollinaria structure are closer to members of *Acronia* than the rest of *Ancipitia*.

### How to cultivate this species

In the wild, *Pleuroballis silvae-pacis* grows as an epiphyte in pre-montane, very humid, cloud forests at elevations of around 1,500m. In cultivation, this species is best grown in the shade, mounted on a wooden plaque. It should be watered at least once a day, and enjoys high humidity and good ventilation.

### Conclusions

Variation in the mentioned features are mostly clinal, hampering a clear distinction between the groups. The phyletic information behind some botanically poorly defined and ambiguous terms such as 'fascicled inflorescence', which refers to the

accumulation of old inflorescences over time, and, 'single-flowered inflorescence', which in most cases in *Pleuroballidinae* is actually a one flowered raceme, should be examined more carefully.

As long as no strong evidence supports its placement in any other genus, we prefer to place the new species in genus *Pleuroballis*. As for its sectional relationships, it seems to be intermediate between *Acronia* section *Macrophyllae-Fasciculatae*

and sect. *Amphygiae* (according to Luer 2005). ■

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