

## *Pseudiris speciosa*, a New Genus and Species of Trimezieae (Iridoideae, Iridaceae) from Chapada Diamantina, Brazil

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*Pseudiris speciosa*, a new genus and species of Trimezieae (Iridoideae, Iridaceae) are here described based on morphological studies. Up to now, *Pseudiris speciosa* is only known from the “campos rupestres” (savanna with rocky outcrops) of the Chapada Diamantina, Bahia, Brazil. It is characterized by a compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases, flowering stems cylindrical to elliptical in cross-section, with 3–4 bracts separated by long internodes, very showy flowers, lilac to blue, with inner and outer tepals unequal, and principally, style branches with two lilac to blue petaloid crests. Description, diagnosis, types, geographical distribution, illustrations, comparisons with closely related genera and an identification key to the genera that compose tribe Trimezieae are presented.

### Resumo

*Pseudiris speciosa*, novo gênero e espécie de Trimezieae (Iridoideae, Iridaceae) é aqui descrito baseado em estudos morfológicos. Provavelmente, *Pseudiris speciosa* é endêmica dos campos rupestres da Chapada Diamantina, Bahia, Brasil e caracteriza-se por apresentar rizomas eretos e compactos, semelhantes a cormos, envoltos por bases foliares persistentes fibrosas semelhantes a túnicas, escapos cilíndricos a elípticos em secção transversal, 3–4 brácteas separadas ao longo do escapo por longos entrenós, flores de lilás a azuis, vistosas, tépalas externas e internas distintas entre si e, principalmente, ramos do estilete com duas cristas petalóides lilases a azuis. São aqui apresentadas descrição, diagnose, tipos, distribuição geográfica, ilustrações, comparações com gêneros próximos de *Pseudiris* e uma chave de identificação dos gêneros que compõem Trimezieae.

Iridaceae Juss. are among the largest families of the order Asparagales, comprising about 65–75 genera and 2030 species, cosmopolitan in distribution (Goldblatt et al. 2008). The family has its greatest diversity and species richness in southern Africa, and more than half of the species belong to only seven genera: *Iris* L. (ca. 275), *Gladiolus* L. (ca. 262), *Moraea* Mill. (ca. 200), *Sisyrinchium* L. (ca. 140), *Romulea* Maratti (ca. 95), *Babiana* Ker Gawl. ex Sims (ca. 90), *Geissorhiza* Ker Gawl. (86) (Goldblatt et al. 1998, Goldblatt et al. 2008). In Brazil occur about 14 genera

and 60 species (Takeuchi et al. 2008). Iridaceae is now divided into seven subfamilies, two of them, Iridoideae Pax and Crocoideae G. T. Burnett, are subdivided in five tribes (Goldblatt et al. 2008).

Trimezieae Ravenna belongs to Iridoideae and the name was proposed by Ravenna (1981) to substitute for Mariceae Hutch. (Hutchinson 1959), which was based on the illegitimate generic name *Marica* Schreb., a homotypic synonym of *Cipura* Aubl. (Sprague 1928). Hutchinson (1959) characterized Mariceae based on floral features: by having style branches deeply divided, but never winged or petaloid (these characters would exclude *Pseudiris* of Trimezieae). When Ravenna (1981) corrected the tribal name, he also emphasized different diagnostic characters, characterizing Trimezieae based on stem and leaf features: by the presence of a creeping or erect rhizome without tunic-like persistent leaf bases or a compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases and linear, linear-ensiform, ensiform or cylindrical leaves (these characters would include *Pseudiris* in Trimezieae). Trimezieae included up to now three genera: *Neomarica* Sprague, *Trimezia* Salisb. ex Herb., and *Pseudotrimezia* Foster (Goldblatt et al. 2008, Chukr and Giulietti 2008). Molecular data indicate that Trimezieae, without *Pseudiris*, was retrieved as a strongly supported monophyletic group (Souza-Chies et al. 1997, Reeves et al. 2001, Goldblatt et al. 2008). The largest genus of Trimezieae is *Neomarica* with ca. 34 species (Gil et al. in prep.) which has a creeping or erect rhizome without persistent fibrous tunic-like leaf bases; flowering stems branched or simple, always flattened, always with a leaf-like bract at the first branch node and similar to the leaves, which are plane, ensiform and equitant; the flowers are showy with white, yellow and blue tepals, the internal tepals differ from the external ones by coloration, form and size; the styles have a cylindrical base and a tripartite apex, each style branch being divided into three filiform, ensiform, falcate or cuspidate crests, that are never petaloid, with a transversal stigmatic zone at the base of the crests; the fruit is a loculicidal capsule, erect or pending, with complete longitudinal dehiscence, often explosive, or opening only partially at the apex (Gil et al., in prep.). *Trimezia* with 18 species (Chukr and Giulietti 2008) shows the greatest morphologic diversity in the tribe, presenting a compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases; leaves plane or cylindrical, flat or plicate; flowering stems branched or simple, generally cylindrical, without bracts or with one to many bracts; flowers yellow or blue, the internal tepals different from the external ones; styles as in *Neomarica* with the presence of a transversal stigmatic zone at the base of the crests or lobes, however each style branch can be divided into two (rarely three) crests or lobes; fruit a loculicidal capsule, erect, opening partially starting from the apex (Chukr and Giulietti 2008; Gil et al., in prep.). *Pseudotrimezia* presents a rootstock similar to *Trimezia* and is characterized by presenting cylindrical leaves (flat leaves only in *P. planifolia* Ravenna [Chukr and Giulietti 2003]); flowering stems branched or simple, cylindrical without bracts or more frequently possessing two imbricate bracts; flowers yellow, with subequal tepals; styles cylindrical, shortly tripartite at the apex, style branches without crests or lobes and with an apical stigmatic zone; fruit a loculicidal capsule, erect, opening partially or completely, starting from the apex (Chukr and Giulietti 2003).

During the preparation of the taxonomic generic revisions of Trimezieae (Chukr and Giulietti 2003; Chukr and Giulietti 2008; Gil et al. in prep.), a quite peculiar Iridaceae, originated from Chapada Diamantina (Bahia state, Brazil), was found in the collections of the consulted herbaria. At a first glance, the specimen seemed to be a species of *Iris* L. (tribe Irideae B.M. Kittel). A notable distinction among the Old and New World tribes of Iridoideae, however, is the position of the nectar guides on the tepals. In Irideae (Old World) the nectar guides are disposed on the outer tepals, while in the Neotropical (New World) tribes such guides are disposed on the inner tepals (Goldblatt 1990). Together, the nectar guides disposed on the inner tepals, the compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases and the ensiform leaves justify the

inclusion of the new plant in the Neotropical tribe Trimezieae. However, various other characters observed in the collected specimen do not allow its inclusion in any of the three known genera of Trimezieae. A molecular phylogenetic analysis also indicates the distinctiveness. Therefore, a new genus and species are being proposed, based on morphologic studies, on cultivated plants and material deposited in the main national and international herbaria.

### GENUS AND SPECIES DESCRIPTION

#### *Pseudiris speciosa* Chukr and A. Gil, gen. et sp. nov.

Figure 1

**TYPE.**— BRAZIL. **Bahia:** Mucugê, projeto Sempre Viva. Campo rupestre. 26 Feb. 2001, *A.A. Ribeiro-Filho* 214 (holotype: HUEFS! isotype: UEC!).

Herbae perennes. Rhizoma 2.5–4 × 2.5–4 cm, globosa ad teretia compacta erecta cormiforma, foliis basibus persistentibus brunneis, fibrosis, glutinosis et tuniciformibus circumdati. Folia 33–129 × 0.7–2 cm, plana, lineari-ensiformia ad ensiformia, equitantia, unifacialia, subcoriacea, pallide viridia, nervibus parallelis prominentibus. Caules floriferi 49–146 × 0.4–1 cm, simplices vel 2–3-ramosi, erecti, recti ad sinuosi, teretes ad elliptici. Bractee 3–4, 6.5–44 × 0.4–1.6 cm, foliiformes, separatae per 3–4 internodiis 7–40 cm longis. Rami floriferi 7.5–33 × 0.2–0.4 cm, recti ad sinuosi, teretes vel elliptici, desinentes in duo rhipidia spatharum coriacea ut includentes rhipidium. Rhipidia spatharum 6–9 × 0.4–0.8 cm, ovaes ad oblongae, equitantes, imbricatae, apicibus acuminatis. Flores lilacini ad caerulei, fugaces, quoque flos subtentus per submembranaceae, ovaes ad oblongae, bractee. Tepala libera, disparia, unguiculata, ungue adscendente; limbi patentes vel reflexi, distales; tepala externa 3.5–6 × 1–2.4 cm, obovata vel oblonga, ungue vittis longitudinalibus pallide purpureis et trichomatibus capitatis, limbo apice emarginato; tepala interna 3–3.5 × 0.8–1 cm, obovata vel elliptica, ungue vittis longitudinalibus pallide purpureis, limbo vitta lutea inter duas fascias albas et numerosas pallide purpureas, trichomatibus capitatis, solum ad regionem medianam limbi unguiculati, apice acuminato. Filamenta 1.2–2 cm longa, alba, filiformia. Antherae 1–1.3 cm longae, caeruleae, stylis adpressis. Styli 3.2–3.7 cm longi, basi tereti, triangulares ad apicem, in tribus ramis libris terminati. Ramis stylis duabus petaloideis cristis et zona stigmatica transversali ad basin cristam. Cristae petaloideae 1–1.2 cm longae, lilacinae vel caeruleae, erectae. Capsulae 2.5–4 × 1–1.5 cm virides, obovatae vel oblongae, teretes ad trigonas, erectae, parte apicali dehiscentes, apice truncato. 2n=30.

Perennial herbs. Rhizome 2.5–4 × 2.5–4 cm, corm-like, compact, erect, globose to cylindrical, wrapped by persistent brown fibrous glutinous tunic-like leaf bases. Leaves 33–129 × 0.7–2 cm, plane, linear-ensiform to ensiform, equitant, unifacial, subcoriaceous, light green, with prominent parallel nerves on both sides. Flowering stems 49–146 × 0.4–1 cm, simple or 2–3-branched, erect, straight to sinuous, cylindrical to elliptical in cross-section, with 3–4 leaf-like bracts along the stem, 6.5–44 × 0.4–1.6 cm, separated by 3–4 internodes, 7–40 cm long. Flowering branches 7.5–33 × 0.2–0.4 cm, erect, straight to sinuous, cylindrical to elliptical in cross-section, ending in two leathery rhipidial spathes that enclose the rhipidia. Rhipidial spathes 6–9 × 0.4–0.8 cm, oval to oblong, imbricate, equitant, apices acuminate. Flowers showy, lilac to blue, fugacious (Fig. 2), each flower subtended by a submembranaceous, oval to oblong bract. Tepals free, unequal, clawed, claw ascending, limb spreading or reflexed distally; outer tepals 3.5–6 × 1–2.4 cm, obovate to oblong, claw with longitudinal light purple stripes and capitate trichomes, limb with emarginated apex; inner tepals 3–3.5 × 0.8–1 cm, obovate to elliptic, claw with longitudinal light purple stripes, limb

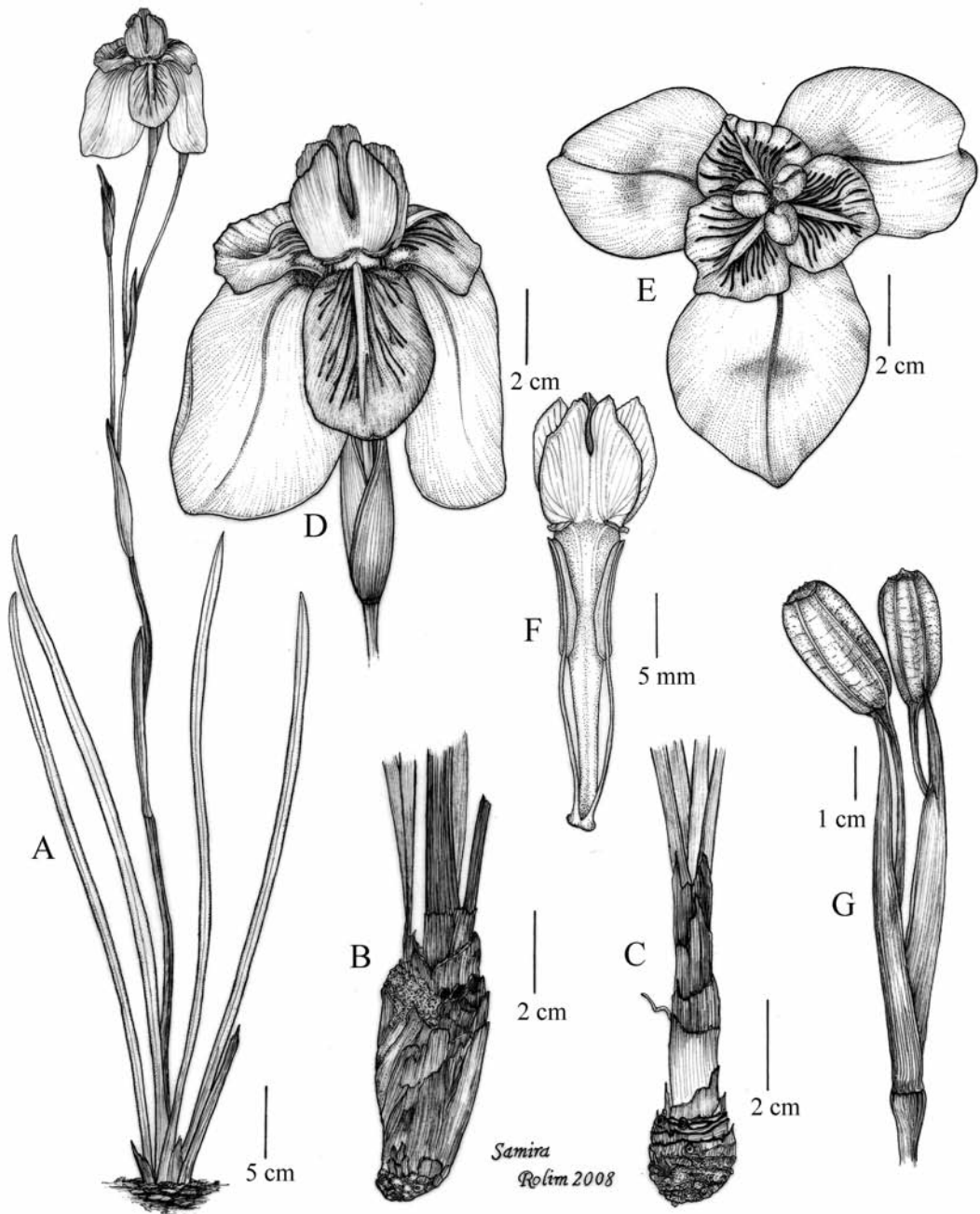


FIGURE 1. *Pseudiris speciosa* Chukr and Gil. A. habit; B. Underground system showing leaf bases wrapping the rhizome; C. Rhizome with leaf bases removed; D. flower in lateral view; E. flower seen from above; F. Style column showing style branches with petaloid crests and adpressed stamens; G. Rhipidial sphenes with two erect immature capsules. (A-G from D. Cardoso & A.A. Conceição 434 [HUEFS])

with a yellow stripe between two white stripes and many light purple stripes, capitate trichomes present on the claw-limb medium region only, with acuminate apex. Filaments 1.2–2 cm long, white, filiform. Anthers 1–1.3 cm long, blue, adpressed to the style. Styles 3.2–3.7 cm long, cylindrical at base, turning triangular at the apex, divided into 3 free branches. Style branches with 2 petaloid crests and a transversal stigmatic zone at the base of the crests. Petaloid crests 1–1.2 cm long, lilac to blue, erect. Capsules 2.5–4 × 1–1.5 cm, green, obovoid to oblong, cylindrical to trigonous, erect, with partial apical dehiscence, apex truncated.  $2n=30$ .

**PARATYPES.**— BRAZIL. **Bahia:** Lençóis, Serra da Chapadinha, Chapadinha, 12°27'S, 41°26'48"W, 21 Feb. 1995, *E. Melo, M. Sena & F. França* 1660 (ALCB!, K!, SPF!); Mucugê, ca. 10 Km N. of Mucugê, on the road to Andaraí, rocky plateau with horizontally bedded rocks, and shallow peaty soil in crevices, with wet flushes, 12°56'S, 41°20'W, 08 Feb. 1974, *R.M. Harley, S.A. Renvoize, C.M. Erskine, C.A. Brighton & R. Pinheiro* 16121 (K!); *Idem*, Parque das Sempre Vivas, 07 Jan. 2007, *N.S. Chukr* 799 (HUEFS!); *Idem*, Guiné, 31 Jan. 2000, *A. A. Conceição* 769 (SPF!); *Idem*, Gerais de Gobira, 13°0'S, 41°23'W, 19 Sep. 2002, *E.C. Smith* 257 (HUEFS!); *Idem*, Gobira, 13°04'38"S, 41°22'31"W, 04 Ago. 2004, *E.L. Borba, A.C.S. Pereira, P.L. Ribeiro & O.A. Oliveira* 1841 (HUEFS!); *Idem*, Parque Nacional da Chapada Diamantina, Serra do Esbarrancado, 12°43'51"S, 41°30'33"W, 16 Apr. 2005, *D. Cardoso & A. A. Conceição* 434 (HUEFS!); Road from Palmeiras to Capão, Km 12–15, 17 May 1992, *R.J.V. Alves, J. Becker & O. Roppa* 4201 (RB!).

**PHENOLOGY.**— Collected with flowers and fruits from January to September.

**DISTRIBUTION.**— Known only from the Chapada Diamantina on “campos rupestres” (savanna with rocky outcrops [Fig. 3]), in the municipalities of Lençóis, Mucugê and on the road from Palmeiras to Capão, Bahia state, Brazil.

**ETYMOLOGY.**— The generic name is based on the combination of the Greek word *pseudo* (a combination of the Greek words: *pseudēs* “false,” or *pseudōs* “falsehood,” both from *pseudein* “to deceive”) and the generic name *Iris*, with the intention of demonstrating the apparent similarity in flower morphology between *Pseudiris* and *Iris*. The epithet for this species is Latin for “showy, splendid”, in reference to its splendid flowers.

We are unable to place *Pseudiris speciosa* in any known genus of Trimezieae. From *Neomar-*



FIGURE 2. *Pseudiris speciosa* Chukr and Gil. Flower in lateral view, with a Chrysomelidae beetle on its inner tepal. (Photo by Abel Conceição.)

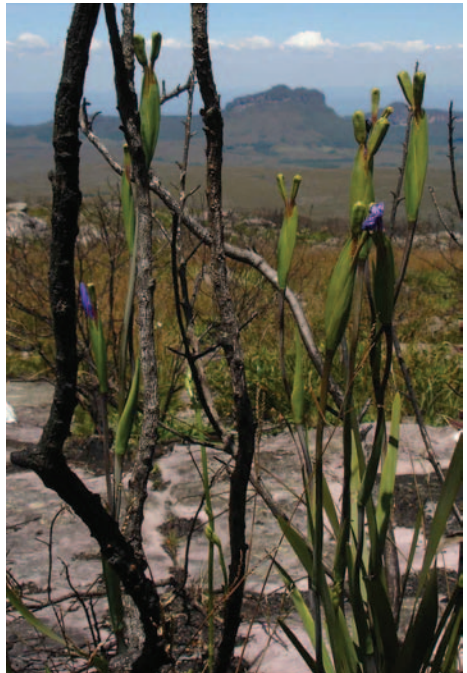


FIGURE 3. *Pseudiris speciosa* Chukr and Gil. Plant in its natural habitat (savanna with rocky outcrops). (Photo by Abel Conceição.)

*ica*, this new genus mainly differs in having a compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases; flowering stems cylindrical to elliptical in cross-section; 3–4 bracts separated by long internodes along the flowering stem; stigmatiferous branches with 2 broad petaloids crests. From *Trimezia*, *Pseudiris speciosa* mainly differs in having stigmatiferous branches with broad petaloids crests. From *Pseudotrimezia*, the new genus mainly differs in having plane leaves, linear-ensiform to ensiform and 3–4 bracts separated by long internodes along the flowering stem; flowers lilac to blue; inner and outer tepals unequal; stigmatiferous branches with 2 broad petaloid crests. It is noteworthy that the tepal ornamentation of *Pseudiris* is quite singular, in having longitudinal linear stripes (similar as in *Iris sibirica* L.) differing from the other genera of Trimezieae, which have punctated, deformed or speckled spots and transversal linear stripes as tepal ornamentation.

A preliminary phylogenetic study of the Trimezieae based on chloroplast DNA sequences (trnH-psbA and trnG; Gil et al., in prep, see Fig. 4) helped us to reject the possibility of including *Pseudiris speciosa* in one of the three genera of this tribe. Using parsimony as well Bayesian methods, all clades within the tribe were well supported with the exclusion of *Pseudiris speciosa*. The conspicuous petaloid *Iris*-like style crests and the characters mentioned above justify the recognition of a new genus for the tribe.

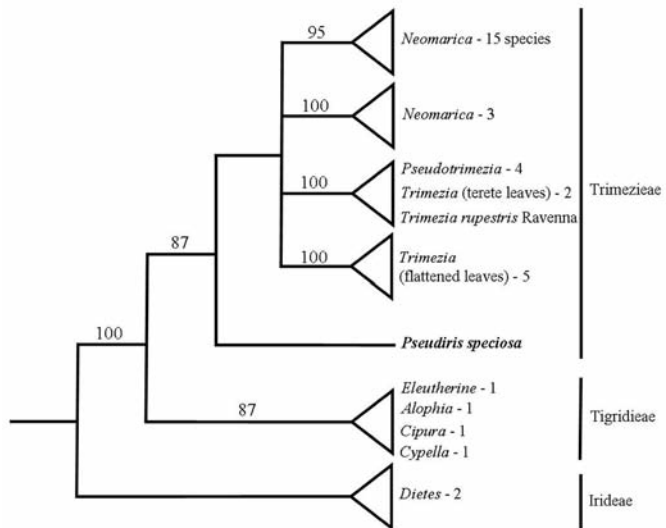


FIGURE 4. The majority-rule phylogenetic tree based on chloroplast DNA sequences (trnH-psbA and trnG) of the tribe Trimezieae, shown the major groups. Bayesian posterior probabilities (> 85%) are shown above the branches.

**Key to the Genera of Trimezieae**

- 1a. Creeping or erect rhizome without persistent fibrous tunic-like leaf bases; flowering stems always flattened, leaf-like. . . . . *Neomarica*
- 1b. Compact erect corm-like rhizome wrapped by persistent fibrous tunic-like leaf bases; flowering stems generally cylindrical to elliptical in cross-section. . . . . 2
- 2a. Inner and outer tepals subequal; style branches without crests or lobes, stigmatic zone apical. . . . . *Pseudotrimezia*
- 2b. Inner and outer tepals unequal, style branches with 2 or 3 crests or lobes, with a transversal stigmatic zone at the base of the stigmatic crests or lobes. . . . . 3
- 3a. Each style branch with two petaloid crests; tepals with longitudinal linear stripes. . *Pseudiris*
- 3b. Each style branch divided into two (rarely three) more or less cuspidate crests or lobes, that are never petaloid; tepals with deformed, punctated or speckled spots. . . . . *Trimezia*

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