

## The reinstatement of *Latace* Phil. (Amaryllidaceae, Allioideae)

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### Abstract

The monotypic genus *Latace* has been formerly treated under its related genera *Leucocoryne* or *Nothoscordum*. The genus *Zoellnerallium*, on the other hand, was established to include the atypical *Nothoscordum andinum* (= *Ornithogalum andinum*) and, later another similar species, namely *Nothoscordum serenense*, was also placed in this genus. In this contribution we corroborate that *Latace* and *Zoellnerallium* are names applied to the same taxon, and different from *Nothoscordum* and *Leucocoryne*. According to the priority rule, *Latace* is the name to be used instead of *Zoellnerallium*. Consequently, the name *Latace* is reinstated, while *Zoellnerallium* is relegated to the synonymy, and three new combinations are proposed: *Latace andina* f. *andina*, *Latace andina* f. *lutea* and *Latace serenense*. In addition, the chromosome identity of *Latace* (= *Zoellnerallium*) and morphological features that support *Latace* as an independent unit are herein highlighted, and presented together with keys to related genera and to species of *Latace*; lectotypes, neotypes, a distribution map, and illustrations are also included.

**Keywords:** *Leucocoryne*, *Leucocoryneae*, *Nothoscordum*, *Zoellnerallium*

### Introduction

The genus *Latace* Philippi (1889: 369) was based on the single species *Latace volkmanni* Philippi (1889: 369), from the Andes of Central Chile. The original description indicates the presence of three staminodes and, for this reason, several authors treated *Latace* under *Leucocoryne* Lindley (1829: 1293) (Engler 1900, Krause 1930, Traub 1963, 1967, Rahn 1998). Since then, *Latace* was unnoticed as an independent genus not only in floristic lists and catalogues (Marticorena & Quesada 1985, Guaglianone 1996, 2009, Zuloaga *et al.* 2008), but also in taxonomic, phylogenetic, ecological and phenetic works (Guaglianone 1973, Crosa 1975, 2004, Fay *et al.* 2006, Escobar *et al.* 2012, Jara-Arancio *et al.* 2014, Sassone *et al.* 2013, 2014). *Latace volkmanni* was based on a specimen collected by H. Volckmann in “Andes de Santa Rosa” (IV Region of Coquimbo, Chile) (Philippi 1889). Fuentes (1929) indicated that the herbarium SGO keep a sample of *Latace volkmanni* collected by Volckmann, between 1861–1862. Muñoz Pizarro (1960) and Muñoz-Schick (former curator at SGO, email written communication) consider SGO-46839 as the type specimen of *Latace volkmanni* (Fig. 1A).

On the other hand, *Zoellnerallium* Crosa (1975: 331) was established to include the atypical *Nothoscordum andinum* (Poeppig 1833: 9) Kunth ex Fuentes (1921: 238), as *Zoellnerallium andinum* (Poepp.) Crosa (1975: 331) owing the presence of purplish-red inner bulb cataphylls, curved long embryo, depressed epidermic cells of seeds, and short chromosomes (2.5–10 µm), mostly acrocentric (A) (vs. short rect embryo, non-depressed epidermal cells of seeds, and long metacentric chromosomes (M) in *Nothoscordum* Kunth (1843: 457), Crosa 1972). *Ornithogalum andinum* Poepp. (1833: 9), the basionym of *Zoellnerallium andinum*, and *Nothoscordum andinum*, was described based on a specimen collected in Chile “Cr. in Chili bor. glareosis ad Las cruzes, Andes de Santa Rosa” (Poeppig 1833). The original description, although very brief: “*O. escapo terete; pedunculis umbellatis erectis, valde inaequalibus; perianthii laciniis, apice revolutis, oblongis; filamentis linearibus*”, clearly indicates that the tepals’ apices are involute, which is probably one of the most distinctive features of this taxon.

Ravenna (2000) considered that the characters described by Crosa, were too weak to segregate *Nothoscordum andinum* as an independent genus. In the same work, Ravenna (2000: 15) placed *Latace*, together with *Zoellnerallium*,



**FIGURE 1.** A: Lectotype of *Latace volkmanni* Phil. (SGO 046839); B: Original color illustration of *Latace volkmanni* Phil. Gartenflora 38: Taf. 1302-I. C: Isotype of *Nothoscordum serenense* Ravenna (SGO 107989). D: Neotype of *Ornithogalum andinum* Poepp. (SI 044519).

in the synonymy of *Nothoscordum*. This author established that *Zoellnerallium andinum* and *Latace volkmanni* were conspecific, and stated that they should be considered as part of *Nothoscordum* subgenus *Latace*. Additionally, a second species, *Nothoscordum serenense* Ravenna (1973: 3), was also mentioned as a member of *Nothoscordum* subgenus

*Latace* (Ravenna 2000). Few years later, Crosa (2004) justified the recognition of *Zoellnerallium* on the basis of new karyological studies, and increased the number of species of the genus by the transfer of *Nothoscordum serenense* to *Zoellnerallium*, as *Zoellnerallium serenense* (Ravenna) Crosa (2004: 166).

The identity of *Zoellnerallium* as an independent genus was recently demonstrated by molecular phylogenies (e.g. Sassone & Giussani 2013, Jara-Arancio *et al.* 2014, Souza *et al.* 2015). Species of *Zoellnerallium* constitute a monophyletic group, sister to *Leucocoryne* (Souza *et al.* 2015). At present, *Zoellnerallium* is included in tribe Leucocoryneae (Amaryllidaceae, Allioideae) with other five American genera: *Beauverdia* Herter (1943: 505), *Ipheion* Rafinesque (1836:12), *Leucocoryne*, *Nothoscordum*, and *Tristagma* Poeppig (1833: 8) (Sassone *et al.* 2014).

In view of the contradictory positions on the boundary and rank of the mentioned taxa, the main objective of the present contribution was to evaluate the identity of *Latace* and *Zoellnerallium* and their distinction from *Nothoscordum* and *Leucocoryne*.

## Material and Methods

In order to understand the taxonomic history of the involved taxa, an exhaustive bibliography search and a complete study of protogues were conducted. Therefore morphological diagnostic characters, karyological and anatomical features, and geographical distribution were also considered.

Morphological studies were performed on herbarium specimens housed at BA, BAA, BAB, LP, MERL, SGO, and SI (acronyms follow Thiers 2015). Preserved flowers and fruits were rehydrated and examined using a Nikon SMZ 2800 stereomicroscope. Additionally, images of type specimens available at JSTOR (<http://plants.jstor.org/>) were studied using digital tools of magnification.

Type specimen of *Ornithogalum andinum* could not be located. Poeppig's herbarium specimens and types are stored in W, with duplicates in several other herbaria (Stafleu & Cowan 1986). Staff at B, BM, BR, C, CGE, FI, G, H, HAL, K, L, LE, LZ, M, MO, NY, OXF, P, PC, PRC, SI, SGO, US, and W, was consulted without any success (neither searching under *Nothoscordum* or *Zoellnerallium*).

To observe crystals from herbarium specimens, 1 cm<sup>2</sup> of epidermis was cut from the inner bulb cataphylls. The samples were rehydrated in warm soapy water and observations were done with Light Microscope Nikon Microphot-FXA, equipped with a photographic camera.

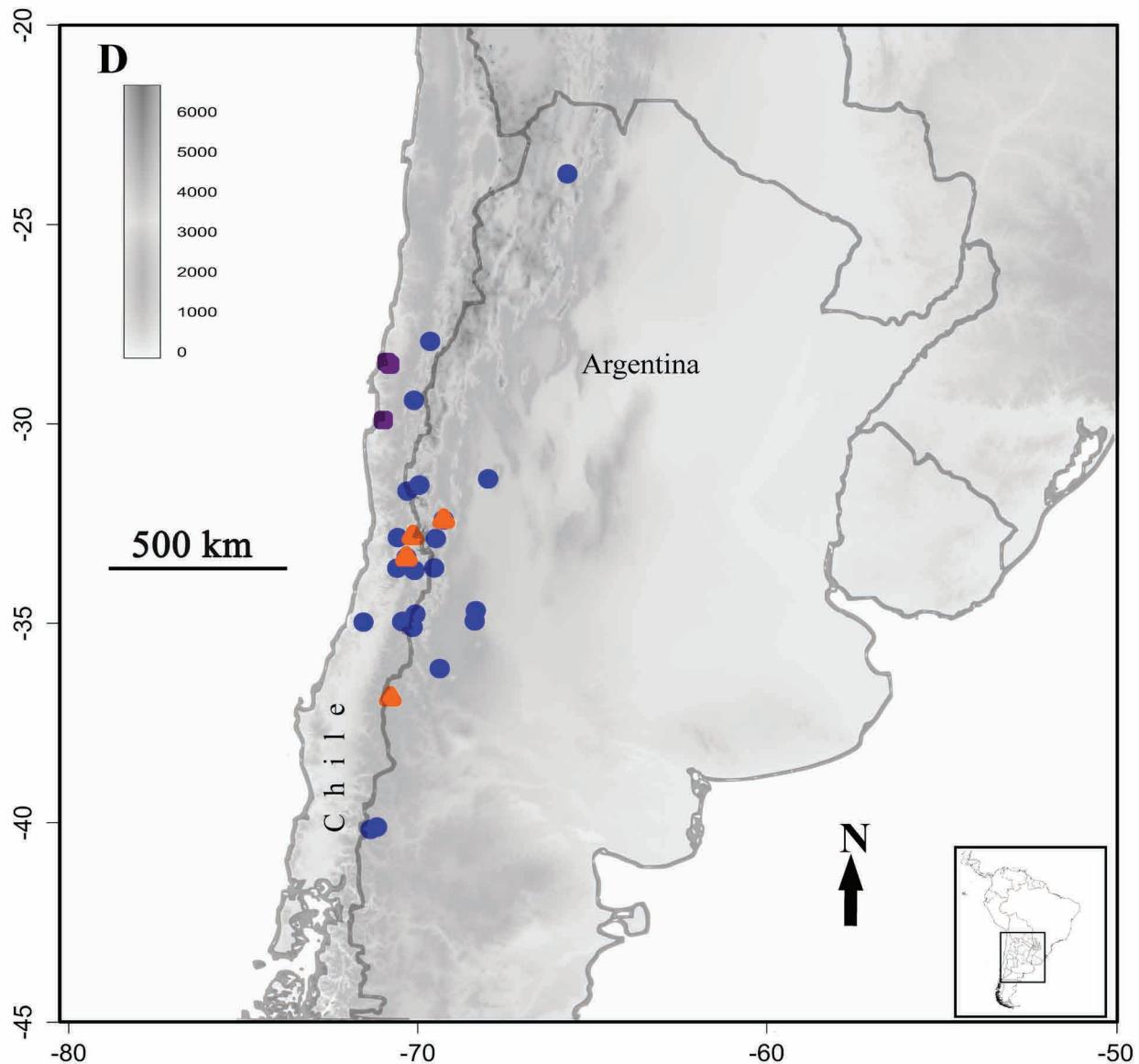
The distribution map was generated from coordinates reported on specimen labels or using georeferenced localities when coordinates were not reported on labels, employing the package 'raster' (Hijmans & van Etten 2015) available in the R statistical package 3.2.2 (R Development Core Team 2010).

## The identity and status of *Latace* and *Zoellnerallium*

After conducting the study of protogues and types, *Latace volkmanni* and *Zoellnerallium andinum* are undoubtedly names applied to the same natural unit. Consequently, these names are considered as synonyms. Since *Latace volkmanni* and *Zoellnerallium andinum* are the type species of their respective genera, both *Latace* (1889) and *Zoellnerallium* (1975) are also considered synonyms. Hence, according to Art. 11.4 of ICN, McNeill *et al.* (2012), *Latace* is the name to be used instead of *Zoellnerallium*.

The independence of *Latace* (= *Zoellnerallium*) as a genus is undoubtedly corroborated by different kinds of data (Table 1). Regarding morphological features, *Latace* (= *Zoellnerallium*) can be easily differentiated from *Nothoscordum* by the presence of purplish-red inner bulb cataphylls with several calcium oxalate crystals (styloids, Fig. 2C), involute tepals' apices and style notably exerted (Fig. 2A), as it was previously proposed by Crosa (1975, 2004). The absence of staminodes was also corroborated separating it from the close genus *Leucocoryne* (3–6 fertile stamen + 3–6 staminodes vs. 6 fertile stamen + 0 staminodes).

As to karyological features, the chromosomes complement ( $2n = 24$ ,  $x = 12$ , 4M+8A, Crosa 2004) shows unique characteristics within tribe Leucocoryneae. The relation of the quantity of metacentric (M) and acrocentric (A) chromosomes and the size of chromosomes cannot be compared with any other genus of tribe Leucocoryneae (Crosa 2004, Souza *et al.* 2015, Table 1).



**FIGURE 2.** A: *Latace andina* (Poepp.) Sassone f. *andina* (photograph by F. O. Zuloaga). B: *Latace serenense* (Ravenna) Sassone (<http://www.chileflora.com>, photograph by Belov, M.). C: Calcium oxalate crystals deposited in the bulb cataphylls of *Latace serenense*. Bar = 40 µm. D: Distribution area of *Latace andina* f. *andina* (blue circle), *L. andina* f. *lutea* (Ravenna) Sassone (orange triangle), and *Latace serenense* (purple square).

**TABLE 1.** Differences between *Latace*, *Leucocoryne*, and *Nothoscordum*.

Characters	<i>Latace</i>	<i>Leucocoryne</i>	<i>Nothoscordum</i>
Presence of red-purple inner bulb cataphylls	Yes	No	No
Presence of abundance of crystals in the bulb	Yes	No	No
Presence of staminodes	No	Yes	No
Tepal	Cucullate or tepal apices involute	Non cucullate nor tepal apices involute	Non cucullate nor tepal apices involute
Basic chromosome number	$x = 12$ (Souza <i>et al.</i> 2015)	$x = 5$ (Crosa 1988)	$x = 4, 5$ (Crosa 1972, 2004, Souza <i>et al.</i> 2009)
Karyotype formula	$4M + 8A$ (Souza <i>et al.</i> 2015)	$3M + 2A$ or $4M + 1A$ (Crosa 1988, Souza <i>et al.</i> 2015)	$4M$ or $3M + 2A$ (Crosa 1972, 2004 (Souza <i>et al.</i> 2009))
Chromosome number	$2n = 24$ (Crosa 2004)	$2n = 10, 18, 19$ (Crosa 1988, Jara-Arancio <i>et al.</i> 2012, Souza <i>et al.</i> 2015)	$2n = 8, 10, 16, 18, 24, 26, 32$ (Crosa 2004)
Chromosome size range ( $\mu\text{m}$ )	2.5–14 (Crosa 2004)	9–22 (Crosa 1988)	12–24 (Crosa 1975)
Geographical distribution	Chile and Argentina	Chile	North and South America

The distinctiveness of *Latace* is also supported by recent molecular data. While studying the phylogenetic relationships among species of *Leucocoryne* (Jara-Arancio *et al.* 2014, Souza *et al.* 2015) or testing the monophyly of tribe Leucocoryneae (Sassone & Giussani 2013), based on a nuclear marker (ITS region), plastidial markers (*matK* and *ndhF*) and combined data (ITS +plastidial markers), these authors corroborated the monophyly and recognized *Latace* (under *Zoellnerallium*) as an independent lineage, which can clearly be distinguished from *Nothoscordum* and *Leucocoryne*.

## Taxonomic treatment

*Latace*, as here circumscribed, is a small genus of Amaryllidaceae, subfamily Allioideae, tribe Leucocoryneae, which comprises two species from South America.

## Identification key to genera

1. Fertile stamens 3 (rarely 6), and staminodes 3 (rarely 6). Chile ..... *Leucocoryne*
- Fertile stamens 6 ..... 2
2. Inner bulb cataphylls white. Tepals not cucullate, tepal apices not involute after anthesis. From North America to South America. ..... *Nothoscordum*
- Inner bulb cataphylls red-purple. Tepals cucullate or tepal apices involute after anthesis. Argentina and Chile ..... *Latace*

***Latace* Philippi (1889: 369).** Type:—*Latace volkmanni* Phil. [= *Latace andina* (Poepp.) Sassone].

≡ *Leucocoryne* Lindl. sect. *Latace* (Phil.) Engler (1900: 10) ≡ *Leucocoryne* Lindl. sect. *Latace* (Phil.) Krause (1930: 325) comb. superfl.  
≡ *Leucocoryne* Lindl. subgen. *Latace* (Phil.) Traub (1963: 35).

= *Zoellnerallium* Crosa (1975: 331). Type:—*Zoellnerallium andinum* (Poepp.) Crosa [= *Ornithogalum andinum* Poepp.].

= *Nothoscordum* Kunth subgen. *Enoscordum* Ravenna (1978: 142). Type:—*Nothoscordum serenense* Ravenna.

**Description** (emended here by Guaglianone & Sassone):—Perennial herbs, 15–45 cm high. Roots fibrous, white. Bulb indeterminate, tunicate, simple or prolific, with numerous collateral bulbils, without conspicuous alliaceous smell. Outer cataphylls cartaceous, light-brown, the next ones papery, 2 grey, 1–2 brown, and 5–10 purplish-red, with several calcium oxalate crystals (styloids, Fig. 2C). Central cataphylls fleshy, with starch-like reserve substances in the inner sheaths: starch grains simple and semi-compound. Leaves few, eligulate, linear, green, glabrous; leaf sheaths forming a purple subterranean neck. Scapes 1–2, lateral, subcylindrical, glabrous, reddish at the base. Inflorescences with 3–12(–15) flowers arranged in an umbellate cyme. Spathe formed by 2 bracts fused at the base, cylindrical, membranous-papery, plurinerved; pedicels cylindrical, glabrous. Flowers bisexual, hypogynous, trimerous, actinomorphic, white or

yellowish. Perigone persistent, tepals 6 disposed in two series; tepals lanceolate with apices slightly involute after anthesis or lanceolate-elliptical and cucullate. Staminal filaments free, awl-shaped; anthers linear, greenish-yellow, dorsifixed. Ovary sessile, oblong, 3 carpellate, septal nectaries present, ovules arranged in 2 rows, style subtrigonous, style notably exerted. Capsule globose, pluri-seeded. Seeds polyhedral; tegument black, slightly wrinkled. Embryo as long as the endosperm, slightly curved. Chromosome number  $x = 12$ ,  $2n = 24$  (Crosa 1975, 2004, Souza *et al.* 2015).

*Latace* includes two species distributed in Argentina (Jujuy, Mendoza, Neuquén, and San Juan), and Chile (Regions III, IV, V, VI, VII, X, and Metropolitana). These species inhabit sandy hills, scattered places and/or arid soils; *Latace andina* is commonly found in mountain areas, meanwhile *Latace serenense* grows at sea level places (Fig. 2D).

### Identification key to species of *Latace*

1. Tepals lanceolate, 8.2 mm × 2–3 mm, apices involute when mature. Argentina and Chile ..... *L. andina*
- Tepals lanceolate-elliptical, cucullate, 8–10 mm × 4 mm, apices not involute. Chile ..... *L. serenense*

#### 1. *Latace andina* (Poepp.) Sassone *comb. nov.*

Bas. *Ornithogalum andinum* Poeppig (1833: 9) ≡ *Nothoscordum andinum* (Poepp.) Kunth ex Fuentes (1921: 238) ≡ *Zoellnerallium andinum* (Poepp.) Crosa (1975: 332). Type (neotype, designated here):—CHILE. [IV Región de Coquimbo] Elqui, Baños del Toro, December 1923, E. Werdermann 199 (SI 044519!, Fig. 1D).

= *Allium poeppigii* Kunth (1843: 456) ≡ *Nothoscordum poeppigii* Fuentes (1921: 237). Type:—“Chile borealis”, not seen, synonymy proposed by Guaglianone (1973).

= *Nothoscordum strictum* Gay (1853: 114). Type (lectotype designated by Guaglianone 1975: 35):—CHILE. Prov. Coquimbo, Los Patos, 3380 m, Jan 1837, C. Gay 441 (Pl., isolectotype SGO 46830, digital image SGO 00001089!).

= *Latace volkmanni* Philippi (1889: 369) ≡ *Leucocoryne volkmannii* (Phil.) Engler (1900: 10) ≡ *Leucocoryne volkmannii* (Phil.) Engl. ex Traub (1963: 35) comb. superfl. Type (lectotype designated by Muñoz Pizarro (1960: 36)):—CHILE. Coquimbo. Andes de Doña Rosa, 1861–62, H. Volckmann s.n. (SGO 046839!, “Andes de Doña Ana” in label). Fig. 1A. Note:—Flowers in the type specimen of *Latace volkmanni* do not match the original description and illustration, as previously indicated by Ravenna (2000). The type material presents flowers with 6 stamens and tepals are fused only at the base, while the description indicates the presence of 3 fertile stamens + 3 staminodes, and tepals fused in a tube of half their length. Due to the fact that the characters described in the protologue are generally used to distinguish species of *Leucocoryne*, the original description linked *Latace* with this genus. Additionally, Ravenna suggested that the color figure that follows the description (Fig. 1B) is a “bad reconstruction from dry material, tepals appear to be more fused as they actually are, and the lack of anthers in one of the stamen verticilles, resulted from poorness of the specimen”. On the other hand, the illustration of the plant habit seems to be based on SGO’s specimen (SGO 046839): the bulb presents purplish-red inner bulb cataphylls, the inflorescence is composed by 7 flowers, tepals’ apices are slightly involute, and the style is notably exerted.

= *Nothoscordum brevispathum* Philippi (1896: 268) ≡ *Nothoscordum sellowianum* Kunth var. *brevispathum* (Phil.) Fuentes (1921: 240). Type (lectotype designated by Guaglianone 1973: 35):—CHILE. Las Mollacas, Cord. Illapel, Jan 1888, Z. Vergara s.n. (SGO 46826!).

**Description:**—Plants of 15–27(–40) cm high. Bulb subglobose, 13–22(–30) mm diameter, prolific. Neck (1–)1.5–4 cm long.; leaf blades 6–20 cm long. Scape 11–24(–35) cm long. Inflorescences with 4–11(–15) flowers, formed by 2–3 contracted cymes, each composed by 2–5 flowers, sometimes with atrophied flowers at the base of the inflorescence. Bracts 8–10(–15) mm long; pedicels 5–45(–85) mm long. Flowers white or yellowish with reddish lines; tepals lanceolate, 8.2–8.6 mm × (1.8–)2.5–3 mm, after anthesis the apex of the tepals rolled inwards, and the ovary is exposed. Staminal filaments yellow, 4 mm × 0.9 mm; anthers 2–3 mm long. Ovary 2.1–2.7 mm long.; ovules 5–8(–14) per locule; style 5–6 mm long., exerted, stigma 3-lobed, papillose, persistent.

**Note:**—The type specimen of *Ornithogalum andinum* is missing, hence we decided to designate a neotype, as it is recommended by Art.9.7 of the ICN, McNeill *et al.* (2012). In order to choose the specimen, we followed the protologue and the concept of the name used by former authors (Fuentes 1921, Guaglianone 1973, 2009, Crosa 1975, 2004).

## Identification key to forms of *Latace andina*

1. Perigone dingy greenish-white ..... f. *andina*  
- Perigone opaque yellowish ..... f. *lutea*

### 1a. f. *andina* (Fig. 3A)

**Habitat and Distribution:**—Chile (Regions Metropolitana, IV, V, VI, VII, and X) and Argentina (Jujuy, Mendoza, Neuquén, and San Juan). This taxon inhabits arid soils of montane areas, between 1500 and 3500 m elevation (Fig. 2D).

**Phenology:**—Flowering and fruiting from December to March.

**Specimens examined:**—ARGENTINA. **Jujuy:** Dpto. Tumbaya: entre Tumbaya y Purmamarca, s.d., *B. Ruthsatz* 422/18 (SI!). **Mendoza:** 1903, *L. Garola* s.n. (SI 35295!); Dpto. Las Heras: Uspallata, September 1913, *L. Hauman-Merck* 77 (SI!); Puente del Inca, Arroyo Cruz de Caña, 20 December 1979, *M. Wingenroth* 157 (SI!); haute Cordillere de Mendoza, November 1913, *L. Hauman* 65 (BA 16681!); Dpto. Luján de Cuyo: Las Cuevas, ladera S expuesta al N, 19 January 1985, *J. H. Hunziker* 11213 (SI!); Dpto. Malargüe: Ruta Provincial 222, camino a Valle Encantado, 14 January 2003, *A.A. Cocucci* 2295 (CORD, SI!); Vega del Azufre, 15 January 1941, *A. Castellanos* s.n. (BA 36641!); Valle de Las Leñas, 18 December 1973, *G. Sosa* s.n. (SI 35269!); *ibidem*, 15 February 1973, *G. Sosa* s.n. (SI 26718!); *ibidem*, 7 December 1971, *s. coll.* s.n. (SI 158984!); Vega del Azufre, 15 January 1941, *A. Castellanos* 14052 (BA!, SI!); Dpto. San Rafael: Hotel Termas del Sosneado, 22 November 2010, *F.O. Zuloaga* 12378 (SI!); Sierra Pintada. Mina de Uranio “Braulie”, 17 February 1973, *H.A. Lagiglia* 2315 (SI!); Mina San Martín, 28 November 1944, *A.A. Ruiz Leal* 9705 (MERL!); Los Reyunos, quebrada a 2 km del Puesto Malal, 19 November 1978, *E.D. Huajardo* s.n. (SI 35267!); Sierra del Nevado, arroyo Agua del Guacho, 8 December 1973, *O. Boelcke* 15758 (BAA!, BAB!, MEN!, SI!); Dpto. Tunuyán: Real de Contretas, 26 December 1933, *A.A. Ruiz Leal* 1995 (MERL!). **Neuquén:** Dpto. Huiliches: Parque Nacional Lanín, Quila-Quina, 23 January 1962, *Lahitte* 374 (BA 5444!); Pucará, 8 February 1962, *Lahitte* s.n. (BA 5443!). **San Juan:** Dpto. Calingasta: Erizos, Río Santa Cruz, December 1980, *Maqueda* 5920 (SI!); *ibidem*, 13 December 1976, *Luti* 5709 (CORD!, SI!); *ibidem*, *R. Kiesling* 8555 (SI!); Pachón, December 1980, *Gómez* 5942 (SI!); Oeste de Barreal, de Casa Amarilla a Casa Naranja, 9 February 1977, *R. Kiesling* 1402 (SI!); Dpto. Angaco: Sierra Pie de Palo, *R. Kiesling* 4761 (SI!); camino al Mogote de los Corralitos, 23 November 1984, *R. Kiesling* 4813 (SI!); *ibidem*, 6 February 2000, *R. Kiesling* 9371a (SI!). CHILE. **Región Metropolitana:** Potrero Grande de los Condes, December 1933, *K. Grandjot* s.n. (SGO 46820!); Santiago ad argentifodinam “Las Arañas”, Cordillera de Santiago, November 1861, *R.A. Philippi* s.n. (SGO 46832!); *ibidem*, 7 March 1899, *C.F. Reiche* s.n. (SGO 46831!); Cajón del Yeso, Termas El Plomo, sendero hacia Paso Piuquenes, 18 January 1995, *M. Muñoz* S. 3511 (SGO N° 145655!); *ibidem*, *M. Muñoz* S. 3532 (SGO142229!); Farellones, camino a Valle Nevada, 9 January, 1993, *M. Muñoz* S. 3207 (SGO 123391!). **V Región de Valparaíso:** Aconcagua, Los Matines, 31 October 1971, *O. Zöllner* 5724 (SGO!); Juncal, 13 October 1971, *K. Beckett* 4092 (SGO!); **VI Región de O’Higgins:** Colchagua. San Fernando, Baños del Flaco, 14 December 1937, *R.A. Pérez-Moreau* s.n. (BA-23105!); 12 December 1937, *R.A. Pérez-Moreau* s.n. (BA 23106!). **X Región de Los Lagos:** Valdivia, Lago Maihue, 18 December 1944, *O. Boelcke* 257 (SI!).

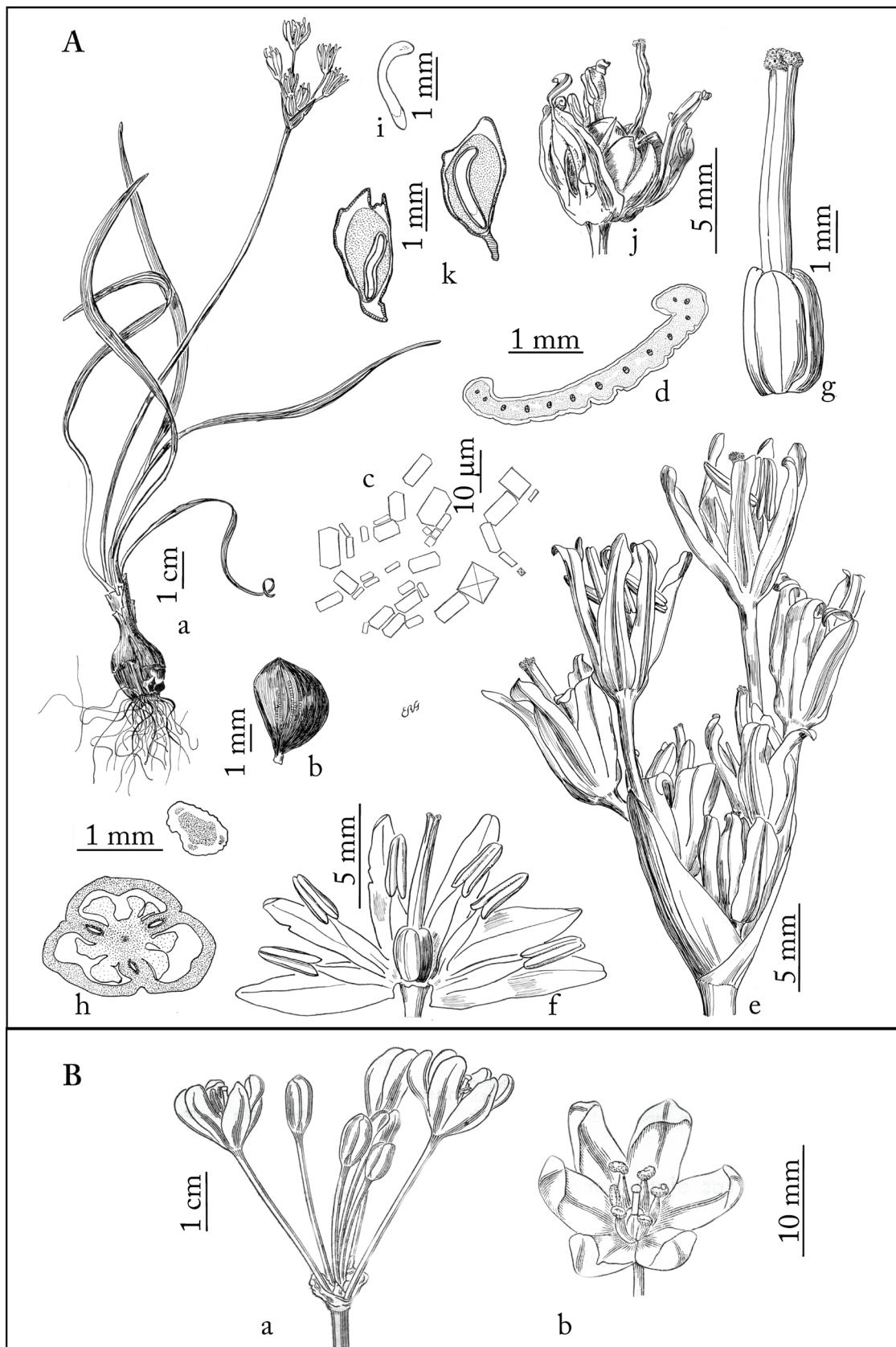
### 1b. f. *lutea* (Ravenna) Sassone *comb. nov.*

Bas.: *Nothoscordum andinum* (Poepp.) Kunth ex Fuentes f. *luteum* Ravenna (2000: 17). Type:—CHILE. Prov. Los Andes. Prope ripas Laguna del Inca, ad Portillo, October 1971, *P. F. Ravenna & M. Mahu* 1800 (holotype SGO!, isotype Herb. Ravenna).

**Habitat and Distribution:**—Chile (Regions V and Metropolitana) around Laguna del Inca (Los Andes, Valparaíso) and scattered places in the Andes above Santiago, in Argentina this form was found in the provinces of Mendoza and Neuquén. *Latace andina* f. *lutea* habits between 1500 and 3000 m elevation (Fig. 2D).

**Phenology:**—Flowering and fruiting from October to February.

**Specimens examined:**—ARGENTINA. **Mendoza:** Dpto. Las Heras: Puente del Inca, 17 December 1930, *D.O. King* 355 (BAB!). **Nuequén:** Dpto. Minas: Ruta Provincial 43, 10 km al noroeste de Aguas Calientes, Las Olletas, 4 December 2002, *E. R. Guaglianone* 3244 (SI!). CHILE. **Región Metropolitana:** Farellones, curva 34, 14 November 1978, *C. Villagrán* 422 (SGO!). **V Región de Valparaíso:** Aconcagua, about 3 km South West of Caracoles along road from Portillos, 1951, *P. C. Hutchison* 154 (SGO!, paratype); Portillo, next to foot path on W side of Laguna del Inca, 2 December 1995, *K. Gengler* 173 (SGO 136945!).



**FIGURE 3.** A: Line art illustration of *Latace andina* (Poep.) Sassone (as *Nothoscordum andinum*). Reprinted with permission from Darwiniana 18: 32. Fig. 1-2. a. General aspect of the plant. b. Bulbil. c. Calcium oxalate crystals deposited in the bulb cataphylls. d. Transverse section of leaf' apex. e. Detail of the inflorescence. f. Open flower. g. Gynoecium. h. Transverse section of the ovary. i. Transverse section of the style. j. Capsule. k. Longitudinal section of the seed. B: Original line art illustration of *Latace serenense* (Ravenna) Sassone (as *Nothoscordum serenense* Ravenna). Reprinted with permission from Not. Mens. Mus. Nac. Hist. Nat. 200: 5. Fig.1a-b. a. Detail of the inflorescence. b. Open flower.

## 2. *Latace serenense* (Ravenna) Sassone, *comb. nov.*

Bas.: *Nothoscordum serenense* Ravenna (1973: 200) ≡ *Zoellnerallium serenense* (Ravenna) Crosa (2004: 166). Type:—CHILE. In collibus arenosis prope Serenam prov. Coquimbo Chiliae, September 1971, P.F. Ravenna 2003 (holotype Herb. Ravenna; isotype SGO 107989!) Fig. 1C; 4B.

**Description:**—Plants of 30–45 cm high. Bulb ovate, 15–20 mm diameter, prolific. Neck 3.5–6 cm long.; leaf blades 9–21 cm long. Scape 22–33 cm long. Inflorescences with 3–12 flowers. Bracts 5–10 mm long; pedicels 22–35 mm long. Flowers white or yellowish, with greenish lines, tepals cucullate, 8–10 mm × 4 mm. Staminal filaments yellow 4.5–5.9 mm × 1 mm; anthers 1.3–1.4 mm × 0.5–1 mm. Ovary 2.2–2.5 mm long.; ovules 8–13 per locule; style 4–7 mm long., exerted, stigma 3-lobed, papillose, persistent.

**Habitat and Distribution:**—Chile (Regions III and IV). This species is present in sandy hills, frequently growing with *Leucocoryne coquimbensis* F.Phil., *Sisyrinchium graminifolium* Lindl., *Conanthera campanulata* Lindl., *Rhodophiala bagnoldii* Traub. and/or *Alstroemeria recumbens* Herb. (Ravenna 1973). Fig. 2D.

**Conservation status:**—According to Ravenna *et al.* (1998) *Latace serenense* is endangered, being necessary its protection and conservation.

**Phenology:**—Flowering and fruiting from September to November.

**Specimens examined:**—CHILE. III Región de Atacama: Huasco, 20–30 km al S. de Freirina. Camino a Quebradita 300–500 m, 9 September 1949, W. Biese 2697 (SGO 104255!); Huasco a Tres Playitas, primera ladera pasado el puente, 5 September 2000, M. Muñoz S. 4088 (SGO 146644!).

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