FURTHER DISENTANGLING OF A TAXONOMIC PUZZLE: MAXILLARIA RAMOSA, ORNITHIDIUM PENDULUM, AND A NEW SPECIES, O. ELIANAE (ORCHIDACEAE)

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Abstract. McIlmurray and Oakeley (2004) demonstrated that the name Maxillaria ramosa has been misapplied to Ornithidium pendulum since 1967, and possibly corresponds to M. cassapensis. We refer Ornithidium ochraceum, O. loefgrenii, and Maxillaria spathulata to the synonymy of O. pendulum (in addition to the already recognized synonyms O. dichotomum and Scaphyglottis tafialae), and designate a lectotype for O. dichotomum. A new species from Venezuela and the Guianas (Ornithidium elianae), previously confused with O. pendulum, is described. An updated description of O. pendulum is presented along with a review of its complicated taxonomic history and the first record of this species for Costa Rica.

Resumen. McIlmurray y Oakeley (2004) demostraron que el nombre Maxillaria ramosa ha sido mal aplicado a Ornithidium pendulum desde 1967, y posiblemente corresponde a M. cassapensis. Referimos los nombres Ornithidium ochraceum, O. loefgrenii y Maxillaria spathulata a la sinonimia de O. pendulum (además de los sinónimos ya reconocidos O. dichotomum y Scaphyglottis tafialae), y designamos un lectotipo para O. dichotomum. Se describe una nueva especie de Venezuela y las Guyanas (O. elianae), la cual hasta ahora había sido confundida con O. pendulum. Se presenta una descripción actualizada de O. pendulum, una revisión de su complicada historia taxonómica, y el primer informe de esta especie para Costa Rica.

Keywords: Cymbidieae, Maxillaria, Maxillariinae, Ornithidium

Few orchid species have experienced such a complicated taxonomic history as Ornithidium pendulum (Poepp. & Endl.) Cogn. (Fig. 1). This species has been described under six different names from three (or four) countries. It has been known by a misapplied name (Maxillaria ramosa Ruiz & Pav.) for over 40 years, and it has been confused with a hitherto undescribed species from Venezuela and the Guianas. McIlmurray and Oakeley (2004) unraveled much of the confusion, but their paper has remained relatively unknown among orchid taxonomists. The present paper aims to further clarify the identity of O. pendulum.

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Species of *Ornithidium* Salisb. ex R. Br. have until recently, been considered part of *Maxillaria* Ruiz & Pav. by many authors (e.g., Foldats, 1970; Pabst and Dungs, 1977; Dunsterville and Garay, 1979; Ortiz, 1988, 1995; Sprunger et al., 1996; Atwood, 1999, 2003a; Romero and Carnevali, 2000; Hamer, 2001; Christenson, 2002a, 2002b; Dodson, 2002; Carnevali and Ramírez-Morillo, 2003; Govaerts et al., 2005). However, new phylogenetic analyses based on molecular data indicate that *Maxillaria* is grossly polyphyletic (Whitten et al., 2007), and we have segregated and reinstalled several genera within subtribe Maxillariinae, including *Ornithidium* (Blanco et al., 2007).

**Taxonomic History of *Ornithidium pendulum* and Its Synonyms**

Table 1 provides a summary of the major historical events in the taxonomy of *O. pendulum*, including its multiple synonyms, misapplied names, and species it has been confused with. Details for each basionym are provided below.

*Scaphyglottis pendula* Poepp. & Endl.

This species was first described by Poeppig and Endlicher in 1836, from a plant collected in 1830 in Peru by Poeppig himself. They proposed the genus *Scaphyglottis* in the same publication (Poeppig and Endlicher, 1836), but most species assigned to that genus by Poeppig and Endlicher are currently placed in *Fernandezia* Ruiz & Pav.6

Bentham (1881: 325) suggested that *Scaphyglottis pendula* should be placed in *Ornithidium*, a genus created in 1813 by Robert Brown, and typified by *Epidendrum coccineum* Jacq. In 1904, Cogniaux formally transferred *Scaphyglottis pendula* to *Ornithidium*. Both Bentham and Cogniaux were correct: *O. pendulum* is indeed closely related to *O. coccineum* (Whitten et al., 2007). In 1945, Schweinfurth transferred the species to *Maxillaria*, in line with the inclusive circumscription of the latter genus prevalent at the time.

Hoehne (1953: 338), not having seen the type of *Scaphyglottis pendula*, suggested that this species (as *Maxillaria pendula*) could be closely related to *Pseudomaxillaria chloroleuca* (Barb. Rodr.) Hoehne (a synonym of *Maxillaria parviflora* (Poepp. & Endl.) Garay7). Brieger (1977), who never saw the type of *S. pendula* either, was probably misled by Hoehne’s opinion and assigned *Ornithidium anceps* Rchb.f. (a synonym of *Camaridium anceps* (Rchb.f.) M. A. Blanco, a close relative of *M. parviflora*; see Atwood, 1993, 1999) to the synonymy of *S. pendula*, and transferred the latter to the genus *Pseudomaxillaria* Hoehne (typified by *P. chloroleuca*). The type of *Scaphyglottis pendula* is very different from those of *P. chloroleuca* and *O. anceps*; both Hoehne and Brieger relied exclusively on the inadequate original description and drawing of *S. pendula* to reach their conclusions. Brieger’s (1977) assertion that “no other specimen of *[Pseudomaxillaria pendula]* has been found in Peru during the last 150 years” is clearly based on his erroneous synonymization.

The two known extant duplicates of the type collection of *Scaphyglottis pendula* are in the Naturhistorisches Museum in Vienna: W-Reich.-Orch. No. 40118, which has only two leaves and two drawings of the plant; and W-0007400, which consists of a large specimen in good condition and was not part of the Reichenbach f. herbarium eventually bequeathed to W, but must have been part of Poeppig’s personal herbarium. Despite an exhaustive search, no duplicates were found in G, which holds many Poeppig collections.

The type *Camaridium pendulum* Barb. Rodr.8 belongs to a different species, also widespread in South America (illustrated in Hoehne, 1953; Sprunger et al., 1996). Surprisingly, *camaridium pendulum* and *Ornithidium pendulum* have never been confused despite being

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6 *Scaphyglottis* is a currently accepted genus in subtribe Laeliinae. Dressler (1960) designated *Fernandezia graminifolia* Ruiz & Pav. as the generic type of *Scaphyglottis* to preserve its modern circumscription and changes that would have been required otherwise.

7 Currently *Camaridium micranthum* M. A. Blanco. Blanco et al. (2007) had to propose a new name when transferring *Maxillaria parviflora* to *Camaridium*, because the specific epithet was already occupied by *Camaridium parviflorum* Fawc. (1910).

8 Currently *Ornithidium pendens* (Pabst) Senghas. Pabst had to propose a new name when transferring *Camaridium pendulum* to *Maxillaria*, because the specific epithet was already occupied by *Maxillaria pendula* (Poepp. & Endl.) C. Schweinf. (1945). Senghas (1993) maintained the specific epithet “*pendens*” when transferring the name to *Ornithidium* because “*pendulum*” was pre-occupied by *Ornithidium pendulum* (Poepp. & Endl.) Cogn. (1904). This species also belongs in the *Ornithidium* clade (Whitten et al., 2007).
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<tr>
<th>Basionym</th>
<th>Collection</th>
<th>Country</th>
<th>Status</th>
<th>Author and Year</th>
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<tr>
<td><em>Maxillaria ramosa</em></td>
<td>Ruiz and Pavón s.n.</td>
<td>Peru</td>
<td>Protologue</td>
<td>Ruiz and Pavón (1798)</td>
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<td><em>Dendrobium ramosum</em></td>
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<td>Syn. with <em>Ornithidium pendulum</em> (mis.)</td>
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<td>Not syn. with <em>O. pendulum</em></td>
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<td>syn. with <em>M. cassapensis</em></td>
<td>McIlmurray and Oakeley (2004)</td>
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<td>Painting by Gálvez</td>
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<td><em>Scaphyglottis pendula</em></td>
<td>Poeppig 1749</td>
<td>Peru</td>
<td>Protologue</td>
<td>Poeppig and Endlicher (1836)</td>
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<td>Syn. of <em>Ornithidium tafallae</em></td>
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<td><em>Ornithidium pendulum</em></td>
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<td><em>Maxillaria pendula</em></td>
<td>Schweinfurth (1945)</td>
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<td>Syn. of <em>Maxillaria ramosa</em> (mis.)</td>
<td>Garay (1967)</td>
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<td><em>Pseudomaxillaria pendula</em> (mis.)</td>
<td>Brieger (1977)</td>
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<td><em>Scaphyglottis tafallae</em></td>
<td>Pavón s.n. (collected by Tafalla)</td>
<td>Peru</td>
<td>Protologue</td>
<td>Reichenbach (1849)</td>
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<td><em>Ornithidium tafallae</em></td>
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<td><em>Maxillaria tafallae</em></td>
<td>Schweinfurth (1945)</td>
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<td>Garay (1967)</td>
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<td>Atwood (2001)</td>
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<td><em>Ornithidium ochraceum</em></td>
<td>Wendland s.n.</td>
<td>New Grenada (Colombia or Panama)</td>
<td>Protologue</td>
<td>Reichenbach (1887)</td>
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<td><em>Maxillaria ochracea</em></td>
<td>Garay (1968)</td>
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<td><em>Ornithidium loefgrenii</em></td>
<td>Löfgren CGG 1954</td>
<td>Brazil</td>
<td>Protologue</td>
<td>Cogniaux (1904)</td>
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<td><em>Camaridium loefgrenii</em></td>
<td>Hoehne (1947)</td>
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<td><em>Maxillaria loefgrenii</em></td>
<td>Pabst (1972)</td>
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Scaphyglottis tafallae Rchb.f.

Reichenbach f. published this name in 1849 based on a Peruvian collection made by Juan Tafalla in 1797 (the earliest known collection of Ornithidium pendulum). A few years later, Reichenbach (1854) recognized Scaphyglottis tafallae as conspecific with S. pendula, but still transferred his species to Ornithidium and treated S. pendula as a synonym. Schweinfurth (1945), seemingly unaware of Reichenbach’s synonymization, transferred both S. tafallae and S. pendula to Maxillaria (apparently he did not see their types either). In 1967, Garay put M. tafallae and M. pendula back together, but this time under the synonymy of M. ramosa (see “Confusion with Maxillaria ramosa Ruiz & Pav.” below).

The isotypes of Scaphyglottis tafallae at BM, G, and MA have the unpublished name “Orchys ramosa” written on their labels (“Orchys” is a misspelling of the genus Orchis L.). The type collection was made by Juan Tafalla for Ruiz and Pavón, but only Pavón’s name is written on the labels (at BM, G, and W), and only Ruiz’s name was mentioned in the protologue. The date “Año 97” (year 1797) and the locality “Chicoplaya” is written on the labels of the specimens at G, MA, and W, and is mentioned in the protologue. The isotype at G has an annotation by Reichenbach f. as “Ornithidium ramosum Rchb.f.,” likely based on “Orchys ramosa;” but he never published that combination.

Reichenbach (1856) cited two duplicates of Ornithidium tafallae, one in the Boissier herbarium (G), and the other in Berlin; the latter was undoubtedly destroyed during the allied bombings of 1943 (Ames, 1944). Reichenbach (1856) misspelled the name as “O. Tabellae” (species number 67) but made reference to his transfer in Bonplandia 2: 18, and to the field data “Chicoplaya 1797.” According to Garay (1967: 260), the specimen at W is made up of fragments (possibly taken by Reichenbach f.) from the specimen at G, but it is also possible that they were taken from the now-destroyed specimen at B.

Mansfeld annotated the specimen at MA as Ornithidium tafallae in 1934, and Carnevali and Ramírez annotated it as the type of Maxillaria ramosa in 1988; this second annotation is incorrect (derived from Garay’s misapplication of the
name; see “Confusion with Maxillaria ramosa Ruiz & Pav.” below). In the same year, E. Christenson also annotated the specimen at BM as the type of *M. ramosa*.

**Ornithidium ochraceum** Rchb.f.

In 1887, Reichenbach f. described *Ornithidium ochraceum* based on a plant from “New Grenada” sent to him by Hermann Wendland, then director of the Royal Gardens in Herrenhausen (Hanover, Germany). Reichenbach even compared his “new” species to *O. tafallae*, but did not mention any differences. Garay transferred *O. ochraceum* to *Maxillaria* in 1968, but did not recognize it as conspecific with *O. pendulum*.

The type specimen of *Ornithidium ochraceum* is depauperate; it consists of a handful of aggregate, leafless pseudobulbs with a broken segment of rhizome at the base. However, there is a drawing of the plant attached to the sheet that clearly shows the characteristic leaf shape of *O. pendulum*, with one flower emerging from within the bracts at the base of the pseudobulb. It also shows the lip with a subtriangular, reflexed epichile with dark warts (mauve-colored spots, according to the protologue). No duplicates of the type collection have been located in GOET (J. Heinrichs, pers. comm.), where Wendland’s main collection resides.

Both Schlechter (1920: 274) and Garay (1968: 235) assumed that the type of *Ornithidium ochraceum* was collected in modern-day Colombia. However, Panama was also part of the Republic of Nueva Granada at the time of publication of the protologue, and it is also possible that the type came from there. The specimen must have been prepared by Wendland from a plant cultivated at Herrenhausen, but not collected by him in the field. It is known that Wendland collected in Belize, Guatemala, Honduras, El Salvador, and Costa Rica (Wittmack, 1903; Stafleu and Cowan, 1988; Vegter, 1988), but there is no indication that he ever collected in Panama or Colombia.

**Ornithidium loefgrenii** Cogn.

Cogniaux described *Ornithidium loefgrenii* in 1904, in the same publication where he transferred *Scaphyglottis pendula* to *Ornithidium*, and thus failed to recognize both as conspecific (Cogniaux used the spelling “löfgrenii,” which was corrected to “loefgrenii”; article 60.6 in McNeill et al., 2006). In 1942, Hoehne transferred *O. loefgrenii* to *Camaridium*, failing to recognize it as conspecific with *Maxillaria pendula*, even though he transcribed the original description of the latter species in the same publication. He repeated the same information in *Flora Brasílica* (Hoehne, 1953). Pabst transferred *O. loefgrenii* to *Maxillaria* in 1972. The name *Maxillaria loefgrenii* (Cogn.) Pabst therefore became widely used in Brazil, as this combination was used in the influential *Orchidaceae Brasilienes* (Pabst and Dungs, 1977).

The type specimen of *Ornithidium loefgrenii* was collected by Löfgren in São Paulo, Brazil. Hoehne (1953: t. 90) published a drawing of the type in which the shape of the labellum is almost identical to that illustrated by Lehmann for *O. dichotomum* Schltr. (Fig. 2). In an extensive molecular phylogeny of subtribe Maxillariinae (Whitten et al., 2007), *O. pendulum* (from Ecuador) is strongly supported as sister to *O. loefgrenii* (as *Maxillaria pendula* and *M. loefgrenii*, respectively), which provides support for their merging.

**Ornithidium dichotomum** Schltr.

Schlechter (1920) described *Ornithidium dichotomum* based on a plant collected by Friederich C. Lehmann in Popayán, Colombia, and compared it to *O. tafallae*. Schweinfurth (1945) referred Schlechter’s species to the synonymy of *Maxillaria tafallae* (Rchb.f.) C. Schweinf.

There is a watercolor in Kew (F.C. Lehmann Icones No. 1005) based on Lehmann s.n. (B.T. 230, K), also from Popayán, that portrays the plant in life (Fig. 2).

The name *Camaridium dichotomum* Schltr. (synonym: *Maxillaria dichotoma* (Schltr.) L. O. Williams) belongs to a different species in the *Camaridium* clade, which occurs from Costa Rica to Peru (Atwood, 1999; Whitten et al., 2007).

**Maxillaria spathulata** C. Schweinf.

Schweinfurth described *Maxillaria spathulata* in 1952 from a Peruvian collection by Julio C. Vargas-Calderón. Schweinfurth even acknowledged a close relationship with *M. tafallae*, but distinguished *M. spathulata* by its larger flowers and differently shaped lip. We view these differences as part of the natural variation of *O. pendulum*, and possibly as artifacts from
pressing, likely to happen in a flower bearing such a rigidly recurved labellum, which is almost impossible to flatten without any distortion.

Pabst referred *Maxillaria spathulata* to the synonymy of *M. loefgrenii* in 1972. Here, we place these two names in the synonymy of *O. pendulum* for the first time.

**Unpublished names**

In the 1960’s, A. H. Heller collected plants of *Ornithidium pendulum* in Nicaragua. Initially unaware of their identity, he intended to describe them as “*Ornithidium nicaraguensis*” and prepared an illustration and description (now in the archives at SEL). The prospective holotype (*Heller 8403* at F, but not the duplicate at SEL), was annotated as “*Ornithidium tafallae var. nicaraguensis* Heller.” Fortunately, these two names remained unpublished (the combination *O. nicaraguense* (Hamer & Garay) M. A. Blanco & Ojeda was coined for the species known until recently as *Maxillaria nicaraguensis* (Hamer & Garay) J. T. Atwood; Blanco et al., 2007). A few years after Heller’s death, Hamer (1983, 1990) annotated the specimens and published the illustration as *Maxillaria ramosa*.

**Confusion with Maxillaria ramosa Ruiz & Pav.**

The genus *Maxillaria* was established in 1794 by Ruiz and Pavón, and four years later they formally described 16 species in this genus, including *M. ramosa*. As in *Scaphyglottis*, the original characterization of the genus was vague and species descriptions were very generalized and therefore easily applicable to many other species currently known. Most of those original species of *Maxillaria* were eventually transferred to other genera. Only *M. prolifera, M. platypetala*, and *M. ramosa* remained within the genus until recently. For several years there was a heated debate on which of these should be regarded as the type of *Maxillaria* (Brieger and Hunt, 1969; Garay and Sweet, 1972; Ortiz, 1988; Senghas, 1993). After painstaking analyses, *Maxillaria platypetala* was finally chosen as the generic type (Garay, 1997; McIlmurray and Oakeley, 2001), a decision that has been widely accepted.

The type of *Maxillaria ramosa* was collected in the vicinity of Chinchao in Peru (Department Huánuco), and has the number 16 assigned to it. In the Delessert herbarium in Geneva there is an isotype of *Scaphyglottis tafallae* (= *Ornithidium pendulum*) with the unpublished name “*Orchys ramosa*,” the number 16 and the name “Pavón” written on the label. Garay (1967) examined this specimen and assumed that it was the type of *Maxillaria ramosa*—an apparently logical, but erroneous conclusion. The name *Maxillaria ramosa* was widely misapplied to *Ornithidium pendulum* from then on (and soon afterward to *O. elianae* Carnevali & M. A. Blanco as well; see under “*Maxillaria ramosa* auct., non Ruiz & Pavón,” at the end of the synonymy of *O. pendulum*, and in the usage synonymy of *O. elianae*, below). At one point, Garay and Sweet (1972) even designated *M. ramosa* as the generic type of *Maxillaria*, based on the confused type of *Scaphyglottis tafallae*.

Garay’s confusion was unearthed by McIlmurray and Oakeley (2001) when they found a painting prepared by Isidro Gálvez (one of the illustrators in the Ruiz and Pavón expedition to Peru) in the archives of the Real Jardín Botánico in Madrid (a photo of this painting was published by McIlmurray and Oakeley, 2001, 2004). The painting has the name *Maxillaria ramosa* on it, but depicts a plant clearly different from *Scaphyglottis tafallae*. McIlmurray and Oakeley (2001) wrongfully stated that the painting and the herbarium specimen corresponded to each other. This error was quickly pointed out by Atwood (2001) who, in a flawed attempt to stabilize the nomenclature, designated the herbarium specimen at Madrid as a lectotype of *M. ramosa* (following Garay’s misapplication of the name).

Soon afterwards, McIlmurray and Oakeley (2004) demonstrated that the original description of *Maxillaria ramosa* and Gálvez’s painting corresponded to each other, but not to the herbarium specimen in Madrid designated as a lectotype by Atwood (2001). Ruiz, Pavón, and Gálvez returned to Spain in 1788; some of their paid collectors, including Juan Tafalla, stayed in Peru and continued to send plants to Spain for Ruiz and Pavón’s *Flora Peruviana et Chilensis*, and for Tafalla’s own *Flora Huayaquilensis* (Estrella, 1991). It was Tafalla who collected the specimens labeled as “*Orchys ramosa*,” which Reichenbach f. later used to describe *Scaphyglottis tafallae* in his honor. That Tafalla made this collection (and not Ruiz or Pavón) is evident by the year written down on the speci-
men labels at G, MA, and W (1797, nine years after the return of Ruiz, Pavón, and Gálvez to Spain), and by the annotation “F. P.” (present in the duplicates at MA and G) that Tafalla made on the labels of the plants collected for Flora Peruviana from 1793 onward (Estrella, 1991). Furthermore, Chicoplaya (the locality written on the label) was never visited by Ruiz and Pavón (Ruiz, 1940, 1998; McIlmurray and Oakeley, 2004), but it was visited by Tafalla between 1797 and 1798 (Estrella, 1995: 54). It seems that both Ruiz and Tafalla, by an unfortunate coincidence, used the same specific epithet (“ramosa”) and the same number (16) for their collections of related but different species, both of which became types. Furthermore, Tafalla did not write his name on the labels but Pavón did, probably because it was collected for him. All these factors contributed to the identity confusion. Additional evidence for this argument is presented by McIlmurray and Oakeley (2004).

McIlmurray and Oakeley (2004) correctly concluded that Tafalla’s “Orchys ramosa” is conspecific with Scaphyglottis pendula and S. tafallae. They also suggested that the name Maxillaria ramosa corresponds to M. cassapensis (Rchb.f.) M. A. Blanco & Carnevali, a member of the Maxillaria graminifolia (Kunth) Rchb.f. suballiance sensu Atwood, 2003b), a conclusion we agree with. Therefore, Maxillaria ramosa is likely an older synonym of Maxillariella cassapensis (but see below). A fruiting specimen of M. cassapensis from the Ruiz and Pavón collections (annotated “Orchys, Ex Herb. de R & P, Lima”) and later incorporated in Hooker’s herbarium (now in the general collection at K), might represent type material of M. ramosa. Thus, Atwood’s (2001) lectotypification of M. ramosa must be rescinded. McIlmurray and Oakeley (2004: 35) claimed that they designated the painting of Gálvez as the lectotype of M. ramosa in their previous (2001) publication, but they did not comply with article 7.11 of the Code (to include the phrase “designated here” or an equivalent, a requirement since 1 January 2001) and thus their lectotypification is invalid.

In any case, McIlmurray and Oakeley (2004) conclusively demonstrated that Maxillaria ramosa and Ornithidium pendulum are heterotypic names that correspond to separate species. However, their paper has been overlooked by some taxonomists of neotropical Orchidaceae. Only Christenson (2002b; but not in the original English version, 2002a) used the name M. ramosa in its correct, clarified new sense, when he assigned it to Maxillaria section Ebulbes Pfitz. (in the M. graminifolia suballiance sensu Atwood, 2003b). Given the long history of misapplication of the name M. ramosa, however, a case can be made for its rejection (see articles 56 and 57 in McNeill et al., 2006; M. A. Blanco, in prep.), and we opted for not transferring the name to Maxillariella (Blanco et al., 2007).

Whitten et al. (2007) used the name Maxillaria pendula, and Blanco et al. (2007) used the name Ornithidium pendulum in the sense used here. Sitko et al. (2006) used the misapplied name Maxillaria ramosa for Ornithidium pendulum.

**TAXONOMIC TREATMENT OF Ornithidium pendulum and O. elianae**

**Ornithidium pendulum** (Poepp. & Endl.) Cogn., Fl. Bras. (Martius) 3(6): 92. 1904. Fig. 1–2.


FIGURE 1. *Ornithidium pendulum* (Poepp. & Endl.) Cogn. A, plant habit; B, flower, side view; C, dissected perianth; D, labellum and column attached to ovary, sepals and petals removed, side view; E, column, side (left) and ventral (right) views. Drawn by D. Bogarin from Karremans 448 (CR).
COLOMBIA or PANAMA). *Ex Hort.* Royal Gardens in Herrenhausen, Germany, *H. Wendland s.n.* (Holotype: W-Reich.-Orch. 40122).


"Ornithidium tafallae var. nicaraguensis" *Heller*, in sched. (*A. H. Heller 8403*, F).
Epiphytic or lithophytic herbs, to 2 m long, most commonly to 70 cm long or less; plants pendent or scandent, with stems branching at the bases of pseudobulbs. Roots cylindrical, 1 mm in diameter. Stems sympodial, always terminated by a pseudobulb. Rhizome to 3–4 mm diameter, first covered with thin, scarious, acute, green sheaths, eventually brownish or gray with age; branches divaricate, usually 2, produced from the axils of consecutive non-foliage bracts immediately behind the pseudobulb; the segments of rhizome between pseudobulbs made up of few, elongate internodes, the pseudobulbs 5–20 cm apart on the rhizome, occasionally groups of 2–3 pseudobulbs growing close together. Pseudobulbs 2.5 cm long, 1.5–5.0 cm wide, 0.7–1.5 cm thick, brownish to gray-green at the base, grading to silvery green at apex; plump and smooth when young, slightly wrinkled when old, apically 1-leaved, ellipsoid, ovoid to (rarely) suborbicular, basally clothed by several imbricate sheaths of which the (1–)2(–4) innermost bear foliar blades, these eventually caducous. Leaves and blades of sheaths bright green, subcoriaceous, smooth, fleshy, conduplicate, articulate, twisted 90 degrees at base so that all the leaves face to the same side; elliptic to oblong or linear-elliptic, the margins often suffused with purple and slightly revolute, the apex acute to shortly acuminate, oblique because one of the halves is conspicuously shorter than the other, keeled abaxially, 8–20 cm long, 2.4–5.0 cm wide, the innermost sheath blade larger than the apical leaf and the outermost smaller, the sheaths 2–5 cm long. Inflorescences numerous, 1-flowered, with thin peduncles, borne singly or several from the axils of the sheaths enveloping the pseudobulbs and from the bracts at any point along the rhizome, several flowers open simultaneously along any given rhizome segment; peduncle 1–2 cm long, cylindrical, basally with 1–3 thin, soft, brown bracts; ovary with pedicel 6–8 mm long; floral bracts tubular, acuminate. Flowers small and inconspicuous, to 1 cm long, usually resupinate, sepal and petals greenish-white, often suffused with pink, and sometimes deep gray-brown; lip white to ochre-yellow, frequently with purple spots, more rarely with pink tinges, the column greenish. Sepals 5.5–10.0 mm long, 1.7 mm wide, rectangular, oblong, acute, concave basally, flat to convex distally, the lateral sepals slightly oblique, somewhat longer and wider than dorsal sepal, basally produced into a small, obtuse mentum. Petals 5–9 mm long, 1.0–1.5 mm wide, linear-elliptic, oblong to oblong-oblanceolate to narrowly obovate oblanceolate, acute. Labellum 6 mm long, 3 mm wide, rectangular and narrow at the base, 3-lobed, the lateral lobes 4.0–6.0 mm long, 0.5–8.0 mm wide, rectangular, straight and parallel to the column in natural position, partially surrounding the column; the central (apical) lobe sharply to obscurely 4-lobulate, 3–2 mm long, 3.6–8.0 mm wide, the margin finely denticulate, apically emarginate, thickened and often verrucose in the central part, strongly reflexed in natural position; the callus to 4 mm long, rectangular and shorter than the lateral lobes, consisting of a transverse plate at the union of the lateral lobes with the central lobe. Column subcylindric, ventrally gibbous, basally produced into a short foot, to 4.7 mm long; anther cap cucullate, pale-brown; pollinia 4, in two unequal pairs attached to a short ligulate stipe and a tiny semilunar viscidium. Fruit an ovate, pendent, dehiscent capsule, 9–12 mm long, 7–8 mm wide, valves separating apically upon maturity.

Habitat and ecology: plants grow as hanging epiphytes or lithophytes and can become large, pendent mats. The species occurs at 400–1800 m in montane and lower montane, wet and cloud forests. The small green to yellowish flowers suggest that pollinators are flies or small bees, but no floral visitors have ever been documented.

Phenology: flowering occurs sporadically throughout the year.

Conservation status: a widespread species and common along the eastern tropical Andes. It is rare in other parts of its distribution, but this rarity appears to be natural, not anthropogenic. This species is not threatened.

Illustrations: detailed analytical drawings have been published under the names Maxillaria spatulata (Schweinfurth, 1945), Camaridium loefgrenii (Hoehne, 1953), Maxillaria ochracea (Dunsterville and Garay, 1976; Bennett and Christenson, 1993; Romero and Carnevali, 2000) and Maxillaria ramosa (Dodson and Gentry, 1978; Dodson and Dodson, 1980; Hamer, 1983, 1990; Senghas, 1993; Dodson, 2002). Some of these (e.g., Bennett and Christenson, 1993) depict the plant as erect, although it is normally pendent.
Photographs of *Ornithidium pendulum* appear in Senghas (1993, as *M. ramosa*), Miller and Warren (1994, 1996, as *M. loefgrenii*), and Fernández (2004, as *M. ochracea*).

**Distribution:** one of the most widely distributed species in the genus (as circumscribed by Whitten et al., 2007, and Blanco et al., 2007). In South America it is recorded from western Venezuela, Colombia, Ecuador, Peru, and southeastern Brazil; it is locally common in parts of Rio de Janeiro state in Brazil (Miller and Warren, 1994, 1996, as *Maxillaria loefgrenii*) and along the eastern Andes from Colombia to northern Peru, but it is rare and patchily distributed elsewhere. It appears to be absent in the Guiana Shield and most of the Amazonian lowlands.

In Venezuela, *Ornithidium pendulum* is only known in the Andean (western) states of Lara, Mérida, Táchira, Trujillo, and Zulia where it is local and rare. Brazilian populations (hitherto classified as *Maxillaria loefgrenii*) appear to be disjunct from those in the Andes, and are confined to the Atlantic coastal mountain range in the states of Espírito Santo, Rio de Janeiro, and São Paulo (possibly also in southern Bahia state), where they are also patchily distributed.

Hamer (1983) mentions this species (as *Maxillaria ramosa*) as being present in Bolivia, but he did not cite any specimens; his record is probably based on the closely related *Ornithidium sillarense* (Dodson & Vásquez) M. A. Blanco & Ojeda (see below).

We also present the first record of *Ornithidium pendulum* for Costa Rica (see specimens examined). In Central America, this species had been previously recorded (as *M. ramosa*) for Nicaragua (Hamer, 1983, 1990, 2001) and Guatemala (Dix and Dix, 2000).


Ornithidium pendulum is vegetatively indistinguishable from the Bolivian O. sillarense, and both species are obviously very closely related. The flowers are very similar, but the labellum of O. sillarense is distinct enough to warrant specific recognition: the midlobe is almost twice as long as the rest of the labellum (vs. subequal or smaller than the rest of the labellum in O. pendulum), is not reflexed, and has a different shape. We have not seen intermediate forms in terms of labellum structure. As far as we know, Ornithidium pendulum has not been collected in Bolivia. According to the protologue, the holotype of O. sillarense was deposited in MO. However, it is presently housed in Herbarium Vasquezianum in Bolivia (R. Vásquez, pers. comm., 2006). A previously unreported isotype of O. sillarense was recently found in SEL.

Both Dix and Dix (2000) and Govaerts et al. (2005) treated Maxillaria repens L. O. Williams (now Ornithidium repens (L. O. Williams) M. A. Blanco & Ojeda) as a synonym of O. pendulum (as M. ramosa). However, O. repens is a different species endemic to Panama, easily distinguished from O. pendulum by its more robust, ascending rhizomes devoid of pseudobulbs.

Herbarium specimens of Ornithidium pendulum have been commonly annotated as Maxillaria loefgrenii (those from Brazil), M. ochracea, or M. ramosa.


Species haec Ornithidio pendulo (Poepp. & Endl.) Cogn. similis, foliis angustioribus, labelli lobulo apicale oblongo concavo (vs. ovato vel ovato oblongo convexo recurvo) abhorret.

Epiphytic or rarely lithophytic herbs, to 1.5 m long, most commonly to 50 cm long or less; plants first suberect or sprawling to creeping,
**Figure 3.** *Ornithidium elianae* Carnevali & M. A. Blanco. **A,** plant habit; **B,** flower, front view; **C,** flower, side view; **D,** dissected perianth; **E,** labellum and column attached to ovary, sepals and petals removed, side view. Drawn by G. C. K. Dunsterville from Dunsterville 204 (voucher not found), from Guatopo (Estado Miranda, Venezuela). This illustration was published as *Maxillaria* “taphallae” Rchb.f. (sic.) in Dunsterville and Garay (1959), and as *M. ramosa* Ruiz & Pav. in Dunsterville and Garay (1976: 37; 1979) and Romero and Carnevali (2000).
eventually arching to pendent, usually growing on thick branches or tree boughs in cloud forests. *Roots* cylindrical, 1 mm in diameter. *Stems* sympodial, always terminated by a pseudobulb. *Rhizome* to 4 mm diameter, first covered with thin, scarios, eventually evanescent sheaths, becoming naked and brownish; branches divaricate, usually two, produced from the axils of consecutive non-foliar bracts immediately behind pseudobulb; the segments of rhizome between pseudobulbs made up of few, elongated internodes, the pseudobulbs 5–20 cm apart on the rhizome. *Pseudobulbs* 1.5–4.2 cm long, 1.4–2.5 cm wide, silvery-gray-green, grading to silvery-brown, smooth and slightly wrinkled, apically 1-leaved, ellipsoid, ovoid to (rarely) suborbicular, slightly laterally compressed, clothed by several imbricate sheaths of which the 1(–2) innermost bear foliar blades; leaves and sheath blades early caducous (mature pseudobulbs usually devoid of them). *Leaves* and the blades of the sheaths bright green, subcoriaceous, conduplicate, articulate, linear-elliptic, narrowly elliptic to narrowly oblong-elliptic, the margins slightly revolute, the apex acute to shortly acuminate, oblique due to the fact that one of the halves is conspicuously shorter than the other, keeled abaxially, 3.5–17.0 cm long, 0.5–1.6(–2.3) cm wide, the sheaths 2–3 cm long. *Inflorescences* 1-flowered, borne singly or several from the axils of the sheaths enveloping the developing or youngest pseudobulbs, up to 20 flowers produced successively per shoot over a long period, only 1–3(–4) flowers are open on any given shoot simultaneously; peduncle 10–15 mm long, cylindrical, basally with 1–2 thin, soft, brown bracts; ovary with pedicel 5.5–6.5 mm long, floral bracts ca. 3 mm long, tubular, acuminate. *Flowers* small and inconspicuous, resupinate, subcampanulate, perianth segments white or greenish-white, more rarely with pink tinges, the column greenish-yellow; the petals and sepals thin-membranous, almost translucent, with a heavily thickened midnerve dorsally which is slightly sulcate on the inner face. *Sepals* 4.5–6.0 mm long, 1.7–2.2 mm wide, oblong elliptic to lanceolate, obtuse to acute, basally concave, flat to convex distally, the lateral sepals slightly oblique, somewhat longer and wider than dorsal sepal, basally produced into a small, obtuse mentum. *Petals* 3.5–5.0 mm long, 1.2–1.7 mm wide, oblong to oblong-oblanceolate to narrowly obovate-oblanceolate, acute to obtuse. *Labellum* 4–7 mm long, 2.5–4.0 mm wide upon flattening, in general outline elliptic to obovate-elliptic from a subcuneate base; rigidly attached to the column foot, 3-lobed below middle, middle lobe 2.5–3.1 mm long, 2.2–2.9 mm wide, oblong subquadrate to almost suborbicular, smooth, apically emarginate to bilobed, the margins erect (thus the lobe deeply concave), the margin finely dentate to irregularly crenate; lateral lobes 1.0–1.5 mm long, ca. 0.7 mm wide, erect, porrect in natural position and enfolding the column, the free portions suborbicular to elliptic; the disk provided with a callus consisting of a transverse plate between the bases of the lateral lobes. *Column* subcylindric, relatively short and thick, basally produced into a short foot, 2.8–4.1 mm long; pollinia not seen. *Fruit* an ovate, pendent, dehiscent capsule, 9 mm long, 7 mm wide, valves separating apically upon maturity.

**Habitat and ecology:** locally common in many places of the Venezuelan Coastal Range at 600–1600 m, frequently in cloud forests. The plants grow as creeping epiphytes first, but eventually become huge, heavy mats and their long stems become arching and pendent. Plants are often found fallen on the forest floor after storms or severe rainfall, but are incapable of surviving in the deep shade of the cloud forest understory and eventually die (G. Carnevali, pers. obs.).

**Phenology:** data from herbarium specimens and from records published by Dunsterville and Dunsterville (1967; as *Maxillaria ramosa*) indicate that flowering occurs sporadically throughout the year.

**Conservation status:** common only in the coastal cordillera of northern Venezuela, but it is protected in several national parks in that area (Canaima, El Avila, Guatopo, Macarao, San Esteban, and Yurubi; G. Carnevali, pers. obs.). This species is not threatened.

**Illustrations:** first illustrated by Dunsterville and Garay (1959) as *Maxillaria “taphallae”* (sic.); this illustration is reproduced here (Fig. 3). After Garay’s (1967) unfortunate confusion, Dunsterville and Garay (1976: 37) changed the name to *Maxillaria ramosa*, and illustrated *O. pendulum* under its synonym *Maxillaria ochracea*. These confused determinations were perpetuated in *Orchids of Venezuela: An

**Eponymy:** named after Eliana Noguera, curator of Orchidaceae in the Venezuelan National Herbarium (VEN) who kindly provided us with material, data, and images of this novelty, O. pendulum, and other related species from Venezuela.

**Distribution:** known from northern Venezuela (where it is relatively common and widespread) and the Guiana Shield (in southern Venezuela, Guyana, Surinam, and French Guiana, where it is local and rare). In Venezuela, it occurs in the Sierra de San Luis, the Coastal Range (including Caracas; Dunsterville and Dunsterville, 1969; as Maxillaria ramosa), and from two collections in the Venezuelan Andes (where both O. elianae and O. pendulum are rare but potentially sympatric). There is an unconfirmed report of this species from Cerro Auyan tepui in the Venezuelan Guayana (Foldats, 1970; Carnevali and Ramírez, 2003; Funk et al., 2007). It is also known from a single collection in western Guyana, and is reported from French Guiana and Surinam (Cremers and Hoff, 1992; Boggan et al., 1997; Chiron and Bellone, 2005; Funk et al., 2007; all as M. ramosa, vouchers not seen by us); these reports are from areas adjacent to the known distribution of O. elianae and most likely represent this species instead of O. pendulum, which has not been collected in the Guiana Shield.

Ortiz’s illustration of “Maxillaria ramosa” (Ortiz, 1988, 1995) is a crude tracing of Dunsterville’s line drawing of O. elianae (Fig. 3). As far as we know, however, O. elianae does not occur in Colombia.


Ornithidium elianae is very similar to O. pendulum and O. sillarense but is distinguished by its more elongate pseudobulbs, and its thinner, narrower leaves and sheath blades, 0.5–1.6(–2.3) cm wide (vs. 2.2–4.5 cm wide) that are shed upon maturation of the pseudobulb (vs. thicker, relatively wider, and persistent in O. pendulum and O. sillarense). The flowers of O. elianae are produced a few at a time per growth (vs. O. pendulum and O. sillarense, that can produce several to many flowers simultaneously), and each flower has a straight, concave, and smooth labellum midlobe (vs. reflexed, convex, and verrucose in O. pendulum).

Ornithidium elianae could potentially be confused also with O. histrionicum Rchb.f. (synonyms: Maxillaria histrionica (Rchb.f.) L. O. Williams and M. aristeguietae Foldats), which also has long rhizome segments separating the narrowly ovate pseudobulbs, and small, greenish flowers (Dunsterville and Garay, 1976, 1979; Romero and Carnevali, 2000). However, the leaves of O. histrionicum are generally much shorter, narrower, and more rigid, the flowers are slightly larger and flesher, and the labellum midlobe is markedly convex and has a prominent, subapical mucron abaxially (vs. concave and emarginate in O. elianae). Furthermore, in O. histrionicum pseudobulbs tend to be produced only at or near the base of the plant, and they become increasingly smaller and absent
toward the distal part of the long branches. In contrast, *O. elianae* pseudobulbs of approximately equal size are always produced at the end of each sympodium. Both species occur sympatrically in some areas.

*Ornithidium lasallei* (Foldats) M. A. Blanco & Ojeda is very similar to *O. histrionicum* and thus also similar to *O. elianae*. However, the flowers are larger (sepals 20–27 mm long), and the more membranous labellum has proportionally less well-developed lateral lobes and the more mem branous labellum has proportionally less well-developed lateral lobes and a much longer central lobe than those of *O. pendulum* and *O. elianae*. *Ornithidium lasallei* appears to be restricted to the eastern part of the Guayana area in Venezuela and western Guyana at elevations of 700–1500 m (Carnevali and Ramírez, 2003), where it is probably sympatric with *O. elianae*, which is rare in this area. *Ornithidium lasallei* has thicker rhizomes than *O. elianae*, which also tend to creep over the phorophyte’s bark for most of its length and only eventually become pendulous, as opposed to *O. pendulum* and *O. elianae*, whose long rhizomes become pendent early in the development of the plant.

Herbarium specimens of *Ornithidium elianae* have commonly been misidentified as *Maxillaria tafaillae* or *M. ramosa*.

**LITERATURE CITED**


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