Wandering throughout South America: Taxonomic revision of Tradescantia subg. Austrotradescantia (D.R.Hunt) M.Pell. (Commelinaceae)

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Abstract
I present the first taxonomic revision for T. subg. Austrotradescantia, based on extensive field, cultivation and herbaria studies. I accept 13 species, three of them (i.e. T. atlantica, T. hertweckii and T. tucumanensis) being described as new in the present study. I provide an identification key to the species, distribution maps, descriptions, comments, conservation assessments and illustrations for all species. The troublesome weed T. fluminensis has its specific limits clarified and its native range is presented so it can serve as a basis to better understanding its ecological requirements and to help control it throughout its invasive range. Furthermore, I highlight that T. mundula, a commonly neglected species closely related to T. fluminensis, might also represent a troublesome weed. Tradescantia mundula has been widely introduced in cultivation under the name T. albiflora and seems to have also escaped from cultivation. However, due to the hitherto poorly understood specific limits of T. fluminensis, T. mundula has been treated as a mere cultivar of T. fluminensis s.s.

Keywords
Commelinales, Invasive species, Tradescantia fluminensis, Tradescantieae, Tradescantiinae, spiderworts, wandering Jew

Erratum note
The present version of this monograph differs from the original one published on 27 June 2018 (https://doi.org/10.3897/phytokeys.101.25057) with removal or replacement of images, changes in the figure captions, and removal of two names from the
Acknowledgments; for figure 18, replaced as a whole, the in-text citations to it were corrected as well. Removed images are: 3(C), 5(C, D), 12(A, C, G–I). Replaced images are: 18(entire plate), 32(A). The reason for replacement or removal is that these images were used by the author without explicit permission of the copyright owner. Given these circumstances, the editors of PhytoKeys decided to remove the original version of the monograph and publish this corrected version, explaining the reasons for that in this present notice. Any and all nomenclatural acts (new species and lectotypifications) published in the original version are effectively published under Article 30.4 of the Shenzhen Code (https://doi.org/10.12705/Code.2018) with the date of publication corresponding to the original release of the monograph, 27 June 2018, not the date of this modified version. The originally published version is archived for the purpose of resolving nomenclatural questions and is available from the publisher upon request.\(^1\)

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\(^1\) After the publication of this revised version of the monograph, the original text of the Erratum note was changed to the present one, where the names of the persons who claimed the copyright violation were removed on their request. A missing reference cited in the text was added to the reference list.
Introduction

Commelinaceae is an economically important family, due to the ornamental value of many genera and by the great number of invasive species, especially in Commelina L. and Tradescantia L. emend M.Pell. (Hunt 2001; Burns 2008). Tradescantia, is the second largest genus in the family, with ca. 90 species (Pellegrini 2017). It is characterised by its actinomorphic flowers with six equal to subequal stamens, seeds with linear hilum and main florescences composed by a double-cincinni fused back to back, with each cincinni subtended by a frondose bract (Faden 1998; Panigo et al. 2011; Pellegrini 2017). Throughout the years, four infrageneric classifications were proposed for Tradescantia: Clarke (1881), Brückner (1930), Hunt (1975, 1980, 1986) and Pellegrini (2017). The current classification divides Tradescantia into five monophyletic subgenera (Hertweck and Pires 2014; Pellegrini 2017), further supported by micro- and macromorphological characters, anatomy, phytochemistry and cytology (Pellegrini 2017).

Tradescantia sect. Austrotradescantia was described by Hunt (1980), being composed of five species, based on the T. fluminensis Vell. species complex (sensu Woodson Jr. 1942) and as the only exclusively South American section of the genus, with its diversity centre in Southeastern Brazil (Hunt 1980). It was characterised by its prostrate stems, leaf-like to spathaceous cincinni bracts, free petals and stamens, dorsal embryotega and numerous and bimodal chromosomes (Jones and Jopling 1972; Hunt 1980). Other studies showed that the section also presented a rather peculiar phytochemical profile (Martínez and Martínez 1993) and stigmatic morphology (Owens and Kimmins 1981; Owens et al. 1984), which differentiated it from the remaining sections and species of the genus. Based on micro- and macromorphological characters, anatomy, phytochemistry and cytology characters and supported by the molecular evidence published by Hertweck and Pires (2014), Pellegrini (2017) elevated T. sect. Austrotradescantia to the subgeneric rank, also broadening and clarifying the group’s morphological circumscription. Hunt (1980) originally included five species in the section, later (i.e. Hunt 2001) reducing T. blossfeldiana Mildbr. to a synonym of T. cerinthoides Kunth. Pellegrini et al. (2015) reestablished T. mundula Kunth and typified T. fluminensis Vell. and T. geniculata Vell., while dealing with the Tradescantia names in Flora fluminensis (Vellozo 1829, 1831). Pellegrini et al. (2016) solved the application of T. cymbispatha C.B.Clarke and considered the latter and T. umbraulisera Hand.-Mazz. as members of this section. Pellegrini (2016) described T. seubertiana M.Pell. and proposed an informal group named the T. crassula group. Pellegrini et al. (2017) described T. chrysophylla M.Pell. as a new species, treated T. schwirkowskiana Funez et al. as a synonym of T. crassula Link & Otto and included T. valida G.Brückn. in the section, as being the only species in the T. crassula group to present spathaceous and supernumerary bracts. Two recent floristic studies have recognised T. multibracteata M.Ferrarese et al. (Büneker et al. 2017) and T. serrana Hassemer & Funez (in Hassemer et al. 2017) as new species for T. sect. Austrotradescantia. Nonetheless, in my new infrageneric classification for Tradescantia (i.e. Pellegrini 2017), I intentionally do not mention these names amongst the species accepted by me for T. subg. Austrotradescantia, as a way to imply that I consider these names to be synonymous with other species. In the overview for T. subg. Austrotradescantia, presented by me as part of the new infrageneric classification for Tradescantia (i.e. Pellegrini 2017), the subgenus...
is represented by ca. 15 species, out of which I mention: *T. cerinthoides*, *T. chrysophylla*, *T. crassula*, *T. cymbispatha*, *T. fluminensis*, *T. mundula*, *T. seubertiana*, *T. tenella* Kunth, *T. umbraulisera* and *T. valida*. Members of this subgenus are economically important due to the ornamental value of their leaves (sometimes conspicuously striped with an array of colours), their mat-forming habit and for being hardy plants, being cultivated worldwide for these reasons. Subsequently, *T. fluminensis* has escaped from cultivation and has become a major weed in countries such as Australia, Italy, Japan, New Zealand, Portugal, Russia, South Africa, USA etc. (Hunt 2001; Burns 2008; Fowler et al. 2013; GSID 2015; pers. observ.).

Despite possessing relatively few species, *T. subg. Austrotradescantia* has a complicated taxonomic history (Pellegrini et al. 2015, 2016, 2017), due to continuous and reticulate morphological characters and possible natural hybridisation between its species (Martínez 1984; Pellegrini 2017), which makes the terminology adopted by Woodson Jr. (1942) of “species complex” rather appropriate for this group (Pellegrini et al. 2013). Despite that, no taxonomic revision has yet been made for the subgenus and no identification key is available for its species. Furthermore, aside from the morphological phylogeny and new infrageneric classification provided by Pellegrini (2017), no detailed study exclusively dealing with the taxonomy and morphology of the species of *T. subg. Austrotradescantia* has ever been made. Thus, I present the first taxonomic revision for *T. subg. Austrotradescantia*, with the description of three new species, an identification key and synonyms, descriptions, comments, illustrations, distribution maps and conservation assessments for all accepted species.

**Methods**

The description of the species, phenology and illustrations were based on over 3,000 herbarium specimens (ALCB, B, BA, BHCB, BHZB, BM, BOTU, BRIT, C, CAL, CEPEC, CESJ, CGE, CGMS, CNMT, COR, CORD, CVRD, EAC, ESA, F, FCAB, FCQ, FLOR, FUEL, FURB, GUA, HAMAB, HAS, HB, HBR, HDCEF, HRB, HRCB, HSTM, HUCS, HUEFS, HUFJS, HURB, IAC, ICN, INPA, IPA, JOI, K, L, MBM, MBML, MG, MO, MY, NY, P, PACA, PMSP, R, RB, RFA, RFFP, RUSU, SCP, SP, SPE, SPSF, U, UEC, UFRN, UPCB, US, VIC, W, WAG and WU; herbaria acronyms according to Thiers, continuously updated), spirit, fresh and cultivated material and field observations. Specimens of all species, except *T. hertweckii* M.Pell., *sp. nov.* and *T. tucumanensis* M.Pell., *sp. nov.*, were seen in the field and later kept in cultivation at the greenhouse of the Jardim Botânico do Rio de Janeiro, in order to better observe, photograph and analyse fresh flowers, fruits and seeds as well as other phenological data. Fresh specimens, field notes, photographs and specimens for cultivation were gathered during several field trips across the Brazilian Atlantic Forest, from the states of Sergipe to Rio Grande do Sul, between 2008 and 2017. Fertile specimens were deposited in RB and, whenever possible, duplicates were sent to US. Indumentum and shape terminology follows Radford et al. (1974); the inflorescence and general morphology terminology follows Weberling (1965, 1989) and Panigo et al. (2011); the fruit terminology follows Spjut (1994); the seed terminology follows Faden (1991); and general macromorphological terminology follows Pellegrini (2015, 2017). The conservation assessments followed the recommendations of IUCN Red List
Categories and Criteria, Version 3.1 (IUCN 2001). GeoCAT (Bachman et al. 2011) was used for calculating the Extent of Occurrence (EOO) and the Area of Occurrence (AOO). The distribution of the species is based on herbaria materials, field data and literature. The classification of vegetation patterns follows IBGE (2012). The rainy season in the Seasonal Dry Forest corresponds to the interval between October and March, which also roughly corresponds to Spring and Summer in South America (Colombo and Joly 2010); while in Atlantic Rainforest, there is no obvious rainy season, with rain relatively evenly distributed throughout the year with a slight peak during Summer (Colombo and Joly 2010).

Results

In the present study, I accept 13 species for *T.* subg. *Austrotradescantia*, increasing by three the total number of species accepted by Pellegrini (2017). *Tradescantia anagallidea* Seub. is here formally reduced to a synonym of *T.* *tenella*, while *T.* *decora* is shown to be the correct name for the species formerly known as *T.* *valida* and *T.* *multibracteata*. Finally, *T.* *serrana* is reduced to a synonym of *T.* *chrysophylla*. This study represents the final publication from my MSc thesis (i.e. Pellegrini 2015), which dealt with the evolution, systematics and nomenclature of *Tradescantia*, added to a taxonomic revision of *T.* subg. *Austrotradescantia*.


Type species. *Tradescantia fluminensis* Vell.

Description. Herbs chamaephytes, base definite or indefinite, perennial, frequently succulent, terrestrial, rupicolous or epiphytes. Roots thin, fibrous. Stems prostrate with ascending apex or erect, herbaceous to succulent, rarely fibrous, little to densely branched, rooting at the basal nodes or at the distal ones when they touch the substrate. Leaves sessile to subpetiolate; distichously or spirally-alternate, evenly distributed along the stem, rarely congested in a rosette; sheaths closed; ptyxis involute or convolute; blades flat to falcate and/or complicate, base asymmetrical, midvein conspicuous, rarely inconspicuous, adaxially impressed, abaxially prominent, rounded, secondary veins conspicuous or inconspicuous. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1–4 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back, sometimes composed of 1–3(–5) cincinni; inflorescence bract hyaline, tubular, inconspicuous; peduncle bracts absent; supernumerary bracts rarely present; cincinni bracts leaf-like, rarely spathaceous, differing from the leaves mostly only in size, similar or unequal to each other, saccate or not, free from each other; cincinni sessile, contracted, opposite to subopposite; bracteoles inconspicuous, imbricate, linear-triangular to triangular, hyaline. Flowers bisexual, acti-
nomorphic, flat (not forming a floral tube); pedicel gibbous at apex, upright at anthesis and pre-anthesis, deflexed at post-anthesis; sepals equal, free, chartaceous, ovate, dorsally keeled or not, apex acute; petals sessile, equal, free, elliptic to ovate to broadly ovate, flat or plicate, base cuneate to obtuse, margin glabrous, apex acute; stamens 6, arranged in two series, equal, filaments free from the petals, straight at anthesis and post-anthesis, white, rarely pink, basally densely bearded with moniliform hairs, hairs as long as the stamens, white, anthers basifixied, rimose, connective rhomboid, yellow, anther sacs ellipsoid, yellow, pollen yellow; ovary subglobose to globose, white, glabrous, locules 2-ovulate, style straight at anthesis and post-anthesis, white, obconical at base, conical at the apex, stigma punctate, pistil longer than or the same length as the stamens. Capsules subglobose to globose, light to medium brown when mature, glabrous, loculicidal, 3-valved, sometimes apiculate due to persistent style base. Seeds 1–2 per locule, ellipsoid to narrowly trigonal, ventrally flattened, cleft or not towards the embryotega, testa costate to rugose with ridges radiating from the embryotega; embryotega dorsal, relatively inconspicuous, without a prominent apicule, generally covered by a cream farina; hilum linear, on a weak ridge.

Habitat, distribution and ecology. Tradescantia subg. Austrotradescantia is distributed from southern Bolivia, Paraguay, Argentina, Southeastern to Southern Brazil and Uruguay (Fig 1). Its species can be found growing understorey in moist and shady forests, open fields, rocky outcrops and are especially common in disturbed areas (Pellegrini 2015, 2017; Pellegrini et al. 2016).

Conservation and invasiveness. Tradescantia subg. Austrotradescantia as a whole seems to be in need of little conservationist attention. Most species possess wide native distribution, with only T. atlantica, T. chrysophylla, T. hertweckii and T. seubertiana possessing narrower distributions and thus meriting some conservationist attention. Out of the 13 species accepted in the present study, one (i.e. T. fluminensis) is already known to represent a troublesome weed worldwide, while the other species have never been considered invasive or to possess an invasive potential. Nonetheless, after careful examination of herbarium specimens collected outside the subgenus native distribution range, I came to the conclusion that several records of T. fluminensis as a weed actually represent misidentified specimens of T. mundula or, more rarely, specimens of T. cymbispatha and T. crassula. Tradescantia cerinthoides is also widely cultivated worldwide, especially its pink and lilac-flowered morphs. Despite my not having observed any unquestionable records that indicate that T. cerinthoides has escaped from cultivation, this species also possesses intense vegetative growth and thus a great potential to become an invasive species if not properly monitored. All invasive accessions done so far for T. fluminensis must urgently be redone in order to properly understand extension of this species’ invasion, discount records now known to represent other species from the subgenus and to appropriately access the threat of invasiveness of the other species of T. subg. Austrotradescantia which also possess records outside their native range.

Etymology. The name of this subgenus means “Tradescantia from the South”, making reference to its exclusively South American distribution.

Comments. Tradescantia subg. Austrotradescantia is a morphologically peculiar group in Tradescantia, being easily recognised by its generally distichously-alternate leaves, sepals ovate, generally all dorsally keeled; filaments basally densely bearded with long moniliform
hairs; style obconic at base and conic at apex, stigma punctate with type D papillae; seeds with costate testa and relatively inconspicuous embryotega; small bimodal and numerous chromosomes ($n = 10$–numerous); and a unique chemical profile (Pellegrini 2017). Two morphological groups are accepted for the subgenus, both supported by recent phylogenetic studies (Pellegrini 2017). The *T. fluminensis* group is composed of generally more delicate plants, with prostrate stems with ascending apex, indefinite bases, subpetiolate leaves, cincinni bracts saccate at base and white petals. Nonetheless, this group also includes the *T. tenella* complex, which possesses erect stems, definite base, flowers that range from white to pink, seeds with rugose testa and hilum shorter than half the length of the seeds. The

Figure 1. Distribution of *Tradescantia* subg. *Austrotradescantia*. Modified from Pellegrini (2017).
species in the *T. fluminensis* group occur almost exclusively in Tropical and Subtropical Rainforests but are also commonly found growing as weedy plants throughout their distribution range (Pellegrini 2017). The *T. crassula* group is composed of succulent plants, with erect stems, complicate leaves, cincinni bracts not saccate at base, petals ranging from white to pink to lilac and seeds cleft towards the embryotega. These species are intimately related to the two southern domains of South America, characterised by open and/or drier vegetation formations: the Chaco (which is part of the Dry Diagonal) and the Pampa (which is mostly represented by grasslands). The species from the *T. crassula* group are morphologically very similar due to many overlapping morphological characters; with indumentum type and distribution in the sepals being the most useful character for separating its species.

**Recommendations for field collectors.** As widely known, Commelinaceae is a group where flowers are generally poorly preserved in herbarium specimens, making it especially difficult to work with (Faden 1991). In *T. subg. Austrotradescantia*, taxonomy relies greatly on indumentum characters, with its type, distribution and colouration being especially important. Moreover, the indumentum in the pedicels and sepals seems to be constant within the same species and variable between different species. Thus, I recommend that field workers pay special attention to the plant’s indumentum, collect young and mature branches in order to correctly characterise the species (since features like the presence of a subpetiole and shape of the leaf-blades might vary during development), record the colouration of vegetative and reproductive organs and, whenever possible, attach photographs to the herbarium sheets. Images are of great aid and can help identify even the most incomplete and damaged specimens. Furthermore, whenever possible, spirit collections and live specimens for cultivation are welcome, since they enable the proper study of the delicate flowers of these plants and live specimens might help us understand their morphological variation and plasticity.

**Roots, stems and growth forms.** As stated by Pellegrini (2017), most *Tradescantia* species are perennial herbs, all of them lacking rhizomes. In *T. subg. Austrotradescantia*, the roots are always thin and fibrous and never tuberised as in many species of the other four subgenera. In the mat-forming species, roots are produced throughout the stems, whenever they touch the substrate. In the species with erect stems, roots are restricted to the basal-most nodes of the plants. The stems can vary in posture, from prostrate (generally with ascending apex) to erect, while the branching pattern ranges from unbranched to little branched at the base or branched to densely branched in the upper half. The leaf-opposed line of uniseriate hairs is generally observable in most species, except *T. seubertiana* which is completely glabrous. Nonetheless, it is not constant in any of the remaining species, being either present or absent, depending on the specimen or even on the maturation and/or position of the stem (i.e. younger shoots tend to produce this leaf-opposed line of uniseriate hairs, which is generally lost with age). Finally, in species densely covered by indumentum, such as *T. cerinthoides*, *T. chrysophylla*, *T. cymbispatha* and *T. mundula*, the leaf-opposed line of uniseriate hairs is generally absent or, if present, is very hard to differentiate from the dense surrounding indumentum.

**Indumentum.** The indumentum in *T. subg. Austrotradescantia* is consistently composed of uniseriate hairs, ranging from eglandular to glandular (Fig. 2C–F). Special attention should be also given to the prickle-hairs that are generally 2-celled and pre-
sent at the margins of the leaf-sheaths and blades (Fig. 2B, E), but consistently absent only in *T. seubertiana* (Fig. 2A). Glandular hairs can be found in the vegetative organs of *T. cerinthoides* but are consistently found in the pedicels of most species and the sepals of many (Fig. 2F). As aforementioned, indumentum morphology is key for species delimitation in *T. subg. Austrotradescantia*, being easily observed most of the time. Nonetheless, some species are especially susceptible to the excessive heat of some plant driers, which can lead to an artificial loss of hairs. Two good examples are *T. cymbispatha* and *T. mundula*, where the first has been observed to sometimes lose its characteristic dense strigose indumentum in some excessively dried specimens from Argentina and Southern Brazil, while the second presents delicate sepal hairs that commonly fall during the drying process. However, due to the almost unique combination of morphological characters (e.g. sessile and succulent leaves, with generally elliptic blades and sepals lacking dorsal keels and evenly velutine), *T. cymbispatha* can be easily identified even when the vegetative hairs are almost completely lost during the excessive drying process. In *T. mundula*, this partial loss of sepal hairs can lead to confusion in the identification of dried specimens, making it even more similar to *T. fluminensis* s.s.
Leaves. The leaves in *Tradescantia* subg. *Austrotradescantia* can range from distichously- to spirally-alternate, sometimes in the same species (e.g. most species belonging to *T. crassula* group), from sessile to distinctively subpetiolate (Fig. 3), but always presenting an asymmetric base (Fig. 3). The blades tend to decrease in overall size towards the apex of the stem, while subpetioles decrease in length. Alternatively, the basal-most leaves...
tend to possess wider bases when compared to the leaves towards the apex of the stem. Subpetioles are restricted to some species in the *T. fluminensis* group, with sessile leaves being plesiomorphic in Commelinaceae (Pellegrini 2017). The apex of the leaf-blades is generally acute but can also range from acute to caudate or obtuse (Fig. 3). The base of the leaf-blades can range from cuneate to obtuse to cordate or from truncate to amplexicaulous (Fig. 3). Finally, the ptyxis can either be convolute or involute, with convolute leaves being restricted to the *T. crassula* group and involute leaves restricted to the *T. fluminensis* group.

**Variegation.** Striped leaves have long been observed, described and utilised for species delimitation in the family. In some species (e.g. *T. soconuscana* Matuda and *T. zebrina* Heynh. ex Bosse and their relatives), it is a marking feature that greatly aids their recognition (Pellegrini 2017). According to my anatomical observations and ongoing studies on the matter, the silver stripes in Commelinaceae seem to consist of aerenchymatous tissue that might help understorey plants increase the amount of light they are able to absorb, by directing light through reflection to the inside of the chlorophyllate parenchyma (unpublished data). Nonetheless, this feature has been observed not to be constant in most taxa of the family, being environmentally controlled in at least *Buforrestia* C.B.Clarke, *Dickorisandra* J.C.Mikan, *Flascopa* Lour., *Plowmanianthus* Faden & C.R.Hardy and *Siderasis* Raf. emend. M.Pell. & Faden (pers. observ.). In *Tradescantia*, this feature seems to be phylogenetically related (at least to some degree), since it is only known to occur in *T. subg. Campelia* (Pellegrini 2017). In *T. subg. Austrotradescantia*, a myriad of cultivars of several species are known for their variegated leaves (e.g. *T. cerinthoides*, *T. decora*, *T. fluminensis* and *T. mundula*; Fig. 4), but also found in members of different subgenera [e.g. *T. spathacea* Sw., *T. zanonia* (L.) Sw. and *T. zebrina* – *T. subg. Campelia* –, *T. pallida* (Rose) D.R.Hunt and *T. sillamontana* Matuda – *T. subg. Setcreasea* –, but it is unknown to me to occur in *T. subg. Mandonia* and *T. subg. Tradescantia*; pers. observ.]. However, this variegation does not seem to be homologous to the silver stripes commonly observed in other members of the family. These stripes do not seem to be produced by the concentration of aerenchymatous tissue, but actually seem to be caused by the loss of pigmentation in the leaves. They actually look similar to the symptoms caused by some strains of the tulip breaking virus (family Potyviridae) in the perianth of Liliales (McKay and Warner 1933; McWhorter 1938) and more precisely to symptoms caused the commelina yellow mottle virus (*Badnavirus* spp., family Caulimoviridae), being generally malefic to the infected plants (Hull 2007; Valverde et al. 2012). These white stripes (sometimes also yellow or pink to vinaceous, due to the presence of secondary pigments; Fig. 4) are not commonly observed in natural populations, being almost exclusively recorded in cultivated plants (pers. observ.). During cultivation in the greenhouses of the Jardim Botânico do Rio de Janeiro, some specimens not originally striped, were observed to acquire such features. The appearance of white to yellow stripes in the leaves occurred shortly after a great aphid and mealybug infestation struck the live collection. Specimens from different genera, such as *Commelina* and *Flascopa* also acquired such stripes. After some months, the affected specimens either withered and died or survived and lost the stripes (pers. observ.). This pattern is coherent with the one observed in the transmission and spread of viruses from families Potyviridae,
Figure 4. Leaf variegation in *Tradescantia* subg. *Austrotradescantia* cultivars A habit of *T. fluminensis*, showing different degrees of yellow variegation in the same plant B sick leaf blade of *T. decora*, showing the white variegation and a necrotic spot C–D *T. fluminensis* with yellow variegation C sick branch, showing atrophied and almost completely lacking chlorophyll D sick leaf blade, showing small portions of chlorophyllate tissue and necrotic spots. E–H, *T. mundula* with pink to vinaceous variegation E habit, showing different variegation patterns and degrees in the same plant F healthy branch, showing leaves with stripes in shades of pink and lilac G sick branch, showing the almost complete lack of chlorophyll and the great amount anthocyanin on the abaxial side of the blades H sick branch, showing the almost complete lack of chlorophyll and the pink hue produced by the anthocyanin from the abaxial side of the blades. Photos by M.O.O. Pellegrini.
Figure 5. Inflorescence architecture in *Tradescantia* subg. *Austrotradescantia* **A** malformed main florescence of *T. cymbispatha*, showing the subopposite cincinni **B** detail of the synflorescence of *T. crassula*, showing an axillary inflorescence composed of solitary cincinnus and a terminal with the typical double-cincinni with non-saccate cincinni bracts **C–D** inflorescence in *T. decora* (removed) **C** inflorescence composed of 4-cincinni, showing the spathaceous and supernumerary bracts (removed) **D** synflorescence, showing main florescences and coflorescences ranging from regular double-cincinni to 3–5-cincinni (removed) **E** front view of the main florescence of *T. fluminensis*, showing the saccate cincinni bracts **F** dorsal view of the main florescence of *T. mundula*, showing the saccate cincinni bracts **G** main florescence of *T. seubertiana*, showing the unequal and non-saccate cincinni bracts **H** main florescence of *T. tenella*, showing the strongly unequal cincinni bracts **I** inflorescence of *T. umbraculifera*, showing the main florescence and a coflorescence emerging from the same leaf axil. Photos by M.O.O. Pellegrini. See the Erratum note.
Caulimoviridae and other plant infecting families that cause mosaic and breaking patterns in plants (McKay and Warner 1933; McWhorter 1938; Andret-Link and Fuchs 2005; Hull 2007; Valverde et al. 2012). Thus, in the present study, striped specimens of _T_. subg. _Austrotradescantia_ are disregarded, being considered merely as sick plants or artificially selected morphotypes of no taxonomic relevance.

**Inflorescences.** The inflorescence architecture in _T_. subg. _Austrotradescantia_ follows the double-cincinni pattern, as described by Panigo et al. (2011) and indicated by Pellegrini (2017) as characteristic to _Callisia_ s.l., _Tradescantia_ and _Tripogandra_ s.l. The cincinni bracts are always frondose, being leaf-like in most species but spathaceous in _T_. *decora* and _T_. *umbraculifera* (Fig. 5C, D, I). The base of the cincinni bracts can be saccate or not, with saccate bracts being synapomorphic to the _T_. *fluminensis* group (Pellegrini 2017). Supernumerary bracts are rare in _T_. subg. _Austrotradescantia_, being exclusively recorded for _T_. *decora*. The cincinni are always sessile, contracted and fused back to back. Due to great reduction in the main florescence, the cincinni seem opposite in most specimens. Nonetheless, in some specimens, a malformation in the inflorescence can cause the internodes between the cincinni to elongate, thus producing subopposite cincinni (Fig. 5A; Pellegrini 2017). Most inflorescences are composed of two cincinni, as the double-cincinni architecture would suggest. Nonetheless, some exceptions are recorded, with _T_. *crassula* producing perfect double-cincinni, but also commonly producing axillary inflorescences composed of a solitary cincinnus (Fig. 5B; Pellegrini 2017). Furthermore, _T_. *decora* is the only species in _T_. subg. _Austrotradescantia_ to regularly present main florescences with more than two cincinni, generally producing main florescences with 2–3(–5) cincinni (Fig. 5C, D; Pellegrini 2017).

**Flowers.** The flowers in _T_. subg. _Austrotradescantia_ are always flat (i.e. not forming a floral tube), with flowers being held in an upright position at pre-anthesis and anthesis and later acquiring a deflexed position at post-anthesis and fruiting (Fig. 6F; Pellegrini 2017). As with the other species of _Tradescantia_, the species of _T_. subg. _Austrotradescantia_ possess scentless flowers (Pellegrini 2017) and, like all species of Commelinaceae, completely lack nectaries of all kinds (Faden 1992). A marking floral conservatism can be easily observed in _T_. subg. _Austrotradescantia_, with gross floral morphology presenting little taxonomic relevance for species delimitation in the subgenus (Pellegrini 2017). Some taxonomic relevance can be given to the shape of the floral buds (that can be of great help in differentiating closely related taxa) and floral diameter (which can also help differentiate some species).

**Sepals.** Aside from the pubescence, little variation is observed in the sepals of _T_. subg. _Austrotradescantia_. The sepals are always equal, free, chartaceous, ovate, with acute apex. They can range from medium to dark green or from purple to vinaceous to dark vinaceous and can be dorsally keeled or not (Fig. 6A–C; Pellegrini 2017). Measures can be of some help, but they do commonly overlap between closely related species.

**Petals.** The deliquescent petals are also quite homogeneous in _T_. subg. _Austrotradescantia_, being always sessile (i.e. without a claw, like some species of _T_. subg. _Campelia_, _T_. subg. _Mandonia_ and _T_. subg. _Setcreasea_ and all species of _T_. subg. _Tradescantia_; Pellegrini 2017), equal, free, elliptic to ovate to broadly ovate, with cuneate to obtuse base, glabrous margin and acute apex. Little colour variation is observed, especially when compared with _T_. subg. _Campelia_ and _T_. subg. _Tradescantia_. All
species possess predominantly white petals, with the exception of *T. seubertiana*, which always possesses pink petals. Nonetheless, specimens also presenting petals in different hues of pink or lilac can sometimes be observed in *T. cerinthoides*, *T. cymbispatha*, *T. decora*, *T. tenella* and *T. tucumanensis*. Finally, petals in *T. subg. Austrotradescantia* can either be flat or plicate. The plicate petals are caused by a fold
along the petals’ midvein and are exclusively found in *T. atlantica* M.Pell. *sp. nov.* and *T. fluminensis* s.s. (Fig. 6D–F).

**Androecium.** As shown by Pellegrini (2017), all species of *T.* subg. *Austrotradescantia* possess filaments densely bearded at the base with moniliform hairs, these hairs being as long as the stamens or at least the filaments; anthers basifixed, with expanded, rhomboid and yellow connectives, divergent and elliptic anther sacs and yellow pollen grains *in vivo* (Fig. 6F). This pattern is exclusive to *T.* subg. *Austrotradescantia* (Pellegrini 2017), but of almost no relevance in differentiating the species within the subgenus.

**Gynoecium.** The gynoecium in *T.* subg. *Austrotradescantia* presents a highly conservative morphology, being always white and glabrous, the ovary ranging from subglobose to globose, the locules 2-ovulate, ovules anatropous with axial placentation, the style being always straight at anthesis and post-anthesis, obconical at base, conical at the apex and culminating in a reduced and punctate stigma (Pellegrini 2017). Finally, the pistil, as a whole, can either be much longer than or approximately the same length as the stamens.

**Capsules and seeds.** Fruit morphology is extremely conservative in *Tradescantia*, being characterised by light to medium brown, thin-walled, loculicidal capsules, sub-globose to globose in shape, externally glabrous and smooth and sometimes apiculate due to the persistent base of the style. The capsules are always 3-valved (Fig. 7A),
with the only known exception in the genus being *T. orchidophylla* Rose & Hemsl., which seems to exclusively present a 2-locular gynoecium and, consequently, producing 2-valved capsules. Each locule can produce up to two seeds, which will directly influence their shape. The seeds range from ellipsoid to narrowly trigonal, commonly with a more truncate side if two seeds are produced in the same locule, ventrally flattened, cleft or not towards the embryotega (with cleft seeds being synapomorphic to the *T. crassula* group; Fig. 7B) and the testa can be either costate (Fig. 7B, C) or rugose, with ridges or pits radiating from the embryotega (i.e. rugose testa being exclusive to the *T. tenella* species complex; Fig. 7D). The embryotega is dorsal and relatively inconspicuous, without a prominent apicule, being generally covered by a cream farinae (Fig. 7B–D). The hilum is linear, located on a mild ridge and can vary in length depending on the species group: (1) longer than ½ the length the seed in the *T. crassula* group (Fig. 7B); (2) ca. equal to ½ the length of the seed in most species of the *T. fluminensis* group (Fig. 7C); and (3) shorter than ½ the length of the seed in the *T. tenella* species complex (Fig. 7D).

**Key to the species of *T. subg. Austrotradescantia***

1 Stems erect, rarely prostrate with ascending apex; leaves with convolute ptyxis, blades succulent, falcate to complicate; cincinni bracts not saccate at base; seeds cleft towards the embryotega ...........................................................................2

- Stems prostrate with ascending apex, less commonly erect; leaves with involute ptyxis, blades membranous to chartaceous, flat; cincinni bracts saccate at base; seeds not cleft towards the embryotega ...........................................................................5

2 Leaf-blades pubescent on both sides or only abaxially, rarely glabrous on both sides; pedicels and sepals densely velutine to hispid, sometimes also with a mixture of glandular and eglandular hairs ........................................................................... *T. cerinthoides* Kunth (Fig. 10)

- Leaf-blades glabrous on both sides; pedicels glabrous, rarely sparsely glandular-pubescent, sepals glabrous or with hairs restricted to the keel or apex ....3

3 Leaf-blades with margins setose at base or until the middle with long hyaline hairs; supernumerary bracts present, cincinni bracts spathaceous, cincinni 2–3(–5); sepals not dorsally keeled...................... *T. decora* W.Bull (Fig. 18)

- Leaf-blades with margins glabrous or ciliolate to ciliate; supernumerary bracts absent, cincinni bracts leaf-like, cincinni 1–2; sepals dorsally keeled ...............4

4 Leaf-sheaths margins glabrous, base of the blades cordate to slightly amplexicaulous to obtuse; cincinni bracts unequal; floral buds ellipsoid; sepals glabrous; petals light pink to pink ....................... *T. seubertiana* M.Pell. (Fig. 26)

- Leaf-sheaths margins ciliolate to ciliate, base of the blades obtuse to truncate; cincinni bracts equal; floral buds broadly ovoid; sepals sparsely setose along the keel; petals white........................... *T. crassula* Link & Otto (Fig. 14)

5 Base definite; stems erect, rarely prostrate with ascending apex, succulent to fibrous; testa rugose, hilum shorter than ½ the length of the seed .....................6

- Base indefinite; stems prostrate with ascending apex, herbaceous; testa costate, hilum longer than or equal to ½ the length of the seed ......................8
6 Stems fibrous; leaves sessile, blades velutine to hispid; sepals with indumentum restricted to the keel; petals always white, plicate .... **T. atlantica** M.Pell. (Fig. 8)

7 Leaf-blades with ciliate margins; floral buds ovoid, flowers 0.4–1.0 cm diam., sepals evenly to sparsely glandular-pubescent, rarely glabrous..........

\[ \ldots \] **T. tenella** Kunth (Fig. 28)

8 Leaf-blades with truncate to amplexicaulious to round base, apex acuminate to caudate; 1–4 double-cincinni per leaf axis, cincinni bracts spathaceous, rarely leaf-like; pedicels white at anthesis and pre-anthesis; pistil longer than the stamens............ **T. umbraculifera** Hand.-Mazz. (Fig 32.)

\[ \ldots \] **T. cymbispatha** C.B.Clarke (Fig. 16)

9 Leaves sessile, blades evenly covered by indumentum on both sides, secondary veins adaxially inconspicuous; floral buds broadly ovoid, sepals not keeled...

\[ \ldots \] **T. fluminensis** Vell. (Fig. 20)

10 Leaf-sheaths strigose, margins sparsely setose to setose, hairs hyaline to light brown, blades strigose, hairs hyaline, adaxially dark to medium bluish-green, margins glabrous; cincinni bracts similar to each other; pedicel and sepals velutine, petals white, rarely pink to lilac..... **T. cymbispatha** C.B.Clarke (Fig. 16)

\[ \ldots \] **T. chrysophylla** M.Pell. (Fig. 12)

11 Stems strigose; leaf-sheaths strigose, blades chartaceous, abaxially vinaceous, margins slightly revolute; pedicels velutine, sometimes with some odd glandular hairs, sepals evenly velutine (hairs sometimes deciduous in dried specimens).................. **T. mundula** Kunth (Fig. 24)

\[ \ldots \] **T. fluminensis** Vell. (Fig. 20)

12 Leaves subpetiolar, blades glabrous, margins evenly ciliolate; cincinni bracts equal to each other; sepals pilose along the keels, petals plicate; hilum equal to ½ the length of the seed.................. **T. fluminensis** Vell. (Fig. 20)

\[ \ldots \] **T. hertweckii** M.Pell. (Fig. 22)
1. *Tradescantia atlantica* M.Pell., sp. nov.
urn:lsid:ipni.org:names:77185915-1
Figs 8, 9

**Diagnosis.** Similar to *T. tenella* due to its definite base, erect and densely branched stems, involute ptyxis, leaf-blades with conspicuous secondary veins, saccate and strongly unequal cincinni bracts, keeled sepals, pistil the same length as the stamens, seeds with rugose testa and hilum shorter than ½ the length of the seed. It can be differentiated by its fibrous stems, sessile leaves with velutine to hispid, light brown to hyaline indumentum, broadly ovoid floral buds, sepals with a mixture of glandular and eglandular hairs restricted to the keel and petals always white and plicate.

**Type.** BRAZIL. Rio de Janeiro: Nova Friburgo, Reserva Ecológica de Macaé de Cima, fl., fr., 26 Jan 2012, M.O.O. Pellegrini et al. 207 (holotype: RB barcode RB01025675!).

**Description.** *Herbs* ca. 10–35 cm tall, with a definite base, terrestrial. *Stems* erect, fibrous, branched to densely branched; internodes 1.8–6.1 cm long at base, distally shorter, dark green to vinaceous, glabrous, except for a leaf-opposed longitudinal line of short, uniseriate, light brown to hyaline hairs. *Leaves* distichously-alternate, sessile; ptyxis involute; sheaths 4.1–7.6 mm long, light green to pink with dark green to purple striations, glabrous, margin setose, hairs light brown to hyaline; blades 3.3–10.2 × 0.9–3.4 cm, elliptic to ovate, flat, membranous to chartaceous, velutine to hispid on both sides, rarely hairs restricted to the midvein, hairs light brown to hyaline, adaxially dark green, abaxially green, sometimes with vinaceous blotches, turning dark brown to olive-green on both sides when dry, base obtuse to rounded, margin ciliolate, slightly revolute, apex acute to acuminate; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially prominent, becoming more evident on both sides when dry. *Synflorescences* terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. *Inflorescences* (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 1.9–3.7 cm long, dark green to vinaceous, glabrous, except for a leaf-opposed longitudinal line of short, uniseriate, light brown to hyaline hairs; basal bract inconspicuous, tubular, hyaline, glabrous; peduncle bracts absent; supernumerary bracts absent; cincinni bracts 1.2–3.4 × 0.4–1.3 cm, leaf-like, unequal to strongly unequal to each other, elliptic to narrowly ovate to ovate, velutine to hispid on both sides, rarely hairs restricted to the midvein, hairs light brown to hyaline, adaxially dark green, abaxially green with vinaceous blotches, base cordate to round, saccate, margin ciliolate, slightly revolute, apex acuminate; double-cincinni (4–)6–8-flowered; bracteoles inconspicuous, imbricate, linear-triangular to triangular, hyaline. *Flowers* 1.1–1.3 cm diam.; floral buds broadly ovoid, apex acute; pedicels 1.2–3.4 mm long, upright at anthesis and pre-anthesis, reflected at post-anthesis, vinaceous, densely glandular-pubescent, rarely with a mixture of glandular and eglandular, hyaline hairs; sepals 3.8–5.3 × 2.6–4.2 mm, dorsally keeled, with a mixture of glandular and eglandular, hyaline hairs restricted to the keel, hairs hyaline to light brown; petals 6.6–8.2 × 3.7–5.2 mm, plicate, white; filaments 3.6–4.9 mm long, anthers 0.4–0.6 × 0.5–0.6 mm; ovary 0.9–1.1 × 0.8–1.2
Figure 8. *Tradescantia atlantica* M.Pell. A Estação Ecológica de Macaé de Cima, Nova Friburgo, state of Rio de Janeiro, Brazil B habit, showing the erect, fibrous and little branched stems C young shoot, showing the densely hispid indumentum D mature stem, showing the dark green to vinaceous and glabrous internodes with the leaf-opposed line of uniseriate hairs E-F inflorescence E overview of the inflorescence F detail of the main florescence, showing the unequal cincinni bracts G detail of the pedicels, showing the vinaceous colouration and glandular hairs H front view of a flower, showing the plicate petals I dorsal and ventral views of the seed, showing the rugose testa not cleft towards the embryotega and the hilum shorter than ½ the length of the seed. Photos by M.O.O. Pellegrini.
mm, style 3.8–4.0 cm long, pistil the same length as the stamens. Capsules 3–3.5 × 2.1–2.4 mm. Seeds 1.4–1.6 × 1.1–1.3 mm, greyish-brown to brown, not cleft towards the embryotega, rugose; hilum shorter than ½ the length of the seed.


Figure 9. Distribution of Tradescantia atlantica M.Pell. Orange– Cerrado; Red– Caatinga; Dark green– Atlantic Forest.
Tradescantia atlantica is endemic to Brazil, more precisely to the states of Minas Gerais, Rio de Janeiro and São Paulo; in the Atlantic Forest domain (Fig. 9). It can be found growing as a terrestrial understorey in shaded and moist forests.

**Phenology.** It was found in bloom and fruit from October to June but peaking during January.

**Etymology.** The epithet makes reference to this species’ distribution range, restricted to the Atlantic Forest domain.

**Conservation status.** *Tradescantia atlantica* possesses a wide EOO (ca. 60,715.793 km²), but a considerably narrow AOO (ca. 32.000 km²). Since it is only known from seven very fragmented collections, following the IUCN (2001) recommendations, *T. atlantica* should be considered Endangered [EN, A2cde+B2ab(ii, iii, iv)+D2].

**Comments.** *Tradescantia atlantica* is a member of the *T. tenella* species complex, being morphologically similar to *T. tenella* and *T. tucumanensis*, due to its definite base, conspicuous secondary veins (Fig. 8B), saccate and unequal to strongly unequal cincinni bracts (Fig. 8F), keeled sepalas (Fig. 8G), pistil the same length as the stamens (Fig. 8H), seeds with rugose testa and hilum shorter than ½ the length of the seed (Fig. 8I). It was previously tentatively included by me (Pellegrini 2015) under a much broader *T. tenella*, due to its erect stems and ovoid floral buds. Nonetheless, after further herbarium and field studies, I have come to the conclusion it indeed merits taxonomic recognition. The fibrous stems and sessile leaves (Fig. 8B) vegetatively differentiate *T. atlantica* from *T. tenella*, with the fibrous stems being unique in the subgenus. Also, the velutine to hispid indumentum covering the leaves (Fig. 8C) is different from the much coarser indumentum observed in *T. tenella* (Fig. 2E), while the indumentum in the sepalas is composed of a mixture of glandular and eglandular hairs (Fig. 8G), as opposed to the evenly glandular pubescent sepalas of *T. tenella* (Fig. 2F). Finally, the plicate petals of *T. atlantica* (Fig. 8H) are only observed in the not so closely related *T. fluminensis* (Fig. 6E) and the distribution of *T. atlantica* and *T. tenella* has no overlaps.

*Tradescantia atlantica* can also be differentiated from the new *T. tucumanensis* by its fibrous stems (vs. succulent in *T. tucumanensis*), sessile leaves with velutine to hispid indumentum (vs. at least the basal ones subpetiolate, sparsely hirsute to hirsute), broadly ovoid floral buds (vs. ellipsoid), sepalas with a mixture of glandular and eglandular hairs restricted to the keel (vs. with a mixture of glandular and eglandular hairs, but exclusively hispid along the keel in *T. tucumanensis*) and petals always white and plicate (vs. ranging from white to pink and flat).


Figs 10, 11

Wandering throughout South America: Taxonomic revision of *Tradescantia*... 23

cher Garten und Botanisches Museum Berlin-Dahlem, cuttings sent to Royal Botanical Gardens, Kew, by W. Curtis, fl., 19 Mar 1951, H. Blossfeld s.n. (K barcode K000501910!; isoneotype: K barcode K000501909!).

*Tradescantia crassula* var. *gaudichaudii* C.B.Clarke in De Candolle & De Candolle, Monogr. Phan. 3: 294. 1881. Lectotype (designated here). BRAZIL. Santa Catarina: s.loc., fl., s.dat., C. Gaudichaud 112 (P barcode P02173932!; isolectotype: P barcode P02173933!). **Syn. nov.**


*Tradescantia koernickeana* Seub. in Martius, Fl. bras. 3(1): 249. 1855. Lectotype (designated by Pellegrini et al. 2016) BRAZIL Rio Grande do Sul: Rio Pardo, fl., 23 Sep 1833, F. Sellow 3033a (B barcode B100521013!; isolectotypes: K barcodes K001040251!, K001096644!, P barcode P02174008!).

**Type material.** Lectotype (designated by Pellegrini et al. 2016). BRAZIL. Brasilia meridionalis, fl., fr., Dec 1836, F. Sellow 2963 (B barcode B100521011!; isolectotypes: B barcode B100521012!, K barcode K000363273!; MO barcode MO3021307!).

**Description.** Herbs ca. 10–60 cm tall, with a definite base, terrestrial or rupicolous, rarely epiphytes. Stems erect, succulent, little branched, branching at the base, rarely branching at the upper half; internodes 1–7.4 cm long at base, distally shorter, green with vertical reddish-purple striations to vinaceous, glabrous to velutine to hirsute to glandular-pubescent, light-brown to hyaline hairs. Leaves distichously-alternate to spirally-alternate, sessile; ptyxis convolute; sheaths 0.3–1.3 cm long, green to pink to vinaceous, glabrous or velutine to hirsipid, margins densely setose to hirsipid, hairs hyaline to light brown to golden, sometimes also with some glandular hairs; blades 1.5–17.5 × 0.6–3 cm, elliptic to broadly elliptic to ovate to broadly ovate to obovate to broadly obovate, falcate to complicate, succulent, velutine to hirsipid on both sides or adaxially glabrous to sparsely hirsipid, abaxially hirsipid, hairs hyaline to light brown to golden, commonly also with a mixture of glandular hairs, adaxially light to medium to dark green, sometimes with vinaceous stripes, abaxially green to vinaceous, turning olive-green to brown when dry, base cordate to obtuse, rarely cuneate, margin green to vinaceous, ciliolate to ciliate, slightly revolute, apex acute to obtuse; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially slightly impressed, abaxially slightly impressed, becoming more evident on both sides when dry. Synflorescences terminal or axillar in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 0.4–5.5 cm long, green to vinaceous, glabrous to velutine to hirsipid, hairs hyaline to light brown to golden, commonly also with a mixture of glandular hairs; peduncle bracts absent; supernumerary bracts absent; cincinni bracts 0.8–5.1 × 0.5–2.1 cm, leaf-like, similar to each other, broadly elliptic to ovate to broadly ovate, velutine to hirsipid on both sides or adaxially glabrous to sparsely hirsipid, abaxially hirsipid, hairs hyaline to light brown to golden, adaxially light to medium to dark green, rarely with vinaceous stripes, abaxially green to vinaceous, base
Figure 10. *Tradescantia cerinthoides* Kunth. A rupicolous subpopulation in the municipality of Vacaria, state of Rio Grande do Sul, Brazil B–C habit B habit, showing the spirally-alternate leaves C habit, showing the distichously-alternate leaves D–F stems and leaf-sheaths D detail of a glabrous stem, vinaceous with green striations and sparsely hispid leaf-sheath, light green with vinaceous striations E detail of a hispid stem, vinaceous with green striations and hispid leaf-sheath, vinaceous with darker striations
cordate to obtuse, not saccate, margin ciliolate to ciliate, slightly revolute, apex acute to obtuse; double cincinni 6–22-flowered. *Flowers* 1.3–1.6 cm diam., pedicels 0.5–2 cm long, green to vinaceous, velutine to hispid, hairs hyaline to light brown, commonly also with a mixture of glandular hairs; floral buds ovoid; sepals 5–7.8 × 2.2–3.4 mm, not keeled, green to vinaceous, velutine to hispid, commonly also with a mixture of glandular hairs, hairs hyaline to light brown, rarely golden; petals 4.9–7.8 × 4.4–7.2 mm, flat, white or white with pink apex to light pink to pink to lilac; filaments 4.7–6.7 mm long, anthers 0.8–1 × 1–1.4 mm; ovary 1–1.5 × 0.9–1.5 cm, style 2.9–5.7 cm long; pistil longer than the stamens. *Capsules* 3.5–4.5 × 2.3–3.6 cm. *Seeds* 1.2–2.2 × 0.9–1.7 mm, testa medium to dark grey, cleft towards the embryotega, costate; hilum longer than ½ the length of the seed.


**Figure 10.** Continued. F detail of a velutine stem, medium green and velutine, pinkish leaf-sheath with vinaceous striations G–J pubescence of the leaf-blades G abaxial side, showing the dark vinaceous colouration and lack of pubescence H abaxial side, showing the vinaceous colouration and sparsely hispid indumentum I adaxial side, showing the medium green colouration and the hispid indumentum J abaxial side, showing the medium green colouration and velutine indumentum K inflorescence, showing the non-saccate cincinni bracts and velutine indumentum L–M floral buds L green floral bud, showing the velutine indumentum M vinaceous floral bud, showing the hispid indumentum N front view of flowers from the same subpopulation (Vacaria, Rio Grande do Sul, Brazil), showing the variation of sepal colour (green to dark vinaceous), sepal pubescence (velutine to sparsely hispid to densely hispid) and petal colour (white to shades of pink to lilac) O dorsal and ventral views of the seed, showing the costate testa cleft towards the embryotega and the hilum longer than ½ the length of the seed. Photos by M.O.O. Pellegrini.
Figure 11. Distribution of *Tradescantia cerinthoides* Kunth. Orange – Cerrado; Yellow – Chaco and Pantanal; Olive-green – Pampa; Dark green – Atlantic Forest.

fr., 11 Oct 1950, B. Rambo 48966 (HBR, K, LIL); Montenegro, fl., 19 Sept 1957, Camargo 1785 (PACA); Fortaleza, fl., fr., 15 Dec 1952, B. Rambo 52904 (PACA); Nova Prata, ca. 9 km de Nova Prata, em direção à Cascata, fl., fr., Nov 1982, J. Mattos & R. Frosi 23749 (HAS); Pareci Novo, fl., 7 Sep 1949, B. Rambo 43789 (PACA); Pinhal, fl., 25 Nov 1949, A. Sehnem s.n. (PACA no. 47744); Pinheiro Machado, km 13 da rodovia para Pelotas, fl., fr., J. Mattos & N. Silveira 25312 (HAS); Piratini, Fazenda Cerro Verde, fl., fr., 1 Nov 1998, L.P. Félix 8995 (HST, RB); Porto Alegre, Morro do Osso, fl., 21 Oct 1944, B. Rambo s.n. (PACA 44043); fl., 9 Oct 1947, I. Granck s.n. (PACA no. 37124); Morro da Polícia, fl., 9 Sep 1949, B. Rambo 43324 (PACA); Morro Santana, fl., 6 Nov 1932, B. Rambo 69 (K, LIL, PACA); fl., 1947, K. Emrich s.n. (PACA no. 34269); Vila Manresa, fl., 27 Nov 1945, B. Rambo 30624 (PACA); fl., 27 Nov 1945, B. Rambo 30669 (K, LIL,
Distribution and habitat. *Tradescantia cerinthoides* is known to occur in Argentina, Brazil (states of Minas Gerais, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul) and Uruguay; in the Atlantic Forest, Cerrado, Chaco and Pampa domains (Fig. 11). It can be found in grasslands growing in full sun or in shaded conditions, directly over rock or as a terrestrial plant. It can be also found growing in sand dunes and in restinga formations in Southern Brazil.

Phenology. It was found in bloom and fruit throughout the year but peaking during the rainy season and being less commonly found in bloom during the dry season.

Etymology. The epithet “*cerinthoides*” means “similar to pollen grains”, probably-making reference to the moniliform hairs of the filaments. These hairs are theorised by Faden (1992) to simulate pollen grains and deceive pollinators into visiting the flowers of Commelinaceae.
Conservation status. *Tradescantia cerinthoides* possesses a wide EOO (ca. 945,153.803 km²), being widely cultivated worldwide as an ornamental plant and being potentially an invasive species in the same regions as *T. fluminensis*. In its natural habitats, *T. cerinthoides* forms dense subpopulations, reproducing either by clones or sexually by seeds. Thus, following the IUCN recommendations (IUCN 2001), *T. cerinthoides* should be considered Least Concern (LC).

Nomenclatural notes. *Tradescantia blossfeldiana* was described by Mildbraed (1940) based on cultivated material by H. Blossfeld at the Botanischer Garten und Botanisches Museum Berlin-Dahlem (Germany), and originally collected in Argentina. Mildbraed gives a detailed description that gives me no doubt that this species should be treated as a synonym of *T. cerinthoides*, as proposed by Hunt (2001). Nonetheless, Mildbraed (1940) cites no examined material. It is known that Mildbraed worked in Berlin (Stafleu and Cowan 1981), however no specimen matching the protologue was ever found at B. Stearn (1955) published a beautiful watercolour for *T. blossfeldiana*, together with horticultural comments for this species in Curtis’s Botanical Magazine. According to Stearn (1955), the watercolour presented by him was based on the living specimen, still in cultivation at the time at the Botanischer Garten und Botanisches Museum Berlin-Dahlem, which served as the base for Mildbraed’s description. Cuttings from the original specimens at the Botanischer Garten und Botanisches Museum Berlin-Dahlem were then sent to the Royal Botanical Gardens, Kew, by Dr. William Curtis on 1931. The plants flowered several times and vouchers were done in 1931, 1939, 1940, and 1951 and placed at K. After careful study of these voucher specimens at K, I have chosen the specimens collected in 1951, since one of the sheets is clearly the one on which the watercolour, published by Stearn (1955), was based. Thus, specimen K000501910 is here designated as the neotype of *T. blossfeldiana*, while specimen K000501909 is treated as the isoneotype.

Comments. *Tradescantia cerinthoides* is a member of the *T. crassula* group, due to its erect stems (Fig. 10A), definite base (Fig. 10B), convolute ptyxis (Fig. 10B), complicate and/or falcate leaves (Fig. 10B, C), cincinni bracts not saccate at base (Fig. 10K), petals that range from white to pink to lilac (Fig. 10N), pistil longer than the stamens (Fig. 10N), seed cleft towards the embryotega and hilum longer than ½ the length of the seeds (Fig. 10) (Pellegrini 2015, 2016, 2017). It can be easily differentiated from the remaining species of this group by a combination of: sepals not keeled and evenly pubescent (with indumentum ranging from velutine to hispid and generally with a mixture of glandular and eglandular hairs; Fig. 10L, M). It is highly polymorphic, being together with *T. crassula*, the only two species in the subgenus where the phyllotaxy has been observed to vary in adult specimens. The individuals presenting spirally-alternate leaves with shortened internodes (i.e. producing rosette leaves) and white petals represent the morphological variation described by Seubert (1855) as *T. koernickeana*. Also, its leaves are generally densely covered by indumentum on the abaxial side, but some individuals with completely glabrous leaves can also be found. On the other hand, the specimens with spirally-alternate leaves and elongated internodes represent *T. cerinthoides* as originally described by Kunth (1843). Finally, the specimens with distichously-alternate leaves, with blades generally adaxially green with vinaceous stripes, glabrous or sparsely pubescent, abaxially vinaceous and densely pubescent and petals ranging from pink to lilac, represent the morphological
variation described by Mildbraed (1940) as *T. blossfeldiana*. Nonetheless, *T. cerinthoides* shows great morphological variation in the same subpopulation. The same subpopulation can present individuals from all three aforementioned morphotypes growing together and, more importantly, with all kinds of intermediate forms between them (Fig. 10N). The same wide morphological variation was also observed in cultivation, with all morphs crossing and producing viable seeds (pers. observ.). Some of the morphological variation observed in *T. cerinthoides* can be partially explained by environmental features (e.g. plant stature and growth form, overall plant succulence, leaf shape and colouration etc.). Nonetheless, most of the obviously observed morphological variation seems to have at least a partial genetic background, with characters such as indumentum of the vegetative organs and colouration of the petals being maintained regardless of the environment. This still poorly understood variation seems to be the main cause of the description for all of its species synonyms and also as a cause for this species being so popular in cultivation. In this scenario, it seems illogical to accept several ill-defined species based on non-clear-cut character states, instead of the broader *T. cerinthoides* as proposed by Hunt (1980, 2001). Populational studies, coupled with reproductive and morphometrical studies, are needed to help us better understand this species’ morphological plasticity. *Tradescantia cerinthoides* is the most popular species from the *T. crassula* group, as a potted plant. This is especially due to the beautiful pink to lilac flowers that are common in the cultivated specimens and its generally dense leave indumentum.


Figs 12, 13


**Holotype.** BRAZIL. São Paulo: Biritiba Mirim, Estação Biológica de Boracéia, fl., 24 Nov 1983, A. Custódio Filho 1910 (RB barcode RB00972738!; isotype: SP barcode SP195458!).

**Description.** *Herbs* ca. 10–40 cm tall, with an indefinite base, terrestrial or rupicolous, rarely epiphytes. *Stems* prostrate with ascending apex, delicate to slightly succulent, little to densely branched; internodes 1.5–8.2 cm long at base, distally shorter, medium to dark green or vinaceous, velutine to hispid, hairs golden to light brown. *Leaves* distichously-alternate, sessile; *ptyxis* involute; sheaths 0.4–1 cm long, light to medium green to vinaceous, sometimes with green striations, velutine to hisute, margin densely setose, hairs golden; blades 1.8–7.6 × 0.9–3.4 cm, elliptic to broadly elliptic or lanceolate to ovate to broadly ovate, flat, succulent, velutine to hispid on both sides, hairs golden to light brown, adaxially medium to dark green, abaxially light to medium green or vinaceous, turning black to dark brown or olive-green when dry, base
Figure 12. *Tradescantia chrysophylla* M.Pell. A habit, showing the prostrate stems (removed) B detail of the ascending apex C–D detail of the stem and leaf-sheath, showing the velutine to hispid indumentum C medium green to reddish-green internodes (removed) D vinaceous internodes E–G leaves E adaxial side F vinaceous abaxial side G light green abaxial side (removed) H–I inflorescence (removed) H upper view of an inflorescence, showing unequal cincinni bracts and a front view of a flower (removed) I front view of a flower (removed) J dorsal and ventral views of the seed, showing the costate testa not cleft towards the embryotega, and the hilum ca. ½ the length of the seed. Photos by M.O.O. Pellegrini. See the Erratum note.
cordate to obtuse, margin ciliolate, slightly revolute, apex acute, sometimes acuminate; midvein conspicuous, adaxially impressed, secondary veins inconspicuous, abaxially inconspicuous, becoming more evident abaxially when dry. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles (0.4–)1.1–9.5 cm long, velutine to hirsute, hairs golden to light brown; cincinni bracts 0.9–6.6 × 0.3–3.1 cm, unequal to strongly unequal to each other, elliptic to ovate to broadly ovate, leaf-like, velutine to hirsute, hairs golden to light brown, medium to dark green, abaxially light to medium green or vinaceous, base cordate to obtuse, saccate, margin ciliolate, slightly revolute, apex acute; double cincinni (4–)6–20-flowered. Flowers 1.1–1.6 cm diam., pedicels 0.6–1.3 cm long, glandular-pubescent; floral buds broadly ovoid; sepals 4.7–6 × 2.2–4 mm, not keeled, light to medium green, glandular-pubescent or with a mixture of glandular and eglandular, golden to light brown hairs; petals 7.2–9 × 4.6–6.2 mm, white; filaments 5.4–6.2 mm long, anthers 0.6–1 × 0.3–0.7 mm; ovary 0.8–1.7 × 0.7–1.4 mm, style 3.8–4.6 cm long; pistil the same length as the stamens. Capsules 2.7–3.2 × 2.2–2.8 mm. Seeds 1.1–1.5 × 1.0–1.4 mm, testa grey to greyish-brown, not cleft towards the embryotega, costate; hilum ½ the length of the seed.

**Distribution and habitat.** *Tradescantia chrysophylla* is endemic to Brazil, more precisely to the states of Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul; in the Atlantic Forest domain (Fig. 13). It can be found growing as a terrestrial, rupicolous or as an epiphyte understorey in shaded and moist forests.

**Phenology.** It was found in bloom and fruit from July to December but peaking during October.

**Etymology.** The epithet “*chrysophylla*” means “golden leaves” and is given after the golden hairs that cover the whole plant, but especially the leaves.

**Conservation status.** According to Pellegrini et al. (2017), *T. chrysophylla* possesses a wide EOO (here updated to ca. 234,968.601 km²), but a considerably narrow AOO (ca. 60.000 km²). It is known from very few and fragmented collections and, following the IUCN (2001) recommendations, it should be considered as Endangered [EN, A2cde+B2ab(ii, iii, iv)+D2].

**Comments.** *Tradescantia chrysophylla* is morphologically similar to *T. cymbispatha*, *T. fluminensis* and *T. mundula* due to their indefinite base (Fig. 12, B), prostrate stems with ascending apex (Fig. 12A, B), involute ptyxis, saccate cincinni bracts, white petals (Fig. 12H, I), pistil as long as the stamens, seeds with unclipped testa towards the embryotega and hilum ½ the length of the seed (Fig. 12J). However, it can be easily differentiated from *T. fluminensis* and *T. mundula* by its sessile succulent leaves, blades evenly covered by indumentum and inconspicuous secondary veins (*vs.* leaves membranous, blades glabrous or unevenly covered by indumentum and impressed secondary veins), floral buds broadly ovoid (*vs.* narrowly ovoid to ovoid) and sepals without keels (*vs.* keeled sepals). *Tradescantia chrysophylla* is considerably more similar to *T. cymbispatha* due to their sessile succulent leaves evenly covered by indumentum, inconspicuous secondary veins and sepals without keels. Nonetheless, in *T. chrysophylla*, the indumentum is velutine to hispid and golden to light brown but sometimes becoming light-brown when over-exposed to the sun (*vs.* strigose and hyaline in *T. cymbispatha*), the cincinni bracts are unequal to strongly unequal (*vs.* equal) and the pedicels and sepals are glandular-pubescent with golden to light brown hairs or covered by a mixture of glandular and eglandular hairs (*vs.* velutine, covered exclusively by eglandular hyaline hairs). Furthermore, *T. chrysophylla* can be differentiated from almost all the species of *T.* subg. *Austrotradescantia* by its golden to light brown indumentum covering almost the entire plant. The only other species known to possess a similarly coloured indumentum are *T. cerinthoides* (*T. crassula* group; Pellegrini 2015, 2016) and *T. tucumanensis* (*T. tenella* species complex; Pellegrini 2017). *Tradescantia chrysophylla* can be easily differentiated by its indefinite habit base (*vs.* definite in *T. cerinthoides*), prostrate stems (*vs.* ascending to erect), saccate cincinni bracts (*vs.* non-saccate), pistil the same length as the stamens (*vs.* longer than the stamens), petals always white (*vs.* ranging from white to pink to lilac), seed not cleft towards the embryotega (*vs.* cleft) and hilum ½ the length of the seed (*vs.* longer than ½ the length). *Tradescantia chrysophylla* and *T. tucumanensis* can be confused due to their similar habit, light brown to golden indumentum and asymmetrical cincinni bracts. Nonetheless, both species are easily differentiated by their non-overlapping distributions (endemic to Brazil in *T. chrysophylla* vs. restricted to the
Figure 13. Distribution of *Tradescantia chrysophylla* M.Pell. Orange– Cerrado; Red– Caatinga; Olive-green– Pampa; Dark green– Atlantic Forest.

Tucumano-Boliviano Forest in *T. tucumanensis*), leaf morphology (leaves sessile, succulent, with inconspicuous secondary veins in *T. chrysophylla* vs. subpetiolar, membranous to chartaceous, with impressed secondary veins in *T. tucumanensis*). Finally, *T. chrysophylla* is easily identified in dried specimens, since it becomes peculiarly dark brown to black, added to the large epidermal domes in the leaf-blades.

Hassemer et al. (2017) describe *T. serrana* as a new species, known from a sole collection and endemic to the state of Santa Catarina. They compare their new species with *T. umbraculifera*, with which it bears very little resemblance. They also compare *T. serrana* with *T. chrysophylla*, differing both species based on the shape of their leaves, concentration of hairs on both sides of the blades, the presence of dorsal keels in the
sepals, the posture of the petals (i.e. flat vs. plicate) and the relative length between the androecium and the pistil. Nonetheless, the sepals’ midvein was misinterpreted by the authors as representing dorsal keels (which, for instance, can be easily observed in *T. fluminensis*; Fig. 6B), the repandous petals as being plicate (which is only known to occur in *T. atlantica* and *T. fluminensis*; Fig. 6D–F), but they failed to realise that the relative length between the stamens and pistil used by me in my MSc thesis (Pellegrini 2015), is actually approximate and that in the *T. crassula* group, the pistil is considerably longer than the stamens, as opposed to the approximately equal length in the *T. fluminensis* group. *Tradescantia chrysophylla* and *T. serrana* share the sessile and succulent leaves with inconspicuous secondary veins, blades velutine to hispid with light brown to golden hairs, unequal to strongly unequal cincinni bracts and pedicels and sepals glandular-pubescent or with a mixture of glandular and eglandular hairs. *Tradescantia serrana* undoubtedly represents nothing more than a synonym of *T. chrysophylla* and is here treated as such.


**Description.** Herbs ca. 10–50 cm tall, with a definite base, terrestrial, rupicolous or epiphytes. Stems erect, succulent, rarely to densely branched at the base, sometimes branching at the upper half; internodes (1.3–)3.2–5.4(–9.2) cm long at base, distally shorter, medium to dark green, glabrous, sometimes with a leaf-opposed longitudinal line of short, uniseriate, light brown to hyaline hairs in the terminal portion of the stems. Leaves distichously or spirally-alternate, sessile; ptyxis convolute; sheaths 0.6–2 cm long, light green, sometimes with green striations, glabrous, margin ciliate to setose, hairs hyaline; blades 4.4–12.8 × 1.4–2.8 cm, elliptic to broadly elliptic to ovate to broadly ovate to obovate, rarely lanceolate, falcate to complicate, succulent, glabrous on both sides, adaxially glossy light-green to green, sometimes glaucous, abaxially slightly lighter, turning olive-green to greyish-green to brown when dry, obtuse to truncate, rarely cuneate, margin green, glabrous or minutely ciliolate, slightly revolute,
apex acute to obtuse, rarely acuminate; midvein conspicuous to inconspicuous, adaxially impressed to inconspicuous, secondary veins inconspicuous on both sides, sometimes adaxially conspicuous. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back, sometimes reduced to a solitary cincinnus in axillary inflorescences; peduncles (0.3–)1.4–3.6(–7.3) cm long, green, the axillary ones sessile, glabrous, sometimes with a leaf-opposed longitudinal line of short, uniseriate, light brown to hyaline hairs; peduncle bracts absent; supernumerary bracts absent; cincinni bracts 1.2–3.9(–6) × 0.7–2.1 cm, leaf-like, rarely unequal or reduced in some axillary inflorescences, broadly ovate to ovate, leaf-like, glabrous, adaxially light to medium to dark green, abaxially light to medium green, base cordate to obtuse, not saccate, margin glabrous to minutely ciliolate, sparsely setose at base, slightly revolute, apex acute; main florescence 8–28-flowered. Flowers 0.8–1.2 cm diam., pedicels 0.7–1.5 cm long, green to vinaceous, glabrous, rarely sparsely glandular-pubescent; floral buds broadly ovoid; sepals 4.6–7.5 × 2.7–4.4 mm, dorsally keeled, green, rarely vinaceous, setose, with long hyaline hairs along the keel; petals 6–7.3 × 4.7–5.2 mm, flat, white; filaments 5.1–6.6 mm long, anthers 0.6–0.8 × 1.1–1.3 mm; ovary 1.7–1.9 × 1.5–1.7 cm, style 4.2–5 cm long; pistil longer than the stamens. Capsules 3.6–4.2 × 2.1–2.7 mm. Seeds 1.2–1.8 × 1.1–1.6 mm, testa grey to greyish-brown, cleft towards the embryotega, costate; hilum longer than ½ the length of the seed.


Figure 14. *Tradescantia crassula* Link & Otto. A habit, showing the erect stems and distichously-alternate leaves with conduplicate blades of a rupicolous specimen B habit, showing epiphytic subpopulation C detail of an epiphytic individual, showing the spirally-alternate leaves D–F stems and leaf-sheaths D vinaceous internodes of a young epiphytic specimen E medium green internode with a leaf-opposed line of uniseriate hairs F medium green internode, showing a leaf-opposed line of uniseriate hairs G detail of the leaf-blade, showing the glabrous surface H synflorescence I detail of the synflorescence, showing an axillary inflorescence composed of solitary cincinnus and a terminal with the typical double-cincinni with non-saccate cincinni bracts J flowers in front and side view, showing the setose sepals with hairs restricted to the dorsal keels and pistil longer than the stamens K dorsal and ventral views of the seed, showing the costate testa cleft towards the embryotega and the hilum longer than ½ the length of the seed. H by G.A. Dettke, remaining photos by M.O.O. Pellegrini.

**Rio Grande do Sul:** Arroio dos Ratos, Fazenda Fasinal, ca. 15 km SW da cidade, fl., Sep 1982, N. Silveira 400 (HAS); fl., 8 Oct 1982, K. Hagelund 14026 (ICN); Augusto Pena, fl., 22 Oct 1953, P.J. Pivetta 964 (HRCB, PACA); Bocaiúva do Sul, Pessegueiros, fl., 8 Nov 2010, G.A. Dettke 477 (ICN); Caçapava do Sul, Guaritas, estrada para as Minas do Camaquã, fl., 9 Oct 2002, J.R. Stehmann et al. 3189 (BHCB); Cachoeira do Sul, rodovia Porto Alegre-Uruguaiana, km 145, fl., Oct 1984, N. Silveira & J. Mattos 7042 (HAS); Canguçu, fl., Nov 1986, N. Silveira 8967 (HAS); Caxias do Sul, Vila Oliva, fl., 5 Jan 1946, B. Ramo 31069 (PACA); Esmeralda, fl., Nov 1982, L.A. Cestaro s.n. (HAS no. 28715); Farroupilha, fl., 25 Nov 1956, O.R. Camargo 1024 (PACA); Parque dos Pinheiros, fl., Nov 1978, L. Aguiar s.n. (Has no. 8926); Garibaldi, fl., 29 Oct 1957, O.R. Camargo 2304 (PACA); Guaíba, Fazenda Maximiano, BR-116, km 308, fl., 20 Aug 2006, L.F. Lima s.n. (ICN no. 151445); Ijuí, Dr. Pestana, fl., 5 Nov 1953, J. Pivetta 963 (PACA); Lages, UAP2/UAL2, fl., 11 Nov 2013, E.D. Santos et al. 319 (FUEL); UAP5/UAL2, fl., 10 Nov 2013, E.D. Santos et al. 265 (FUEL); Lavras do Sul, capoeira 1 km N de Lavras do Sul, fl., 1 Oct 1971, B.E. Irgang & J.C. Lindeman 1416 (EFC, HAS); Montenegro, Campestre, fl., fr., 18 Oct 1950, A. Sehnem s.n. (PACA no. 51067); Pareci, fl., 1944, B. Ramo 26664 (PACA); Morro Reuter, fl., 17 Nov 1971, R.A. Wasum 204 (HUCS, PACA); Nova Petrópolis, fl., 15 Dec 1974, K. Hagelund 8754 (ICN); Palmarens do Sul, Fazenda do Martin, fl., 24 Sep 2012, E. Valduga 442 (FLOR, FUEL, HUCS); Porto Alegre, Barra do Ribeiro, fl., 14 Nov 1948, B. Ramo 38309 (PACA); fl., 2 Nov 1957, O.R. Camargo 2453 (PACA); Morro São Pedro, Econsciência Espaço de Conservação, fl., 18 Sep 2005, R. Setubal & G. Seger 344 (ICN); fl., 12 Oct 2006, R. Setubal et al. 858 (ICN); Vila Manres, fl., 22 Oct 1955, B. Ramo 57077 (HBR, PACA); Rio Grande, Estação Ecológica do Taim, fl., Sep 1986, J.L. Achchter 2216 (HAS); Santana da Boa Vista, Arroio Vargas, fl., 23 Sep 1998, C. Mondin 1483 (PACA); São Francisco de Paula, Cam-
Figure 15. Distribution of *Tradescantia crassula* Link & Otto. Orange– Cerrado; Yellow– Chaco and Pantanal; Olive-green– Pampa; Dark green– Atlantic Forest.

Tradescantia crassula occurs in Argentina, Brazil (in the states of Minas Gerais, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul) and Uruguay; in the Atlantic Forest, Cerrado and Pampa domains (Fig. 15). It is commonly found growing in rocky outcrops, grasslands and open areas, under full sunlight, as rupicolous or terrestrial. It is also found on roadsides and within the understorey of open forests, as terrestrial or, more rarely, as an epiphyte (Pellegrini et al. 2017). Phanology. It was found in bloom and fruit throughout the year but peaking during the rainy season and being less commonly in bloom during the dry season.
**Etymology.** The epithet “crassula” makes reference to the extremely succulent vegetative parts characteristic of this species.

**Conservation status.** As stated by Pellegrini et al. (2017), *T. crassula* possesses a wide EOO (here expanded to ca. 627,243.259 km²), thus following the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

**Comments.** *Tradescantia crassula* is very plastic in plant stature, leaf shape and flower size. Few vegetative characters were observed to be constant in the *T. crassula* group and thus are of little taxonomic relevance. Nonetheless, all studied individuals of *T. crassula* always present glabrous leaves (Fig. 14G), sepals with long hairs along the keel (Fig. 14H–J) and white petals (Fig. 14J). Added to that, most of the known variation can be related to ecological conditions. Furthermore, species in this subgenus are morphologically variable and, when kept in cultivation or growing in shaded areas, they can change their vegetative morphology quite drastically, changing between the different morphs (more or less succulent plants, smaller or taller plants, plants with different leaf shapes). Thus, I agree with Pellegrini et al. (2017) in treating *T. schwirkowskiana* as a mere synonym of *T. crassula*. Detailed comments on the morphological similarities between *T. crassula* and closely related species and the species morphological variation are presented by Pellegrini et al. (2017), while Pellegrini (2017) discusses its systematic affinities.

**5. Tradescantia cymbispatha** C.B.Clarke in De Candolle & De Candolle, Monogr. Phan. 3: 296. 1881.
Figs 16, 17


*Tradescantia cymbispatha* var. *cymbispatha* C.B.Clarke, in De Candolle & De Candolle Monogr. Phan. 3: 296. 1881.


*Tradescantia mundula* var. *scabrida* Seub., in Martius Fl. Bras. 3(1): 249. 1855. Lectotype (designated by Pellegrini et al. 2015). BRAZIL. s.loc., fl., s.dat., F. Sellow 3852 (B barcode B 10 0247278!).

**Description.** Herbs ca. 5–30 cm tall, with an indefinite base, terrestrial, rupicolous or epiphytes. Stems prostrate with ascending apex, delicate to slightly succulent, little to densely branched; internodes 0.8–6.4 cm long at base, distally shorter, medium to dark green or reddish-purple to vinaceous, strigose, hairs hyaline. Leaves distichously-
alternate, sessile; ptyxis involute; sheaths 0.4–0.7 cm long, green to green with vinaceous striations or vinaceous, strigose, margin setose, hairs light brown; blades elliptic to broadly elliptic or broadly ovate, 1.2–4.6 × 0.6–2.2 cm, flat, succulent, strigose on both sides, adaxially dark to medium bluish-green, turning olive-green to medium brown when dry, abaxially light to medium green or vinaceous, turning tan to light brown when dry, base cordate to obtuse, margin green to vinaceous, ciliolate, slightly revolute, apex acute; midvein conspicuous, adaxially impressed, secondary veins inconspicuous, adaxially inconspicuous, abaxially inconspicuous, becoming more evident on both sides when dry. Synflorescences terminal or axillar in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 0.6–4.3 cm long, medium to dark green or reddish-purple to vinaceous, strigose; cincinni bracts similar to each other, broadly elliptic to broadly ovate, 1–3.5 × 0.6–1.6 cm, leaf-like, strigose on both sides, adaxially dark to medium bluish-green, abaxially light to medium green or vinaceous, base cordate, saccate, margin ciliolate, slightly revolute, apex acute; double cincinni 6–10-flowered. Flowers 0.9–1.5 cm diam., pedicels 0.9–1.6 cm long, vinaceous, velutine, sometimes with some odd glandular hairs, hairs hyaline; floral buds broadly ovoid; sepals 6–6.5 × 2–2.6 mm, without keels, vinaceous, rarely green, velutine, hairs hyaline; petals 0.5–0.7 × 0.3–0.5 cm, flat, white, sometimes pink to lilac; filaments 4.1–4.6 mm long, anthers 0.8–1 × 1–1.3 mm; ovary 0.9–1.2 × 0.6–1 cm, style 2.6–3.2 cm long; pistil the same length as the stamens. Capsules 2.9–3.8 × 1.8–2.2 mm. Seeds 1.4–1.8 × 1.1–1.5 mm, testa grey to greyish-brown, not cleft towards the embryotega, costate; hilum ½ the length of the seed.

Figure 16. *Tradescantia cymbispatha* C.B.Clarke. **A** habit, showing the velvety aspect of the leaves due to the strigose indumentum **B** detail of the stem, showing the predominant vinaceous colour of the stem and leaves **C** detail of the stems, leaf-sheaths and abaxial side of the blades, showing the strigose and hyaline indumentum **D** adaxial side of the leaf-blade, showing the inconspicuous secondary veins and the strigose and hyaline indumentum **E** detail of flower at post-anthesis, showing the pedicel's and sepals' velutine indumentum **F** front view of a flower **G** dorsal and ventral views of the seed, showing the costate testa not cleft towards the embryotega and the hilum ca. ½ the length of the seed. Photos by M.O.O. Pellegrini.
Figure 17. Distribution of *Tradescantia cymbispatha* C.B.Clarke. Orange—Cerrado; Red—Caatinga; Yellow—Chaco and Pantanal; Olive-green—Pampa; Dark green—Atlantic Forest.

no. 8759); Gramado, Pousada Cabanas do Tio Müller, fl., fr., 11 Nov 2006, R. Marquete & E.V.S. Medeiros 4000 (RB); Montenegro, Kappesberg, fl., 1 Sep 1946, A. Sehnem s.n. (PACA no. 48435); fl., 11 Sep 1949, B. Rambo 43432 (PACA); Pareci Novo, st., 1944, E. Henz s.n. (PACA no. 27649); Nova Hamburgo, Ferrabraz, fl., 14 Oct 1936, B. Rambo 2785 (PACA); fl., fr., 2 Sep 1949, B. Rambo 43230 (PACA); Nova Petrópolis, Morro Reuter, fl., 23 Oct 1966, A. Sehnem 8924 (PACA); Passo Fundo, fl., 30 Oct 1971, J.C. Lindeman et al. s.n. (EFC, CTES no. 203179, ICN no. 8840); Porto Alegre, Itapu, no Morro da Grota, fl., Oct 1984, J. Mattos et al. 26110 (HAS); Morro Santana, fl., Aug 1987, N. Silveira 4840 (HAS); Rio Grande, Estação Ecológica do Taim, fl., 18 Sep 1986, J.L. Waechter 2206 (FLOR); Rolante, Arroio

Santa Catarina:

Central Department:

**Distribution and habitat.** Argentina, Brazil (states of Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul), Paraguay and Uruguay; in the Atlantic Forest, Chaco and Pampa domains (Fig. 17). It can be found growing understorey in shaded and moist forests as terrestrial, rupicolous and sometimes as an epiphyte.

**Phenology.** It was found in bloom throughout the year but peaking during the rainy season and being less commonly in bloom during the dry season. Fruit has been sporadically observed during the flowering period.

**Etymology.** The epithet makes clear the great nomenclatural confusion created by Clarke’s misinterpretation of Vellozo’s plate. It means “boat-shaped bract”, a character present only in the Bolivian *T. praetermissa* M.Pell. and other members of *T. subg. Campelia*, on which Clarke partially based his description (Pellegrini et al. 2016; Pellegrini 2017).

**Conservation status.** *Tradescantia cymbispatha* possesses a wide EOO (ca. 1,201,901.629 km²), being also cultivated throughout its distribution range as an ornamental plant. Thus, following the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

**Nomenclatural notes.** *Tradescantia cymbispatha* was originally described as *T. geniculata* Vell. on *Florae fluminensis* (Vellozo 1829, 1831). However, since this name was a posterior homonym of *T. geniculata* Jacq., it was almost completely overlooked by most botanists until Clarke (1881) inadvertently proposed *T. cymbispatha* C.B.Clarke as a replacement name. These matters were only recently clarified by Pellegrini et al. (2015, 2016).

**Comments.** *Tradescantia cymbispatha* is morphologically similar to *T. chrysophylla*, *T. fluminensis* and *T. mundula* due to their indefinite base, prostrate stems with
ascending apex (Fig. 16A, B), involute ptyxis, saccate cincinni bracts (Fig. 16B), white petals (Fig. 16F), pistil as long as the stamens (Fig. 16B, E, F), seeds with uncleaved testa towards the embryotega and hilum ½ the length of the seed (Fig. 16G). It can be easily differentiated from *T. fluminensis* and *T. mundula* by its sessile leaves with inconspicuous secondary veins (*vs.* subpetiolate with impressed secondary veins, in *T. fluminensis* and *T. mundula*), blades evenly covered by indumentum (*vs.* glabrous or unevenly covered by indumentum) and sepals without dorsal keels (*vs.* sepals dorsally keeled). *Tradescantia cymbispatha* is morphologically more closely related to *T. chrysophylla* due to their sessile and succulent leaves with inconspicuous secondary veins, blades abaxially vinaceous and sepals without dorsal keels. Both species can be differentiated based on pubescence of the vegetative and reproductive organs (leaves strigose, pedicels and sepals velutine, hairs hyaline in *T. cymbispatha* *vs.* leaves velutine to hispid, pedicels and sepals glandular-pubescent or with a mixture of glandular and eglandular hairs, hairs light brown to golden), symmetry of the cincinni bracts (equal in *T. cymbispatha* *vs.* unequal in *T. chrysophylla*) and petal colour (white but sometimes pink or lilac in *T. cymbispatha* *vs.* always white in *T. chrysophylla*). In the field, *T. cymbispatha* is a very distinctive species, being easily differentiated from the remaining species of the *T. fluminensis* group by its adaxially dark to medium bluish-green and abaxially vinaceous leaves, which possess a peculiar velvety glow due to its dense strigose hyaline hairs. The stems are prostrate, forming dense mats that may cover large areas and producing a bluish herbaceous understorey formation. Furthermore, *T. cymbispatha* possesses some very interesting characters that become evident when specimens are dried. Firstly, the intense bluish-green pigmentation of the adaxial side becomes olive-green to medium brown, while the vinaceous pigmentation (i.e. anthocyanin) evaporates, leaving the abaxial side tan to light brown. Also, despite possessing inconspicuous secondary veins due to its succulent leaves, dried leaves of *T. cymbispatha* acquire a striate aspect, due to the large and linearly arranged epidermal domes possessed by this species.

Figs 18, 19


**Type material. Neotype (designated here).** BRAZIL. Rio Grande do Sul: Jaguari, ca. 12.5 km ao norte de Jaguari na BR-287 em direção a Santiago, fl., fr., Dec 2005, L.Y.S. Aona & M.C. Machado 958 (UEC 2ex barcode UEC057324!; isoneotype to be distributed to: RB!).
Figure 18. *Tradescantia decora* W. Bull A habit B detail of the leaf-sheath and the base of the blade, showing the long-setose hairs C detail of the base of the leaf blade, showing the long-setose hairs at the margin D details of a long-setose hair E main florescence composed of 4-cincinni, showing the side view of a flower and its pistil longer than the stamens F detail of the stamen G flower at anthesis H flower at post-anthesis I sepal, showing the lack of a dorsal keel J flower at post-anthesis, with capsule beginning to develop K pistil L–M seeds: L dorsal view, showing the costate testa cleft towards the embryotega; ventral view showing the hilum longer than $1/2$ the length of the seed. Line drawing by M.A. Rezende. The entire figure has been replaced, see the Erratum note.
Description. Herbs ca. 30–70 cm tall, with indefinite base, rupicolous, rarely terrestrial. Stems erect, succulent, little branched only at the base; internodes 1.8–7 cm long at base, distally shorter, green, sometimes with vertical reddish-purple striations, glabrous. Leaves spirally-alternate, sessile; ptyxis convolute; sheaths 0.4–3.8 cm long, light green, sometimes with vertical green or reddish-purple striations, glabrous, margin setose, with long hyaline hairs; blades 2.7–37.5 × 1.1–2.5 cm, linear elliptic to linear lanceolate to lanceolate, rarely ovate, falcate to complicate, succulent, glabrous, adaxially light to medium green, abaxially light green, rarely tinted vinaceous to completely vinaceous, turning olive-green to light brown when dry, base truncate to obtuse, margin green to vinaceous, setose at base or until the middle with long hyaline hairs, slightly revolute, apex acute to acuminate; midvein conspicuous to inconspicuous, secondary veins inconspicuous, becoming more evident on both sides when dry. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate 2–3(–5) cincinni fused back to back; peduncles 3.5–6.2 cm long, green, glabrous; basal bract inconspicuous, tubular, hyaline, glabrous; peduncle bracts absent; supernumerary bracts present, 1–3 per inflorescence, similar in shape and size to the cincinni bracts; cincinni bracts 1–3.5 × 0.3–1.2 cm, unequal to each other, lanceolate to ovate, rarely broadly ovate, spathaceous, glabrous, light green, abaxially slightly lighter, base truncate to obtuse, not saccate, margin green, setose at base or until the middle with long hyaline hairs, flat, apex acute; main florescence (4–)6–30-flowered; Flowers 1–1.5 cm diam.; floral buds broadly ellipsoid, apex acuminate; pedicels 0.7–2 cm long, green, glabrous, rarely sparsely glandular-pubescent, if present hairs hyaline; sepals 4.8–7.3 × 1.5–3 mm, green, without dorsal keels, glabrous, rarely sparsely pilose at the apex, when present hairs eglandular, hyaline; petals 4–8.6 × 2.7–5.4 mm, flat, white to white with pink apex to light pink; stamens with filaments 2.8–5 mm long, anthers 0.8–1 × 1–1.2 mm; ovary 1–1.7 × 1–1.3 cm, style 4–5.8 cm long; pistil longer than length the stamens. Capsules 2.8–4.2 × 1.8–3 mm. Seeds 1.1–3 × 1–1.8 mm, cleft towards the embryotega, testa grey to greyish-brown, cleft towards the embryotega, costate; hilum longer than ½ the length of the seed.


Distribution and habitat. Tradescantia decora is endemic to the central region of Rio Grande do Sul, Brazil; in the Atlantic Forest and Pampa domains (Fig. 19). It can be found growing as rupicolous, rarely as a terrestrial, in rocky walls.

Phenology. It was found in bloom and fruit in December and April.

Etymology. The epithet “decora” means decorated, ornamented, making reference to this species beautiful appearance, decorated by its lush foliage.

Conservation status. Tradescantia decora is only known from five collections restricted to the state of Rio Grande do Sul, one of them cultivated in Berlin and without precise locality. Furthermore, its EOO and AOO are considerably narrow (ca. 672.001 km² and ca. 16.000 km², respectively). According to Bünecker et al. (2017), this spe-
cies is known to present small subpopulations, with its distribution range being extremely threatened by the construction of small hydroelectric powerplants in the next few years (Marchiori et al. 2014). This might cause most or all known subpopulations to become extinct in the near future, since this species grows in rock walls near water bodies. Thus, in accordance with the IUCN recommendations (IUCN 2001), *T. decora* should be considered as Critically Endangered [CR, A2ac+B2ab(iii, iv, v)+D1+E].

**Nomenclatural notes.** After analysing the original publication (Bull 1892), I have concluded that, like most species described in Seed and Nursery Catalogues, *T. decora* was probably described based on living and cultivated material. Thus, no voucher was ever made for this name. Unfortunately, Bull (1892) does not present any kind of il-

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**Figure 19.** Distribution of *Tradescantia decora* W.Bull. Yellow– Chaco and Pantanal; Olive-green– Pampa; Dark green– Atlantic Forest.
Illustration that might be selected as the lectotype for his name. Thus, according to The Code (McNeill et al. 2012, Art. 9.7), I designate the specimen Aona & Machado 958 (UEC barcode UEC057324) as the neotype of T. decora since it is in complete accordance with the protologue.

**Comments.** After analysing the protologue of T. decora (Bull 1892), it became clear that this name was conspecific to T. valida and T. multibracteata, due to its erect stems (Fig. 18A), spirally-alternate leaves (Fig. 18A), linear lanceolate to lanceolate leaf-blades with truncate base (Fig. 18A)) and, most importantly, all being restricted to the state of Rio Grande do Sul, Brazil (Fig. 19). Since T. decora has priority over T. valida and T. multibracteata, it should be treated as the accepted name for this species. Tradescantia decora can be easily differentiated from all remaining species of the T. crassula group by the presence of supernumerary bracts, its spathaceous and unequal cincinni bracts, its main florescence being generally composed by 2–3(--5) cincinni (Fig. 18A, E) and sepals not keeled with caducous hairs at the apex (Fig. 18G, H, J). It is similar to T. cerinthoides due to its sepals without dorsal keels (Fig. 18G, H, J). Nonetheless, they can be easily differentiated due to its generally linear elliptic to linear lanceolate to lanceolate leaf-blades (vs. elliptic to broadly elliptic or ovate to broadly ovate or obovate to broadly obovate, in T. cerinthoides), glabrous with margins setose at the base or until the middle (vs. pubescent on both sides or only abaxially, rarely glabrous on both sides and ciliate margins) and pedicels and sepals glabrous or only sparsely pubescent at apex with eglandular hairs (vs. evenly densely velutine to hispid, sometimes with a mixture of glandular and eglandular hairs). Tradescantia decora is much more similar to T. crassula and T. seubertiana, due to their leaf-blades and sepal pubescence. These species can be easily differentiated by the pubescence of the margin of their leaf-sheaths (ciliate to shortly-setose in T. crassula; glabrous in T. seubertiana; and long-setose in T. decora), the pubescence of their sepals (long-setose along the keels in T. crassula; glabrous in T. seubertiana; and glabrous or with few hairs at the apex in T. decora) and by the shape of their floral buds (broadly ovoid T. crassula; ellipsoid in T. seubertiana; and ellipsoid in T. decora).

Figs 20, 21

*Tradescantia albiflora* Kunth, Enum. Pl. 4: 84. 1843. Lectotype (designated here).
s.loc., cultivated in Germany, Horto Berolinense, fl., s.dat., C.S. Kunth 165 (B barcode B100264915!; isolectotype: B barcode B100264916!).


Description. Herbs ca. 15–50 cm tall, with an indefinite base, terrestrial, rupicolous or epiphytes. Stems prostrate with ascending apex, delicate to slightly succulent, little to densely branched; internodes 1.6–9 cm long at base, distally shorter, medium to dark green, glabrous, with a leaf-opposed longitudinal line of short, uniseriate, hyaline hairs in the terminal portion of the stems. Leaves distichously-alternate, subpetiolate; ptyxis involute; sheaths 0.2–1.3 cm long, medium green, glabrous, margin densely setose, hairs hyaline to light brown; petiole 0.2–1.5 cm long to indistinct; blades (1.3–1.6–)2.2–11.8 × (0.6–0.8–)1.1–4.8 cm, elliptic to broadly elliptic or ovate to broadly ovate, flat, membranous to slightly succulent, glabrous on both sides, adaxially dark to medium green, abaxially light to medium green, turning olive-green or medium to dark brown when dry, base cordate to obtuse, rarely cuneate, margin green, ciliolate, flat, apex acute; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially conspicuous, becoming more evident on both sides when dry. Synflorescences terminal or axillar in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 0.6–4.7 cm long, dark to medium green, glabrous to sparsely pilose near the cincinni bracts, with a longitudinal line of short, uniseriate, hyaline hairs, opposed to the first cincinni bract; cincinni bracts 1.1–5.7 × 0.5–2.6 cm, similar to each other, ovate to broadly ovate, leaf-like, glabrous, medium to dark green, abaxially light to medium green, base cordate to obtuse, saccate, margin ciliolate, sometimes sparsely setose at base, flat, apex acute; double cincinni (4–)6–12-flowered. Flowers 1.5–2 cm diam., pedicels 0.6–1.5 cm long, medium green, glabrous to distally sparsely glandular-pubescent, hairs hyaline; floral buds ovoid; sepals 4.6–6.7 × 2.6–4.4 mm, dorsally keeled, medium green, pilose along the keel; petals 0.7–1 × 0.4–0.6 mm, plicate, white; filaments 5–5.2 mm long, anthers 0.8–1 × 0.9–1 mm; ovary 1–2.1 × 0.9–1.3 mm, style 3.5–4.4 mm long; pistil the same length as the stamens. Capsules 3.3–4.1 × 2.7–2.9 cm. Seeds 1.4–1.6 × 1.1–1.2 mm, testa brown to greyish-brown, not cleft towards the embryotega, costate; hilum equal ½ the length of the seed.


Figure 20. *Tradescantia fluminensis* Vell. A habit, showing the mat-forming prostrate stems B detail of the stem and leaf-sheath, showing the setose margin of the leaf-sheath and the subpetiole C adaxial side of the leaf-blade, showing the impressed secondary veins D detail of the inflorescence, showing the sessile cinclini bract base, the plicate petals and the pistil as long as the stamens E floral bud, showing the dorsally keeled sepals and the pilose indumentum restricted to the keels F front view of a flower, showing the plicate petals G dorsal and ventral views of the seed, showing the costate testa not cleft towards the embryotega and the hilum ca. ½ the length of the seed. Photos by M.O.O. Pellegrini.

**Rio Grande do Sul:**

**Santa Catarina:**
Bocaína do Sul, Pessegueiros, fl., 8 Nov 2010, G.A. Dettke 476 (ICN); Bom Jardim da Serra, Serra do Rio do Rastro, fl., s.dat., M. Sobral et al. 9019 (ICN); Ibirama, fl., 20 Oct 1953, R.M.
Figure 21. Distribution of *Tradescantia fluminensis* Vell. Light green – Amazon Forest; Orange – Cerrado; Red – Caatinga; Yellow – Chaco and Pantanal; Olive-green – Pampa; Dark green – Atlantic Forest; Purple – Andean Yungas.

Klein 614 (HBR); Itapiranga, proximidades do Rio Uruguai, fl., 6 Feb 1951, B. Rambo 49832 (PACA); Rodeio, fl., 19 Oct 2015, L.A. Funez 4550 (FURB); São Bento do Sul, Trilha do Parque Florestal do SAMAE, pequeno remanescente de mata próximo a estrada, fl., 28 Sep 2014, M.O.O. Pellegrini & P. Schwirkowski 420 (RB); São Francisco do Sul, fl., 13 Oct 2008, T.G. Fendrich 7136 (HUFSJ, JOI); Timbó, Centro, margem do Rio dos Cedros, fl., 11 Oct 2014, L.A. Funez 3558 (FURB); Turvo, Arar, 20.x.1943, fl., R. Reitz 73 (HBR, RB). **São Paulo:** s.loc., fl., Aug 1942, s.leg. s.n. (CESJ no. 812, HAS no. 67752); Biritiba Mirim, Estação Biológica de Boracéia, fl., 29 Sep 1983, A. Custódio Filho 1568 (RB, SP); Campinas, Fazenda Santa Eliza, Mon-
Distribution and habitat. Argentina and Brazil (states of Espírito Santo, Rio de Janeiro, Minas Gerais, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul), Paraguay and Uruguay; in the Atlantic Forest, Cerrado, Chaco and Pampa domains (Fig. 21). It can be found growing as terrestrial or epiphyte understorey in shaded moist forests, as a weed and at roadsides.

Phenology. It was found in bloom throughout the year but peaking during the rainy season and being less commonly in bloom during the dry season. Fruiting seems to be uncommon, with most fruiting specimens recorded in the state of Rio de Janeiro, Brazil.

Etymology. The epithet “fluminensis” makes reference to the region the species was originally described, the state of Rio de Janeiro.

Conservation status. Tradescantia fluminensis possesses a wide EOO (ca. 1,440,097.589 km²), being also an aggressive weed worldwide known to occur in Australia, Bermuda, Italy, Japan, Kenya, New Zealand, Portugal, Puerto Rico, Russia, Saint Lucia, South Africa, Swaziland and USA. (Hunt 2001; Burns 2008; Fowler et al. 2013; GSID 2015; pers. observ.). Thus, following the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

Nomenclatural notes. Tradescantia fluminensis was, together with T. geniculata Vell. (≡ T. cymbispatha), the first two species currently placed in T. subg. Austrotradescantia to be described (Vellozo 1829, 1831). They were both described in the infamous
Florae fluminensis by Friar José Mariano da Conceição Vellozo, based on specimens collected by him in the state of Rio de Janeiro (Pellegrini et al. 2015).

When describing *T. albovittata*, Pynaert (in Burvenich et al. 1885) makes no reference to any herbarium specimen. Nonetheless, the author presents a gorgeous chromolithograph that shows the habit of the plant and its characteristic white-striped leaves. Thus, I designate the original illustration as the lectotype of *T. albovittata* and reduce it to a synonym of *T. fluminensis*.

According to Stafleu and Cowan (1986), it is unknown where the specimens of any names described by A. Voss are housed. Voss (in Siebert and Voss 1895), makes no reference to any kind of studied specimen and presents no illustration for most of his names, which prevents the designation of lectotypes. Since no specimens matching the diagnosis of *T. fluminensis* f. *aureovittata* were located, I was unable to designate neotypes for it.

**Comments.** The name *T. fluminensis* has been misapplied to almost all species of *T.* subg. *Austrotradescantia*, even to species from the *T. crassula* group. Here I consider *T. fluminensis* as a much lesser variable entity than accepted by previous authors (e.g. Seubert 1871; Clarke 1881; Hunt 1980). *Tradescantia fluminensis* is morphologically similar to *T. cymbispatha*, *T. chrysophylla*, *T. hertweckii*, *T. mundula* and *T. umbraculifera* due to their indefinite base, prostrate stems with ascending apex (Fig. 20A), involute ptyxis, saccate cincinni bracts (Fig. 20D), white petals (Fig. 20D, F), seeds with unclotted testa towards the embryotega and hilum ½ the length of the seed (Fig. 20G). It can be easily differentiated from *T. cymbispatha* and *T. chrysophylla* by its subpetiolate leaves with impressed secondary veins (*vs.* sessile leaves with inconspicuous secondary veins, in *T. cymbispatha* and *T. chrysophylla*), blades glabrous or unevenly covered by indumentum (*vs.* evenly covered by indumentum) and sepals dorsally keeled (*vs.* sepals without dorsal keels). It is morphologically more closely related to *T. hertweckii*, *T. mundula* and *T. umbraculifera* due to their leaves with impressed secondary veins, dorsally keeled sepals and petals always white. *Tradescantia fluminensis* can be differentiated from *T. mundula* due to its glabrous stems (*vs.* strigose in *T. mundula*), leaves glabrous (*vs.* unevenly to evenly strigose), blades membranous to slightly succulent and abaxially light to medium green (*vs.* chartaceous and abaxially completely to partially vinaceous), sepals pilose with hairs restricted to the keels (*vs.* evenly velutine) and plicate petals (*vs.* flat). *Tradescantia fluminensis* can be differentiated from *T. umbraculifera* due to its subpetiolate leaves (*vs.* sessile in *T. umbraculifera*), leaf-like cincinni bracts (*vs.* spathaceous), pedicels green at anthesis (*vs.* white), petals plicate (*vs.* flat) and pistil as long as the stamens (*vs.* longer than the stamens). *Tradescantia fluminensis* is easily identified in the field, due to its emerald green and glossy leaves, that give healthy plants a characteristic plastic aspect.

As aforementioned, *T. fluminensis* is a popular potted plant, as well as an aggressive weed worldwide. However, many cultivated specimens or weedy populations studied by me actually represent other species from *T.* subg. *Austrotradescantia*. In cultivation, many plants are referred to as *T. albiflora* Kunth, which is here kept as a synonym of *T. fluminensis*. Nonetheless, they actually represent specimens of *T. mundula* and, more
rarely, specimens of *T. cymbispatha* and *T. crassula*. Alternatively, the only other species of *T.* subg. *Austrotradescantia* known to me to have been introduced in cultivation is the pink and lilac flowered forms of *T. cerinthoides*, generally treated by gardeners as *T. blossfeldiana*. In cultivation, *T. fluminensis* rarely set seeds and commonly reproduces itself by stem fragmentation. Seed production seems to be also uncommon throughout most of its native range, being only recurrently observed in the state of Rio de Janeiro, Brazil. The reason for this is unknown, since all observed native populations and all specimens kept in cultivation were consistently seen being visited by several insects. My hypothesis is that *T. fluminensis* actually represents a self-incompatible species and thus some subpopulations are incapable of producing seeds, since they might be exclusively composed of clonal individuals. I believe that, in light of the present taxonomic revision, the reproductive biology of *T.* subg. *Austrotradescantia*, especially of the *T. fluminensis* group, should be properly studied.

8. *Tradescantia hertweckii* M.Pell., sp. nov.
urn:lsid:ipni.org:names:77185916-1
Figs 22, 23

**Diagnosis.** Similar to *T. fluminensis* due to its indefinite base, stems prostrate with ascending apex, involute ptyxis, leaf-blades with conspicuous secondary veins, saccate cincinni bracts, ovoid floral buds, keeled sepals, pistil the same length as the stamens and seeds with costate testa. It can be differentiated by its sessile leaves, blades hispid, margins ciliate, but setose at base, sepals setose along the keel, petals flat and hilum longer than ½ the length of the seed.

**Type.** BRAZIL. Rio de Janeiro: Paraty, estrada para o Pico do Coriscão, próximo a um rio, 222 m.s.m., 23°14’99”S, 44°47’68”W, fl., fr., 18 Dec 2007, M.G. Bovini et al. 2694 (holotype: RB barcode RB00537845!; isotypes to be distributed to: R!, SPF!, US!).

**Description.** *Herbs* ca. 30–60 cm tall, with an indefinite base, terrestrial. *Stems* prostrate with ascending apex, delicate to slightly succulent, branched to densely branched; internodes 1.8–4.5 cm long at base, distally shorter, medium to dark green, glabrous, with a leaf-opposed dense longitudinal line of short, uniseriate, brown to light brown hairs. *Leaves* distichously-alternate, sessile; ptyxis involute; sheaths 4.1–7.6 mm long, medium green, glabrous, with a dense setose line of uniseriate hairs opposed to the blade, margin densely setose, hairs light to medium brown; blades 6.4–13.6 × 1.9–3.8 cm, lanceolate to elliptic to linear oblong, flat, membranous, adaxially sparsely hispid to hispid, abaxially hispid, adaxially dark to medium green, abaxially light to medium green, turning olive-green or medium brown when dry, base rounded to cordate, margins green, ciliate, setose at base, flat, apex acuminate; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially inconspicuous, becoming more evident on both sides when dry. *Synflorescences* terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. *Inflorescences* (*main florescences*) consisting of a pedunculate double-cincinni fused back to back; peduncles 1.9–3.8 cm long,
Figure 22. *Tradescantia hertweckii* M.Pell. A habit B detail of the leaf-sheaths, showing the setose margins C hair from the margin of the leaf-sheath D–E leaves D detail of the abaxial side of the apex of the blade, showing the hispid indumentum E detail of the adaxial side of the apex of the blade, showing the hispid indumentum F–G flowers F front view of a flower G oblique view of a flower H sepals, showing the setose indumentum restricted to the dorsal keels I petal J–K androecium J stamen K detail of the anther L–M gynoecium L pistil M detail of the stigma N open mature capsule O seeds, showing the costate testa not cleft towards the embryotega and the hilum longer than ½ the length of the seed. Line drawings by M.A. Rezende.
medium to dark green, glabrous, with a dense longitudinal line of short, uniseriate, light to medium brown hairs; cincinni bracts 3.8–7.7 × 1–2.6 cm, unequal to strongly unequal to each other, lanceolate to ovate, leaf-like, adaxially sparsely hispid to hispid, abaxially hispid, adaxially dark to medium green, abaxially light to medium green, base cordate to obtuse, saccate, margin ciliate, setose at base, flat, apex acuminate; double-cincinni 6–12-flowered. 

**Flowers** 1.2–1.5 cm diam., pedicels 0.5–1.3 cm long, medium to dark green, distally sparsely glandular-pubescent, hairs hyaline; floral buds ovoid; sepal 4.6–6.5 × 3–4.8 mm, dorsally keeled, medium green, setose along the keel, hairs hyaline; petals 5.9–7.5 × 3–4.3 mm, flat, white; filaments 4.9–5.8 mm long, anthers 0.4–0.6 × 0.6–0.9 mm; ovary 1.3–1.7 × 1.1–1.3 cm, style 4–5.1 mm long; pistil the same length as the stamens. 

**Capsules** 4.2–5 × 3.4–4.3 cm. 

**Seeds** 1.5–1.8 × 1.2–1.4 mm, testa light to medium grey, not cleft towards the embryotega, costate; hilum longer than ½ the length of the seed.

**Distribution and habitat.** *Tradescantia hertweckii* is endemic to Brazil, more precisely to the state of Rio de Janeiro, municipality of Paraty; in the Atlantic Forest domains (Fig. 23). It can be found growing as a terrestrial, understorey in shaded and moist forests, near river margins.

**Phenology.** It was found in bloom and fruit in December, during the rainy season.

**Etymology.** This species is named after Dr. Kate Hertweck, dear colleague and specialist in subtribe Tradescantiinae, in appreciation for her contributions to the systematics and evolution of Monocots and Commelinaceae, especially regarding the evolution of *Tradescantia*.

**Conservation status.** *Tradescantia hertweckii* is known solely from the type collection and, following the IUCN recommendations (IUCN 2001), it should be considered Data Deficient (DD), until further collections and information becomes available.

**Comments.** *Tradescantia hertweckii* was considered by me a doubtful specimen related to *T. fluminensis* and, for this reason, not included in my Master thesis in the initial account for *T.* subg. *Austrotradescantia* (at the time *T.* sect. *Austrotradescantia*; Pellegrini 2015). It was thought by me to putatively represent a natural hybrid between *T. fluminensis* and *T. umbraculifera*, but it differed greatly from the other putative hybrids. Added to that, the inflorescence morphology of *T. hertweckii* is very similar to the one of *T. fluminensis* and does not show the very peculiar inflorescence of *T. umbraculifera* (Fig. 5I). Finally, *T. umbraculifera* is not known to occur in the same locality as *T. hertweckii*, with the only other species in the subgenus known to occur in Paraty being *T. fluminensis*. For these reasons, I have decided to recognise *T. hertweckii* as a new species, instead of a natural hybrid.

*Tradescantia hertweckii* is the only species from *T.* subg. *Austrotradescantia* not included by Pellegrini (2017) in his morphological phylogeny for the genus. However, it is a member of the *T. fluminensis* group, due to its indefinite base, stems prostrate with ascending apex, involute ptyxis, leaf-blades with conspicuous secondary veins (Fig. 22A), saccate cincinni bracts (Fig. 22A), pistil the same length as the stamens (Fig. 22G) and seeds with costate testa not cleft towards the embryotega (Figs 7C, 22O). It is morphologically similar to *T. fluminensis* and *T. umbraculifera. Tradescantia hertweckii*
Figure 23. Distribution of *Tradescantia hertweckii* M.Pell. Orange– Cerrado; Olive-green– Pampa; Dark green– Atlantic Forest.

is morphologically similar to *T. umbraculifera* due to its robust habit, sessile leaves, acuminate to caudate leaf-blades (Fig. 22A) and hilum longer than \( \frac{1}{2} \) the length of the seed (Figs 7C, 22O). Nonetheless, it can be easily differentiated from *T. umbraculifera* by its membranous to slightly fleshy leaf-blades covered by hispid indumentum (*vs.* chartaceous and glabrous or pilose in *T. umbraculifera*), 1 inflorescence per leaf axil (*vs.* 1–4), cincinni bracts leaf-like and unequal to strongly unequal (*vs.* spathaceous and equal), pedicels green at pre-anthesis and anthesis (*vs.* white) and pistil as long as the stamens (*vs.* longer than the stamens). On the other hand, *T. hertweckii* might be more easily confused with *T. fluminensis* s.s., due to its glabrous stems (Fig. 22A), membranous to slightly fleshy leaf-blades, 1 inflorescence per leaf axil, leaf-like cincinnati
bracts (Fig. 22A), sepals with eglandular hairs restricted to the keels (Fig. 22H, N) and pistil as long as the stamens (Fig. 22 G). However, both species can be differentiated based on leaf morphology (leaves sessile, blades hispid, margins ciliate with densely setose base in *T. hertweckii* vs. subpetiolate, glabrous, evenly ciliolate in *T. fluminensis*), inflorescence morphology (cincinni bracts unequal to strongly unequal *vs.* equal), sepal pubescence (setose *vs.* pilose), petal posture (flat *vs.* plicate) and hilum relative length (longer than ½ the length of the seed *vs.* equal).


Figs 24, 25

*Tradescantia mundula* Kunth var. *mundula*. Holotype. URUGUAY. Montevideo: s.loc., fl., Dec 1836, F. Sellow 2103 (B barcode B100247279!).


Description. *Herbs* ca. 5–30 cm tall, with an indefinite base, terrestrial, rupicolous or epiphytes. *Stems* prostrate with ascending apex, delicate to slightly succulent, little to densely branched; internodes 1–6.2(–9.3) cm long at base, distally shorter, medium to dark green or vinaceous, strigose, generally with a leaf-opposed longitudinal line of short, uniseriate, hyaline hairs. *Leaves* distichously-alternate, basal leaves subpetiolate; ptyxis involute; sheaths 0.5–1.2 cm long, green to vinaceous, strigose, margin sparsely setose to densely setose, hairs hyaline to light brown; petiole 0.2–0.5(–1–1.3) cm long to indistinct; blades 1.1–6.7(–7.8–13.4) × 0.6–3.4 cm, lanceolate to elliptic, rarely ovate, flat, chartaceous, adaxially glabrous to sparsely strigose to strigose, abaxially to sparsely strigose to strigose, rarely glabrous, adaxially medium to dark green, abaxially light to medium green or vinaceous, turning olive-green to medium brown when dry, base cuneate, rarely obtuse, margins green, ciliolate, slightly revolute, apex acute to acuminate; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially inconspicuous, becoming more evident on both sides when dry. *Synflorescences* terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. *Inflorescences* (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 1.4–5.3(–9.3) cm long, medium to dark green or vinaceous, glabrous to sparsely strigose, with a dense longitudinal line of short, uniseriate, hyaline hairs; cincinni bracts 2.2–5.3(–8.7–10.6) × 1–2.1 cm, similar to each other, broadly elliptic to ovate, leaf-like, adaxially glabrous to sparsely strigose to strigose, abaxially sparsely strigose to strigose, adaxially green, abaxially light to medium green or vinaceous, base cordate to obtuse, saccate, margin ciliolate, slightly revolute, apex acute to acuminate; double-cincinni 6–8-flowered. *Flowers* 1–1.4 cm diam., pedicels 0.9–1.7 cm long, medium to dark green or vinaceous, velutine, sometimes with some odd glandular hairs, hairs hyaline; floral buds ovoid; sepals 5.1–7.5 × 2.4–4.1 mm, dorsally keeled, green, velutine, hairs generally caducous when dry, persistent only along the keel, hyaline; petals 6.3–7.6 × 3.8–5.1 mm,
Figure 24. *Tradescantia mundula* Kunth. A habit, showing the mat-forming prostrate stems B–C stems and leaf-sheaths B detail of a sparsely strigose stem, leaf-sheath and subpetiole C detail of a strigose stem, leaf-sheath, subpetiole and young leaves D–E leaves D adaxial side of the blade, showing the medium green colouration and impressed secondary veins E abaxial side of the blade, showing the vinaceous tinted colouration F detail of the inflorescence, showing the saccate cincinni bract base G detail of flower at post-anthesis, showing the pedicel’s and sepals’ velutine indumentum H front view of a flower, showing the flat petals I dorsal and ventral views of the seed, showing the costate testa not cleft towards the embryotega and the hilum ca. ½ the length of the seed. Field photos by M.O.O. Pellegrini.
flat, white; filaments 4.4–5.6 mm long, anthers 1–1.2 × 0.8–1 mm; ovary 1.4–1.9 × 1–1.3 cm, style 3–5 mm long; pistil the same length as the stamens. Capsules 2.7–3.6 × 2.3–2.7 cm. Seeds 1–1.7 × 0.9–1.3 mm, testa greyish-brown to grey, not cleft towards the embryotega, costate; hilum equal ½ the length of the seed.

Wandering throughout South America: Taxonomic revision of Tradescantia...

Distribution and habitat. *Tradescantia mundula* is known to occur in Argentina, Brazil (states of Minas Gerais, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul) and Uruguay; in the Atlantic Forest, Chaco and Pampa domains (Fig. 25). It can be found growing understorey in shaded and moist forests and also in open forests, as a terrestrial, rupicolous or epiphyte.

Phenology. It was found in bloom and fruit from July to February but peaking during the rainy season.

Etymology. The epithet “mundula” means adorned, making reference to the strigose vegetative organs and the velutine sepals that characterise this species.

Conservation status. *Tradescantia mundula* possesses a wide EOO (ca. 920,899.945 km²), being also a potentially aggressive weed worldwide. Thus, following the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

Nomenclatural notes. As aforementioned, it is unknown where the specimens of any names described by A. Voss are housed (Stafleu and Cowan 1986) and, since
Comments. *Tradescantia mundula* is the smallest species from *T.* subg. *Austrotradescantia*, being comparable in size only with some specimens of *T.* *tenella*. It is morphologically similar to *T. cymbispatha* and *T. fluminensis* due to their indefinite base, prostrate stems with ascending apex (Fig. 24A), involute pyxis, saccate cincinni bracts (Fig. 24F), white petals (Fig. 24F, H), pistil as long as the stamens (Fig. 24G, H), seeds with uncleft testa towards the embryotega and hilum ½ the length of the seed (Fig. 24I). It can be easily differentiated from *T. cymbispatha* by its subpetiolate

Voss (in Siebert and Voss 1895) makes no reference to any kind of specimen, presents no illustration for most of his names and no specimens matching the diagnosis of *T. fluminensis* f. *bicolor* were located, I was unable to typify it.

**Figure 25.** Distribution of *mundula* Kunth. Orange– Cerrado; Red– Caatinga; Yellow– Chaco and Pantanal; Olive-green– Pampa; Dark green– Atlantic Forest.
leaves with impressed secondary veins (vs. sessile leaves with inconspicuous secondary veins, in *T. cymbispatha*), blades chartaceous and glabrous or unevenly covered by indumentum (vs. succulent and evenly covered by indumentum) and sepals dorsally keeled (vs. sepals without dorsal keels). It is more easily confused with *T. fluminensis*, especially in dried specimens, due to their leaves with impressed secondary veins, sepals dorsally keeled and gross floral morphology. *Tradescantia mundula* can be differentiated from *T. fluminensis* due to its strigose stems (vs. glabrous in *T. fluminensis*), leaves unevenly to evenly strigose (vs. glabrous), blades chartaceous and abaxially completely to partially vinaceous (vs. membranous to slightly succulent and abaxially light to medium green), sepals evenly velutine *in vivo* (vs. pilose with hairs restricted to the keels) and flat petals (vs. plicate).

Figs 26, 27

**Holotype.** BRAZIL. Santa Catarina: Grão Pará, Serra do Corvo Branco, 4 Oct 2014, fl., M.O.O. Pellegrini et al. 436 (RB barcode RB01045343!; isotypes: UEC!, US barcode US01926164!).

**Description.** Herbs rupicolous, ca. 20–40 cm tall. Stem erect, succulent, little branched, branching at the base, rarely branching at the upper half; internodes 3.1–6.3 cm long at base, distally shorter, green to reddish-purple to vinaceous, glaucous, glabrous. Leaves distichously-alternate, sessile; ptyxis convolute; sheaths 0.4–1.3 cm long, green to green with vinaceous striations to vinaceous, glaucous, glabrous, margin glabrous; blades ovate to broadly ovate, 2.8–7.7 × 0.9–3.2 cm, falcate to compli cate, succulent, glabrous, adaxially light-green, glaucous, abaxially slightly lighter to reddish-purple to vinaceous, glaucous, turning olive-green to light-brown when dry, base cordate to slightly amplexicaulous to obtuse, rarely cuneate, margin green, glabrous, slightly revolute, apex acute; midvein conspicuous to inconspicuous, adaxially impressed to inconspicuous, secondary veins inconspicuous on both sides, becoming more evident on both sides when dry. Inflorescences terminal or axillary in the distal portion of the stems, 1 per leaf axis; peduncles 1.6–3.7 cm long, green to reddish-purple to vinaceous, glaucous, glabrous; cincinni bracts unequal to strongly unequal to each other, ovate to broadly ovate, 0.7–3.3 × 0.4–1.2 cm, leaf-like, glabrous, adaxially light-green, glaucous, abaxially slightly lighter to reddish-purple to vinaceous, glaucous, base cordate to obtuse, not saccate, margin glabrous, slightly revolute, apex acute; double cincinni ca. 6–14-flowered. Flowers 0.8–1 cm diam., pedicels 0.7–1.4 cm long, green to reddish-purple to vinaceous, glaucous, glabrous; floral buds ellipsoid; sepals 4.8–5.9 × 2.4–4.6 mm, dorsally keeled, green to reddish-purple to vinaceous, glaucous, glabrous, rarely with some odd glandular hairs; petals 6.3–7 × 3.2–4.4 mm, light-pink to pink; filaments 2.8–3.2 mm long, anthers 0.5–0.8 × 1.3–1.5 mm; ovary 1–1.3 × 0.9–1.2 cm, style 4.3–8.5 cm long; pistil longer than the stamens. Capsule 1.8–2.6 × 1.8–2.2 cm. Seeds 1–1.2 × 0.8–1 mm, testa grey to greyish-brown, costate, cleft towards the embryotega; hilum longer than ½ the length of the seed.
Figure 26. *Tradescantia seubertiana* M.Pell. A Serra do Corvo Branco, Santa Catarina, Brazil B habit, showing the erect stem C detail of the stem, leaf-sheath and leaf, showing the amplexicaulous leaf-blade base D detail of the stem, leaf-sheath and the abaxial side of the leaf-blade, showing the reddish-purple colouration and the complete absence of indumentum E detail of the inflorescence, showing the not saccate and unequal cincinni bracts F detail of the floral buds and flowers at post-anthesis, showing the reddish-purple colouration of the pedicels and sepals and the complete absence of indumentum G side view of a flower, showing the green sepals and pink petals H front view of a flower, showing the pistil longer than the stamens. Photos by M.O.O. Pellegrini.

Distribution and habitat. *Tradescantia seubertiana* is endemic to the alpine region of Rio Grande do Sul and Santa Catarina, Brazil; in the Atlantic Forest and Pampa domains (Fig. 27). It can be found growing on wet rock walls, from ca. 700 to 1,800 metres above sea level.

Phenology. It was found in bloom and fruit from September to March.

Etymology. This species was named after the prominent German botanist Moritz August Seubert (1818–1878), in appreciation for his extensive contribution to Commelinaceae systematics, especially for his contributions to the knowledge of the Brazilian Commelinaceae.

Conservation status. As stated by Pellegrini (2015), *T. seubertiana* is known from few localities and very small populations, none of which are inside any conservation unit. This species is directly threatened by habitat loss, since all known collections are found along roads and high roads, currently being enlarged. In the near future, most known sub-populations might become extinct. Thus, following the IUCN recommendations (IUCN 2001), this species should be considered Critically Endangered [CR, A3cd+C2a(i)].

Comments. *Tradescantia seubertiana* is a member of the well supported *T. crassula* group (Pellegrini 2017). This group is characterised by Pellegrini (2017) as comprising species with erect habit, definite base, convolute ptyxis, complicate to falcate and succulent leaves, generally with inconspicuous secondary veins (Fig. 26B–D), cincinni bracts non-saccate (Fig. 26E–G), pistil longer than the stamens (Fig. 26G–H), seeds
Tradescantia seubertiana is morphologically similar to \textit{T. crassula} and \textit{T. decora}, but only superficially similar to \textit{T. cerinthoides}, especially due to its pink petals (which can range in \textit{T. cerinthoides} from white to light pink to pink to lilac; Fig. 10N; Pellegrini 2015, 2017; Pellegrini et al. 2017). It can be differentiated from \textit{T. crassula} and \textit{T. decora} by its glabrous leaf-sheath margin – a very uncommon character in Commelinaceae – (vs. leaf-sheath margin ciliate in \textit{T. crassula} and long ciliate in \textit{T. decora}), leaf base cordate to slightly amplexicaul to obtuse (vs. obtuse to truncate), ellipsoid flower buds (vs. broadly ovoid in \textit{T. crassula} and \textit{T. decora}), sepals glabrous (vs. setose along the keel in \textit{T. crassula} and with...
minute caducous hairs at the apex of the sepals in *T. decorata* and by its light pink to pink petals (*vs.* white in *T. crassula*). It can be easily differentiated from *T. cerinthoides* by being almost entirely glabrous (*vs.* generally densely pubescent in *T. cerinthoides* with a mixture of glandular and eglandular, hyaline to light brown to golden hairs), inconspicuous secondary veins (*vs.* conspicuous in *T. cerinthoides*), its unequal cincinni bracts (*vs.* equal in *T. cerinthoides*), ellipsoid floral buds (*vs.* ovoid in *T. cerinthoides*) and keeled and glabrous sepals (*vs.* not keeled and densely pubescent in *T. cerinthoides* with a mixture of glandular and eglandular, hyaline to light brown to golden hairs).

Additionally, *T. seubertiana* is found growing exclusively on wet rocky cliffs, while *T. cerinthoides*, *T. crassula* and *T. decora* are commonly found growing in open fields, sand dunes near the shore, dry rocky outcrops or understory as terrestrial or epiphytes.


Figs 28, 29


*Tradescantia fluminensis* var. *tenella* (Kunth) C.B.Clarke in De Candolle & De Candolle, Monogr. Phan. 3: 295. 1881. Holotype. URUGUAY. Montevideo, fl., fr., Dec 1836, F. Sellow d2290 (B barcode B100247280!).

*Tradescantia anagallidea* Seub. in Martius, Fl. bras. 3(1): 249. 1871. Lectotype (designated here). BRAZIL. s.loc., fl., fr., s.dat., F. Sellow 2801-67 (B barcode B100247281!; isolecotypes: IPA no. 54001!, MO barcode MO3020446!). Syn. nov.

Description. Herbs ca. 5–50 cm tall, with a definite base, terrestrial, rupicolous or epiphytes. Stems erect, succulent, densely branched to fruticose; internodes 1.5–9.2 cm long at base, distally shorter, light to medium green to vinaceous, glabrous, sometimes glandular-pubescent or sparsely hirsute or a mixture of glandular and eglandular hairs, with a leaf-opposed longitudinal line of short, uniseriate, hyaline hairs in the terminal portion of the stems. Leaves distichously-alternate, sessile to subpetiolate; ptyxis involute; sheaths 0.3–1.3 cm long, light to medium green, glabrous to hirsute, margin densely setose, hairs hyaline to light brown; petiole 0.2–2.4 cm long to indistinct; blades (0.5–0.9–)1.2–14.8 × 0.5–3.6 cm, ovate to broadly ovate, rarely elliptic to lanceolate, flat, membranous to chartaceous, glabrous to sparsely hirsute on both sides, adaxially light to medium to dark green, sometimes with a vinaceous stripe along the midvein, abaxially light to medium green or vinaceous, turning olive-green to greyish-green when dry, base cordate to obtuse, rarely cuneate, margins green, ciliolate, slightly revolute, apex acute to acuminate; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially conspicuous, becoming more evident on both sides when dry. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 1.9–5.3(–9.3) cm long, light to medium to dark green or vinaceous, glabrous, sometimes glandular-pubescent
Figure 28. *Tradescantia tenella* Kunth. A habit, showing the definite base and fruticose and erect stems B detail of the stem and leaf-sheath, showing the leaf-opposed line of uniseriate hairs and the setose leaf-sheath margin C detail of the adaxial side of the leaf-blade, showing the hirsute indumentum D adaxial side of the leaf-blade, showing the impressed secondary veins and the vinaceous stripe along the midvein E abaxial side of the leaf-blade, showing the subpetiole and the vinaceous colouration F detail of the inflorescence, showing the saccate and strongly unequal cincinni bracts G flower at post-anthesis showing the glandular-pubescent indumentum and the dorsal keels of the sepals H–I flowers H white petalled flower I light pink petaled flower J dorsal and ventral views of the seed, showing the rugose testa not cleft towards the embryotega and the hilum shorter than ½ the length of the seed. Photos by M.O.O. Pellegrini.
or sparsely hirsute, with a dense longitudinal line of short, uniseriate, hyaline to light brown hairs; cincinni bracts 0.4–8.1 × 0.2–3.1 cm, unequal to strongly unequal to each other, elliptic to ovate to broadly ovate, leaf-like, glabrous to sparsely hirsute, light to medium to dark green, sometimes with a vinaceous stripe along the midvein, abaxially light to medium green or vinaceous, base cordate to obtuse, saccate, margin ciliolate, slightly revolute, apex acute; double cincinni (4–)8–14-flowered. **Flowers** 0.4–1.0 cm diam., pedicels 0.4–1.7 cm long, green to vinaceous, sparsely glandular-pubescent to glandular-pubescent; floral buds ovoid; sepals 3–6.6 × 1.8–2.5 mm, dorsally keeled, green, sparsely glandular-pubescent to glandular-pubescent, rarely glabrous, hairs hyaline; petals 3.5–6.8 × 4–5.1 mm, white to white with pink apex to light pink to pink; filaments 3.8–4.1 mm long, anthers 0.9–1.1 × 1.2–1.8 mm; ovary 1.6–1.8 × 1.1–1.4 cm, style 3.5–3.8 mm long; pistil the same length as the stamens. **Capsules** 2.6–4.5 × 2.2–2.5 cm. **Seeds** 0.9–1.7 × 0.9–1.5 mm, testa grey to greyish-brown, not cleft towards the embryotega, rugose; hilum shorter than ½ the length of the seed.

growing understorey in shaded and moist forests, between rocks near waterfalls and in clay ravines, as terrestrial, rupicolous or epiphyte.

**Phenology.** It was found in bloom and fruit from August to January but peaking during October.

**Etymology.** The epithet “tenella” means “delicate”, “small”, probably making reference to its delicate appearance and also to the small portion available to Kunth when describing the species.

**Conservation status.** *Tradescantia tenella* possesses a wide EOO (ca. 791,707.235 km²), and generally forming dense subpopulations. Thus, following the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).
Comments. *Tradescantia tenella* is one of the most peculiar species from the *T. fluminensis* clade. It possesses a definite base, erect and succulent stems (Fig. 28A) and flowers that range from white to pink (Fig. 28H, I), which are characters more commonly observed in species belonging to the *T. crassula* group. Nonetheless, it possesses involute ptyxis, subpetiolate leaves (Fig. 28E), saccate cincinni bracts (Fig. 28F, H, I), style as long as the stamens (Fig. 28H, I), seeds not cleft towards the embryotega and hilum shorter than ½ the length of the seed (Fig. 28J). These characters undoubtedly place *T. tenella* and related species (i.e. *T. atlantica* and *T. tucumanensis*) in the *T. fluminensis* group (Pellegrini 2017). Due to its peculiar morphology, *T. tenella* can be confused with species belonging to the *T. crassula* and *T. fluminensis* groups. *Tradescantia tenella* can be confused with *T. seubertiana* from the *T. crassula* group, due to their delicate habit, definite base, erect and succulent stems, unequal cincinni bracts and pink flowers. Nonetheless, it can be differentiated by its generally densely branched to fruticose stems (*vs.* little branched, branching at the base or rarely branching at the upper half in *T. seubertiana*), subpetiolate leaves with impressed secondary veins (*vs.* sessile with inconspicuous secondary veins), blades generally sparsely hirsute to hirsute with ciliolate margins (*vs.* always glabrous with glabrous margins), saccate cincinni bracts (*vs.* not saccate), pistil as long as the stamens (*vs.* longer than the stamens), seeds with testa rugose and not cleft towards the embryotega (*vs.* costate and cleft) and hilum shorter than ½ the length of the seed (*vs.* longer than ½ the length of the seed). In the *T. fluminensis* group, *T. tenella* can be confused with *T. mundula* due to their generally reduced stature, subpetiolate leaves and blades generally abaxially vinaceous. However, it can be easily differentiated due to its definite base (*vs.* indefinite in *T. mundula*), erect stems (*vs.* prostrate), leaf-blades generally sparsely hirsute to hirsute (*vs.* sparsely strigose to strigose), unequal cincinni bracts (*vs.* equal), sepals glandular pubescent (*vs.* velutine), petals ranging from white to pink (*vs.* always white), seeds with rugose testa (*vs.* costate) and hilum shorter than ½ the length of the seed (*vs.* equal to ½ the length of the seed). *Tradescantia tenella* is unquestionably morphologically closely related to *T. atlantica* and *T. tucumanensis*, forming the *T. tenella* complex. The species in this complex share the definite base, erect stems, chartaceous leaf-blades, flowers that range from white to pink, seeds with rugose testa and hilum always shorter than ½ the length of the seeds (Pellegrini 2017), being differentiated by stem consistency, the presence of a subpetiole, type and distribution of hairs in the sepals and petal morphology (see identification key).

12. *Tradescantia tucumanensis* M.Pell., sp. nov.
urn:lsid:ipni.org:names:77185917-1
Figs 30, 31

Diagnosis. Similar to *T. tenella* due to its definite base, densely branched stems, hirsute leaves, conspicuous secondary veins, saccate and strongly unequal cincinni bracts, keeled sepals, flat petals, pistil the same length as the stamens, seeds with rugose testa and hilum shorter than ½ the length of the seed. It can be differentiated by its prostrate stems with ascending apex, sessile to subpetiolate leaves, hyaline to light brown hairs,
ellipsoid floral buds and sepals with a mixture of glandular and eglandular hairs, but exclusively hispid along the keel.

**Type.** BOLIVIA. Santa Cruz: Florida, Tierras Nuevas, km 55 camino de Mairana a Postrevalle, fl., fr., 21 Nov 2004, J.R.I. Wood & H. Huayalla 21010 (holotype: K; isotype: HSB!).

**Description.** Herbs ca. 20–55 cm tall, with a definite base, terrestrial or rupicolous, rarely epiphytes. Stems erect, sometimes prostrate with ascending apex, succulent, little to densely branched; internodes 1.6–12.1 cm long at base, distally shorter, medium to dark green or vinaceous, sometimes with green longitudinal striations or
spots, velutine to hispid, sometimes becoming glabrous with age, with a leaf-opposed longitudinal line of short, uniseriate, hyaline hairs in the terminal portion of the stems. Leaves distichously-alternate, sessile to subpetiolate; ptyxis involute; sheaths 0.4–1 cm long, medium green, with longitudinal vinaceous striations, sparsely velutine to hispid, margin setose, hairs hyaline to light brown; petiole 0.2–1.2 cm long to indistinct in the apical leaves; blades 1.1–8.7 × 0.9–3.2 cm, narrowly lanceolate to lanceolate or ovate to broadly ovate, flat, membranous to chartaceous, sparsely hispid to hispid on both sides, hairs hyaline to light brown, adaxially medium to dark green, abaxially light to medium green or vinaceous, turning medium brown to olive-green when dry, base cordate to round, margin green, ciliate, slightly revolute, apex acute to acuminate; midvein conspicuous, adaxially impressed, secondary veins conspicuous, adaxially impressed, abaxially inconspicuous, becoming evident when dry. Synflorescences terminal or axillary in the distal portion of the stems, composed of a solitary main florescence, 1 per leaf axis. Inflorescences (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles (0.8–2.0–)3.4–8.2 cm long, velutine to hispid, with a leaf-opposed longitudinal line of short, uniseriate hairs, in the terminal portion of the stems, hairs hyaline to light brown; cincinni bracts 1.1–4.8 × (0.5–)1–2.7 cm, leaf-like, unequal to strongly unequal to each other, rarely similar to each other, elliptic or ovate to broadly ovate, sparsely hispid, hairs hyaline to light brown, adaxially medium to dark green, abaxially light to medium green or vinaceous, base cordate to obtuse, saccate, margins ciliolate to hispid, hairs hyaline to light brown, slightly revolute, apex acute to acuminate; double cincinni (4–)6–12-flowered. Flowers 1.2–1.6 cm diam., pedicels 0.7–2.2 cm long, vinaceous, with a mixture of glandular and eglandular hairs; floral buds ellipsoid; sepals 3.1–7.6 × 2.4–3.5 mm, keeled, green, with a mixture of glandular and eglandular hairs, hispid along the keel composed exclusively by eglandular hairs, hyaline to light brown; petals 6.6–7.2 × 3.3–5.2 mm, white to pink; filaments 5.6–6.3 mm long, anthers 0.6–0.7 × 0.8–0.9 mm; ovary 0.7–0.9 × 0.7–0.9 mm, style 5.4–6.5 mm long; pistil the same length as the stamens. Capsules 3.2–4.1 × 2.3–3.8 mm. Seeds 1.4–2.4 × 1–1.4 mm, testa grey, not cleft towards the embryotega, rugose; hilum shorter than or equal to ½ the length of the seed.

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Figure 31. Distribution of *Tradescantia tucumanensis* M.Pell. Orange– Cerrado; Yellow– Chaco and Pantanal; Olive-green– Pampa; Dark green– Atlantic Forest; Purple– Andean Yungas.


**Distribution and habitat.** *Tradescantia tucumanensis* is mainly distributed from Argentina to Bolivia, in the Tucumano-Boliviano Forest formation (Chaco and Andean Yungas domains), but also reaching Paraguay in the dry forests of the Atlantic Forest domain (Fig. 31). It can be found growing as a terrestrial or rupicolous herb and seems to be associated with considerably drier habitats than all other species from the *T. fluminensis* group.

**Phenology.** It can be found in bloom and in fruit throughout the year but peaking during the rainy season.

**Etymology.** The epithet makes reference to the species distribution, restricted to the Tucumano-Boliviano Forest formation in Argentina and Bolivia.

**Conservation status.** *Tradescantia tucumanensis* possesses a wide EOO (ca. 873,174.442 km²), being widely distributed in Argentina and Paraguay, with few records in Bolivia. It seems to form dense subpopulations and, in accordance with the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

**Comments.** *Tradescantia tucumanensis* was initially interpreted by me as a new species closely related to *T. chrysophylla*, due to its stems being sometimes prostrate with ascending apex, involute ptyxis, leaves velutine to hispid, indumentum drying light brown, unequal cincinni bracts (Fig. 30C), sepals with a mixture of glandular and eglandular hairs (Fig. 30C–E) and pistil as long as the stamens. Nonetheless, the similarities in gross morphology were quickly observed to be outnumbered by many more relevant differences: its definite base (*vs.* indefinite in *T. chrysophylla*), stems generally erect (*vs.* always prostrate), leaves generally subpetiolate (*vs.* always sessile), blades membranous to chartaceous with impressed secondary veins (*vs.* succulent with inconspicuous secondary veins), sepals keeled (*vs.* not keeled), hairs along the keel exclusively eglandular (*vs.* exclusively glandular or with a mixture of glandular and eglandular hairs), seeds with rugose testa (*vs.* costate) and hilum shorter than ½ the length of the seed (*vs.* equal ½ the length of the seed). Furthermore, *T. tucumanensis* is restricted to the Tucumano-Boliviano Forests from Argentina and Bolivia, while *T. chrysophylla* is endemic to the Atlantic Forest of Brazil. The seed morphology was key in making the connection between *T. tucumanensis* and *T. tenella*. Both species are morphologically more closely related due to their: definite base, erect stems (Fig. 30A), involute ptyxis, membranous to chartaceous leaf-blades (Fig. 30B), flowers ranging from white to pink (Fig. 30D, E), seeds with rugose testa (*vs.* costate) and hilum shorter than ½ the length of the seeds. Nonetheless, both species can be differentiated based on the pubescence of the leaf-blades, shape of the floral buds, size of the flowers and pubescence of the sepals (see identification key). Out of these differences, floral bud shape and sepal pubescence have proven to be stable in reliable characters in the taxonomy of *T. subg. Austrotrades-cantia*. Furthermore, *T. tucumanensis* has a preference for drier environments than *T. tenella*, which is very commonly found growing in damp soil and moss carpets.
Figure 32. *Tradescantia umbraculifera* Hand.-Mazz

A habitat (replaced)

B detail of the stem and the leaf-sheath, showing the leaf-opposed line of uniseriate hairs and the setose leaf-sheath margin

C adaxial side of the leaf-blade, showing the impressed secondary veins

D abaxial side of the leaf-blade

E synflorescence.

F detail of the synflorescence, showing two inflorescences emerging from the same leaf axil and the spathaceous and saccate cincinni bracts.

Figs 32, 33


**Description.** *Herbs* ca. 30–80 cm tall, with an indefinite base, terrestrial, rupicolous or epiphytes. *Stems* prostrate with ascending apex, succulent to slightly fibrous, little to densely branched; internodes 2.8–10 cm long at base, distally shorter, light to medium to dark green or reddish-purple to vinaceous, glabrous to sparsely pilose, with a leaf-opposed longitudinal line of short, uniseriate, hyaline to light brown hairs in the terminal portion of the stems. *Leaves* distichously-alternate, sessile; *ptyxis* involute; *sheaths* 0.5–2.3 cm long, light to medium to dark green or reddish-purple to vinaceous, glabrous to pilose to sparsely hispid, hairs hyaline to light brown; *blades* 3.8–19.1 × 1–3.5 cm, linear lanceolate to lanceolate or narrowly lanceolate to lanceolate, flat, chartaceous, sometimes membranous, glabrous on both sides or adaxially glabrous and abaxially pilose, hairs hyaline to light brown, adaxially medium to dark green, abaxially light to medium green, rarely vinaceous, turning dark brown to black when dry, base truncate to amplexicaulous or round, margins green, ciliolate to ciliolate, flat, apex acuminate to caudate; *midvein* conspicuous, adaxially impressed, secondary veins conspicuous, adaxially slightly impressed to impressed, abaxially prominent, becoming more evident on both sides when dry. *Synflorescences* terminal or axillar in the distal portion of the stems, composed of a solitary main florescence, 1–4 per leaf axis. *Inflorescences* (main florescences) consisting of a pedunculate double-cincinni fused back to back; peduncles 0.5–4.3 cm long, light to medium to dark green, glabrous to pilose, with a dense longitudinal line of short, uniseriate, hyaline to light brown hairs; *cincinni bracts* 0.5–1.5(–2.3–6.2) × 0.2–1(–1.4) cm, similar to each other, cordate to obtuse, saccate, margins ciliolate to ciliolate, flat, apex acute, rarely acuminate; double

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**Figure 32.** Continued. **G** detail of the inflorescence, showing the spathaceous and saccate cincinni bracts, and the side view of a flower, showing the pistil longer than the stamens. **H** flower at post-anthesis showing the white pedicel and the glabrous sepals. **I–J** flowers: **I** front view of a flower of a typical specimen of *T. umbraculifera*; **J** front view of a flower of a putative hybrid between *T. umbraculifera* and *T. fluminensis*, showing the leaf-like cincinni bracts, ovate petals, sparser filament hairs. **K** dorsal and ventral views of the seed, showing the costate testa not cleft towards the embryotega, and the hilum longer than ½ the length of the seed. Photos by M.O.O. Pellegrini, except **E, G–H & I** by H. Medeiros. See the Erratum note.
cincinni (4–)8–12-flowered. Flowers 1.3–2.2 cm diam., pedicels 0.5–1.2 mm long, white to vinaceous, rarely green, glabrous to sparsely glandular-pubescent; floral buds ellipsoid; sepals 5.2–8.1 × 2–3.7 mm, dorsally keeled, green, glabrous or pilose, with hairs generally along the keel and at the base of the sepals close to the pedicel, hyaline to light brown; petals 0.7–1.2 × 0.3–0.6 cm, white; filaments 4.7–6.8 mm long, anthers 0.8–1 × 0.9–1.2 mm; ovary 1.2–2 × 0.8–1.3 mm, style 4.5–6.2 mm long; pistil longer than the stamens. Capsules 2.5–3.8 × 2.1–2.7 cm. Seeds 1.6–1.9 × 1.2–1.5 mm, testa grey to greyish-brown, not cleft towards the embryotega, costate; hilum longer than ½ the length of the seed.

Specimens see. ARGENTINA. Chaco: 1º de Mayo, Colonia Benítez, fl., 10 Nov 1973, A.G. Schulz s.n. (CORD no. 469148, CTES no. 203094). Corrientes: Ituzaingo, Desembocadura del Arroyo Garapé em el Río Paraná, 45 km al E de Ituzaingó, fl., fr., 24 Apr 1975, A. Schinini et al. 11243 (CTES). Misiones: Apostoles, San Jose, fl., 11 Feb 1947, A.M.B. Huidobro 4981 (K, LIL); Cainguás, Salto Marvilla, fl., 4 May 1999, N.B. Deginani et al. 998 (CORD, CTES, SI); Candelaria, Cerro Azul, fl., fr., 16 Feb 1947, A.M.B. Huidobro 5282 (K, LIL); Loreto, fl., 12 May 1946, J.E. Montes 2223 (K, LIL); road from Bonpland to Oberá, fl., 23 Feb 1984, T.M. Pedersen 13668 (L); Picada Guemes, fl., fr., 21 Feb 1947, A.M.B. Huidobro 4859 (K, LIL); Profundidad, fl., 19 Sep 1974, A. Krapovickas et al. 25711 (CTES); Candelaria-Loreto, fl., fr., 22 Jul 1949, J.E. Montes 4222 (LIL, LP); Concepción de la Sierra, fl., 3 Feb 1948, A. Schinini 6979b (CORD, CTES); Eldorado, ruta 17, desvio 2 km a San Pedro, fl., 20 Jan 1973, A. Schinini & A. Fernandez 5933 (CORD, CTES); ruta 17, 89 km E de Eldorado, fl., 22 Jan 1973, A. Schinini & A. Fernandez 6002 (CORD, CTES); General Manuel Belgrano, 12 km S de Bernardino de Irigoyen, ruta 14, Cerro Tigre, fl., 15 Feb 1970, V. Maruñak 107 (CORD, CTES, LP); Guaraná, Predio Guaraní, picada al Arroyo Soberbio, fl., 15 Mar 1994, S. Tressens et al. 4881 (CORD, CTES); rumbo cerca de Papeal Misionero, fl., 28 Apr 1999, S. Tressens et al. 6279 (CTES, K); Iguaúzú, Rio Paraná, 10 km S de Puerto Iguaúzú, frente a Puerto Bertoni, fl., 28 Mar 1970, A. Krapovickas et al. 15780 (CORD, CTES); Parque Nacional Iguaúzú, Sendero Macuco, fl., 6 Aug 1991, R. Vanni et al. 2666 (CORD, CTES); fl., 23 Apr 1996, J. Herrera 174 (CTES); Leandro M. Alem, 2 km al NE de Cerro Azul, fl., 10 Mar 1969, A. Krapovickas et al. 15070 (CORD, CTES); Libertador General San Martín, Predio UNLP, valle del arroyo Cuña Pirú, fl., fr., 19 Jul 1998, F. Biganzoli et al. 126 (LP, SI); Montecarlo, Arroyo Piray Guazú y ruta 12, fl., 15 Feb 1980, A. Schinini 19909 (CORD, CTES); San Ignacio, fl., 3 Feb 1947, J.E. Montes 822 (BA, LIL); Posadas, Jardín Botánico, fl., 17 Jul 2001, M. Grabiele 5 (CORD, CTES, MNES); San Pedro, 89 km E de Eldorado, fl., 22 Jan 1973, A. Schinini & A. Fernandez 6014 (CORD, CTES); ruta provincial 17, desvio 5 km a Tobuna por ruta provincial 224, fl., 26 Jan 1973, A. Schinini & A. Fernandez 6100 (CORD, CTES); entre San Pedro y Puerto Piray, 20 km de San Pedro, ruta provincial 16, fl., 28 Feb 1995, F.O. Zuloaga et al. 5063 (CORD, CTES, SI); cruzando el Puente sobre el Yabotí hacia los obrajes, ruta proyectada 102, fl., 9 May 1999, N.B. Deginani et al. 1213 (CORD, CTES, SI); Santa Anna, fl., 1907, s.leg. s.n. (LP no. 19175). BRAZIL. Minas Gerais: s.loc., fl., fr., 1816–1821, A. Saint-Hilaire D 548 (P); Aiuruoca, PCH-Aiuruoca, área de vazão reduzida, RPPN Cachoeira do Tombo, fl., 26
Figure 33. Distribution of *Tradescantia umbraculifera* Hand.-Mazz. Orange– Cerrado; Yellow– Chaco and Pantanal; Olive-green– Pampa; Dark green– Atlantic Forest.

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Distribution and habitat. Argentina and Brazil (states of Minas Gerais, Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul) and Paraguay; in the Atlantic Forest, Cerrado and Chaco domains (Fig. 33). It can be found growing as terrestrial and epiphyte understorey in shaded and moist forests.

Phenology. It was found in bloom and fruit throughout the year but peaking between August and February.

Etymology. The epithet “umbraculifera” means “carrying several umbrellas”, making reference to the many inflorescences per leaf axil this species generally produces and, most importantly, to the its small spathaceous cincinni bract.

Conservation status. *Tradescantia umbraculifera* possesses a wide EOO (ca. 764,678.067 km²), forming dense subpopulations in shady and moist understorey. Thus, in accordance with the IUCN recommendations (IUCN 2001), it should be considered Least Concern (LC).

Comments. *Tradescantia umbraculifera* is a member of the *T. fluminensis* group (Pellegrini 2017), due to its indefinite base, prostrate stems (Fig. 32A), involute ptyxis, leaf-blades with impressed secondary veins (Fig. 32C), saccate cincinni bracts (Fig. 32E–G) and seeds not cleft towards the embryotega (Fig. 32K). Furthermore, dried specimens of *T. umbraculifera* acquire a peculiar dark brown to black colouration, which is recorded in *T. subg. Austrotradescantia* for *T. chrysophylla*, *T. cymbispatha* and some specimens of *T. fluminensis*. Nonetheless, it is one of the most peculiar species in *T. subg. Austrotradescantia*, due to its generally acuminate to caudate leaf-blades (Fig. 32C), numerous inflorescences per leaf axis (Fig. 32E, F), spathaceous cincinni bracts (Fig. 32E–G), white to vinaceous pedicels (Fig. 32H), pistil longer than the stamens (Fig. 32G) and hilum longer than ½ the length of the seed (Fig. 32K). This combination of characters differentiates *T. umbraculifera* from all remaining species of *T. subg. Austrotradescantia*. Smaller specimens of *T. umbraculifera* can be more easily confused with *T. fluminensis* but can be easily differentiated based on inflorescence and seed characters. Despite the distinction between *T. umbraculifera* and *T. fluminensis* being generally clean-cut, some specimens were especially challenging to certainly identify. This is mainly due to the presence of leaf-like, instead of spathaceous cincinni bracts (easily observable in herbarium specimens) and intermediate floral features between the two species (observable only in fresh specimens; Fig. 32J), such as: the colour of the pedicels, shape of the petals, length and density of the filaments hairs and pistil length. These specimens are hypothesised to represent naturally occurring hybrids between both species, since they were observed in areas where both *T. umbraculifera* and *T. fluminensis* were known to occur. However, due to the lack of reproductive, hybridisation and cytological studies, I have chosen to tentatively recognise these specimens under a broader sense of *T. umbraculifera*. Further studies might confirm my assumptions of the natural occurrence of hybrids between *T. umbraculifera* and *T. fluminensis*. Despite the small morphological resemblance, herbarium specimens of *T. umbraculifera* have been previously confused in Southern Brazil with *T. tenella*. Both species share only a handful of morphological characters, all of them being synapomorphies of the *T.*
fluminensis group. Tradescantia umbraculifera can be easily differentiated from T. tenella due to its robust habit (vs. generally small in T. tenella), indefinite base (vs. definite), prostrate stems (vs. erect), sessile leaves (vs. subpetiolate), 1–4 main florescences per leaf axil (vs. always 1), cincinni bracts spatheaceous and equal (vs. leaf-like and unequal) flowers 1.3–2.2 cm diam. (vs. 0.4–1 cm diam.), petals always white (vs. ranging from white to pink), pistil longer than the stamens (vs. equal), seeds with costate testa (vs. rugose) and hilum longer than ½ the length of the seed (vs. shorter than ½ the length of the seed).

Despite being in different morphological groups, herbarium specimens of T. umbraculifera have also been confused with T. crassula. This might be due these species robust habit, sessile leaves, sepals with hairs restricted to the dorsal keels, petals always white, pistil longer than the stamens and hilum longer than ½ the length of the seed. Nonetheless, T. umbraculifera can be easily differentiated by its indefinite base (vs. definite in T. crassula), prostrate stems (vs. erect), 1–4 main florescences per leaf axil (vs. always 1), cincinni bracts spatheaceous and saccate (vs. leaf-like and non-saccate) and seeds not cleft towards the embryotega (vs. cleft).

Final remarks

As stated by Pellegrini et al. (2017) and shown by Hunt (1975, 1980, 1986) and Pellegrini (2017), Tradescantia is a taxonomically complicated and morphologically diverse genus. Its morphology has hitherto been unsatisfactorily explored and many morphological characters historically used in its taxonomy are not completely reliable on their own. Further studies are still needed in Tradescantia, especially regarding the taxonomy within its subgenera. Tradescantia subg. Campelia, was considered by Pellegrini (2017) to be composed of ca. 15 species. However, ongoing studies in collaboration with Dr. David R. Hunt and Dr. Jason R. Grant, have revealed several undescribed species, and highlighted the need for more thorough studies in some species complexes (e.g. T. commelinoides and T. zebrina) and the need to revisit their taxonomy (Pellegrini et al. in prep.). Tradescantia subg. Mandonia is still poorly studied and understood and a taxonomic revision seems pressing. As exposed by Pellegrini (2017), T. subg. Tradescantia is still a taxonomically challenging group, with several poorly understood species, blurry specific boundaries and several putative natural hybrids. Nonetheless, the number of still undescribed species seems to be very low. Tradescantia subg. Setcreasea is taxonomically well-understood thanks to Hunt (1975, 1976), but lacks an updated identification key. Further studies in this subgenus should also address reproductive biology and population genetics studies.

This study presented the first complete taxonomic revision for one of the five subgenera of Tradescantia, proposed by Pellegrini (2017). I recognise 13 species, most of them widely distributed and presenting considerable morphological variation, as was also observed by Anderson and Woodson Jr. (1935) for the species of Tradescantia, native to the USA. The recognition of narrowly distributed and poorly-circumscribed taxa renders the taxonomy of Tradescantia unnecessarily complicated and most prob-
ably unnatural. The specific boundaries accepted by me for the species of *T*. subg. *Austrotradescantia* reflect extensive fieldwork throughout the Neotropical region, cultivation of almost all species of the subgenus and an understanding of the genus as a whole. My observations on dried and living specimens suggest that most variation in the genus might be ecologically related, with some changes being also putatively controlled by epigenetics and cytology. Unless focused studies on the reproductive and genetic features of these species are conducted, I strongly recommend that the broader species concepts herein proposed are followed.

**Acknowledgements**

I would like to thank the staff and curators of the visited herbaria for the specimens loaned to RB and for sending high-quality images; Cassia M. Sakuragui, David R. Hunt, Fernanda Santos-Silva, Luana S. B. Calazans, Rafael Felipe de Almeida and Rafaela C. Forzza for suggestions on an early version of this manuscript; Rafael Felipe de Almeida for the graphical support; Maria Alice de Rezende for the line drawings; and Kate Hertweck for the invaluable contributions during the review process. I would like to thank William M. Ciesla, Herison Medeiros and Germaine A. Parada for field photos. I would also like to thank CAPES for my Master scholarship granted from 2013–2015 (UFRJ) and for my current PhD scholarship (USP) and Fundação Flora de Apoio à Botânica and Smithsonian Institution for my REFLORA grant. This study was carried out as part of my Master’s degree in Biodiversity and Evolutionary Biology, at Programa de Pós-Graduação em Biodiversidade e Biologia Evolutiva, Instituto de Biologia, Universidade Federal do Rio de Janeiro – IB/UFRJ.

**References**


Pellegrini MOO, Aona-Pinheiro LYS, Forzza RC (2013) Taxonomy and conservation status of *Tripogandra warmingiana* (Seub.) Handl. (Commelinaceae), a previously obscure taxon from Brazil. Phytotaxa 91(2): 39–49. https://doi.org/10.11646/phytotaxa.91.2.2


