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**Bulbophyllum flectens** Cribb & P. Taylor sp. nov. affine *B. concatenato* Cribb sed labelli marginibus denticulato-papilloso, scapo atropurpureo, sepalis papilloso et anthera rotundata differt; a *B. encephalodes* Summerh. inflorescentia minore et labello bicristato non rugoso bene distinguendum. Typus: Tanzania, Iringa District, Mufindi, Cribb, Grey-Wilson & Mwasumbi 11446 (holotypus K.).

*Herba* parva, epiphytica, rhizomate repente. *Pseudobulbi* unifoliati, cylindrico-ellipsoidei, circiter quadriangulati, 1.5-2.9 cm longi, 0.9 cm diametro, ochreati, 0.7-3.5 cm inter se distantes, e rhizomate exorti. *Folia* coriacea, erecta, anguste oblonga vel oblongo-elliptica, apicibus rotundatis obscure emarginata, 3-7.5 x 0.6-1.2 cm. *Inflorescentia* erecta, 6-16 cm longa, atropurpurea; pedunculo gracili tereti, rachide carnosia quadrangulata ad angulum obtusum abeunte, bracteis distichis patentibus ovatis acutis 4-7 mm longis, marginibus undulatis. *Flores* subsessiles, carnosissimae, extra papilloso, atropurpureae. *Sepalum dorsale* concavum, ovato-lanceolatum, acutum, 5 x 1.6 mm. *Sepala lateralia* lanceolata, acuminata, 5 x 2 mm. *Petalum* linearia, ad apicem rotundata, 2.3 x 1.7 mm. *Labelllum* carnosissimum, ovatum, 2.3 x 1.7 mm, supra bicristatum, marginibus denticulato-papilloso ad basin auriculis membranaceis duabus instructum. *Columna* leviter decurvata, 1.2 mm longa, ad apicem auriculis brevibus duabus praedita, anthera subovoidea superne leviter papillosa. (Fig. 2.)

**HABITAT.** Epiphyte in montane forest; 1750-2150 m.

**TANZANIA.** Iringa District: Mufindi, Upper Kigogo R., 16 Feb. 1979, Cribb, Grey-Wilson & Mwasumbi 11446! (holotype K) & 23 March 1962, Polhill & Paulo 1840! & 15 March 1944, Pollock in Moreau 794! & Dabaga Highlands, Ihangana Forest, 18 m [29 km] S of Dabaga, 18 Feb. 1962, Polhill & Paulo 1530!; Rungwe District: between Tukuyu & Isongole Ndaga, 6 Feb. 1979, Cribb, Grey-Wilson & Mwasumbi 11300! & Rungwe Forest, 1 Jan. 1973, Leadal 1341!; Songea District: Matengo Hills, Lugembe Hill, 11 Jan. 1956, Milne-Redhead & Taylor 8199!

The deep-purple inflorescence bent at an obtuse angle at the apex of the peduncle and bearing papillose deep-purple flowers makes this a most distinctive species. It is closely allied to both *B. encephalodes* Summerh. and to *B. concatenatum* described above but appears to replace both in the Southern Highlands of Tanzania.

## Sections and Series in *Tradescantia*

### American Commelinaceae: IX\*

D. R. HUNT

**Summary.** A sectional classification of *Tradescantia* L. proposed to supersede that of C. B. Clarke. Eight sections are recognized and the principal section, sect. *Tradescantia*, is further divided into four series. The species included in each section are listed.

#### INTRODUCTION

The sectional classification of the genus *Tradescantia* L. proposed by C. B. Clarke (in DC., Monogr. Phan. 3: 288 (1881)) has long been in disuse. His sect. *Decantaria* (Schl.) C. B. Cl. corresponds to the genus *Tripgandra* Rafin. (syn. *Descantaria* Schl.) which has been monographed by Handlos (in Rhodora 77: 213-319 (1975)). The peculiar *Tradescantia laxiflora* C. B. Cl. was rightly excluded from *Tripgandra* by Handlos, however, and has been placed in a monotypic genus *Gibasisoides* D. R. Hunt (in Kew Bull. 33: 331 (1978)).

The one species of sect. *Monantha* C. B. Cl., *Tradescantia nana* Martens & Gal., has also been referred to a new genus, *Matudanthus* D. R. Hunt (l.c., 333 (1978)).

The 23 species of Clarke's sect. *Eutradscentia* were divided by him into three groups. Following Rohweder (Die Farinosae in der Vegetation von El Salvador, in Abh. Geb. Auslandsk. 61C, 18: 143 et seq. (1956)) the species of Clarke's §2 and §3 are referable to the genera *Gibasis* Rafin., *Pipoidia* Rafin. and *Thysanthemum* Pichon. No. 19, *Tradescantia hirsuta* Kunth, not dealt with by Rohweder, has been referred to a new monotypic genus *Elasis* D. R. Hunt (l.c. 332 (1978)).

Of the 12 species enumerated by Clarke in his §1, *T. navicularis* Ortig. was referred by Rohweder to *Pipoidia* Rafin. and *T. commelinoides* Schult. f. and *T. cymbispatha* C. B. Cl. to *Cymbispatha* Pichon. The first of these transfers is provisionally accepted by the present writer, but *Cymbispatha* is adopted at sectional rank in *Tradescantia* only. The species of *Cymbispatha* link *Tradescantia*, *Zobrina* Schinzl, and some species assigned to *Campelia* L. C. Rich. in such a way as to offer several ways of classifying the few species involved, of which that adopted here seems preferable for the time being.

The remaining nine species of Clarke's sect. *Eutradscentia* §1 are divisible, as Clarke himself noted, into three groups according to the nature of the inflorescence: 'umbels mostly terminal' (*T. virginica* L., i.e. *T. virginiana* L.), 'umbels several axillary' (*T. andrieuxii* C. B. Cl., *T. ambigua* Mart., etc.) and 'umbels conspicuously 2-bracteate' (*T. crassula* Link & Otto, *T. fluminensis* Vell., etc.). In *T. andrieuxii*, later unknowingly redescribed as *Setcreasea australis* by Rose, the petals are coherent at the base with the filaments to form a tube, and the species has been put in a separate section, *Tradescantia* sect. *Parasetcreasea* D. R. Hunt (l.c. 30(3): 455 (1975)). With this exception, Clarke's three groups correspond to three of the eight sections recognized in

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\*Continued from Kew Bull. 34: 660 (1980).

the conspectus which follows, i.e. sect. *Tradescantia* (containing the type of the genus, *T. virginiana*), sect. *Mandonia* D. R. Hunt, sect. nov. (based on *T. ambigua* Mart.) and sect. *Austrotadescantia* D. R. Hunt, sect. nov. (based on *T. fluminensis* Vell.)

*T. guatemalensis* C. B. Clarke, not described till 1893, is peculiar in a number of respects, and is here treated as a monotypic section *Coholomia* D. R. Hunt, sect. nov.

Apart from *Cymbispatha* Pichon, already mentioned, two other erstwhile genera, *Setcreasea* K. Schum. & Sydow and *Separitheca* Waterfall, are treated as sections by the present writer (cf. Kew Bull. 30(3): 443-458 (1975)).

As here understood, the genus *Tradescantia* as a whole contains 60 described species, of which 32 are placed in sect. *Tradescantia*. Eighteen of these are endemic to the U.S.A. and form a clear group around the type of the genus, *T. virginiana* L. It is convenient to treat these non-tuberous or sub-tuberous species as series *Virginianae* D. R. Hunt, ser. nov., and so to contrast them with their mostly endemic and tuberous Mexican counterparts, for which the series *Tuberosae* D. R. Hunt, ser. nov., is suggested. Series *Tuberosae* will probably prove capable of further division when the species are better known, but is here treated as having 10 species. The four remaining Mexican species of sect. *Tradescantia* form two very dissimilar pairs of closely allied species, one pair eastern, series *Sillamontanae* D. R. Hunt ser. nov., the other western, ser. *Orchidophyllae* D. R. Hunt, ser. nov.

#### CONSPPECTUS OF SECTIONS AND SERIES

1. Inflorescence units mostly pseudoterminal or pseudoterminal and lateral, bracts spathaceous, often well-differentiated from the leaves; petals free, not clawed at base; embryotege lateral or dorsal; karyotype asymmetric, very rarely symmetric; mostly chamaephytes with stems which overwinter and root at the nodes;
2. Bracts strongly differentiated from the leaves; sepals  $\pm$  unequal; stamens sometimes slightly epipetalous; embryotege lateral (Mexico to Bolivia and Brazil) . . . sect. 1. **Cymbispatha** (*Pichon*) D. R. Hunt
2. Bracts well-differentiated from the leaves or only slightly smaller; sepals equal; stamens free; embryotege dorsal:
3. Bracts subsimilar to the leaves but the sheaths connate to form a distinct narrow tube 1 cm long enclosing the buds; axes of cincinni parallel (Guatemala, El Salvador, S Mexico) . . . sect. 2. **Coholomia** D. R. Hunt
3. Bracts  $\pm$  well-differentiated from the leaves, amplexicaul but not connate; axes of cincinni back-to-back (Brazil, Uruguay, N Argentina) . . . sect. 3. **Austrotadescantia** D. R. Hunt
1. Inflorescence units pseudoterminal, lateral or pseudoaxillary, bracts usually subsimilar to the leaves, rarely spathaceous; sepals  $\pm$  equal; petals not clawed, or clawed and connate at least at the base; embryotege dorsal; karyotype always symmetric; mostly hemicyptophytes or geophytes with annual stems which die back to a shortly rhizomatous base or to tuberous rootstock:
4. Inflorescence units mostly pseudoterminal or pseudoterminal and lateral, bracts 2 (sometimes more) usually subsimilar to the leaves, rarely differentiated and spathaceous:

5. Petals free, not clawed at the base; stamens free (sect. 4. **Tradescantia**);

6. Hemicyptophytes with fibrous or  $\pm$  fleshy roots, stem base perennial, shortly rhizomatous:

7. Glandular hairs present, at least on the calyx and pedicels, or with glandular and eglanular hairs mixed, or glabrous (U.S.A.)

ser. I. **Virginianae** D. R. Hunt

ser. II. **Sillamontanae** D. R. Hunt

7. Plants eglanular but densely villose-hairy (NE Central Mexico)

6. Geophytes with tuberous roots, stems annual:

8. Leaves linear to lanceolate or narrowly elliptic (U.S.A.: Texas; Mexico: Chihuahua to Puebla) . . . ser. III. **Tuberosae** D. R. Hunt

8. Leaves lanceolate to ovate or orbicular, often rosulate (Mexico: Colima to Guerrero) . . . ser. IV. **Orchidophyllae** D. R. Hunt

5. Petals clawed at base and connate at least in the lowermost 1 mm with the filaments of the antepetalous stamens:

9. Hemicyptophytes or chamaephytes, the stem-base persistent (U.S.A.: Texas; Mexico: Chihuahua to Veracruz)

sect. 5. **Setcreasea** (K. Schum. & Sydow) D. R. Hunt

9. Geophytes overwintering by tubers; dwarf species (Mexico: Durango)

sect. 6. **Separitheca** (*Waterfall*) D. R. Hunt

4. Inflorescence units mostly pseudoaxillary and sessile, each subtended by a normal or somewhat reduced leaf, the whole inflorescence spiciform and superficially monopodial:

10. Petals free, not clawed at the base (Mexico to Argentina) . . . sect. 7. **Mandonia** D. R. Hunt

10. Petals clawed and connate at the base to form a tube (Mexico: Chihuahua to Oaxaca) . . . sect. 8. **Parasetcreasea** D. R. Hunt

#### REVIEW OF SECTIONS AND SERIES

**Tradescantia** sect. 1. **Cymbispatha** (*Pichon*) D. R. Hunt stat. nov.

*Cymbispatha* Pichon in Not. Syst. (ed. Humbert) 12: 224 (1946); Rohweder in Abh. Geb. Auslandsdsk. 61C, 18: 148 (1956).

Type species: *T. commelinoides* Schult. f.

The genus *Cymbispatha* was proposed by Pichon for species with spathiform bracts, alternatively unequal stamens, anatropous ovules and lateral embryotege. The original species were *T. commelinoides* and *T. cymbispatha* C. B. Cl. (*T. geniculata* Vell. non Jacq.; *Cymbispatha geniculata* Pichon). Besides the tendency (no more) for the stamens to be of unequal length, the sepals also tend to be unequal with the upper larger. The seed and chromosome characters indicate as close an affinity with *Zebraea* Schnizl. as with *Tradescantia* sect. *Tradescantia*.

Included species (several of uncertain status): *T. commelinoides* Schult. f. (incl. *T. macropoda* Greenm.), *T. coscomatepecana* Matuda, *T. cymbispatha* C. B. Cl. B. Clarke, *T. deficiens* Brandegee, *T. gracillima* Standley, *T. plusiantha* Standley (*Cymbispatha plusiantha* (Standley) Rohw.), *T. tonalamonticola* Matuda, *T. venezuelensis* Steyermark (*Cymbispatha venezuelensis* (Steyermark) Aristeguieta).

DISTRIBUTION. Mexico (as far north as Durango) to Brazil and Bolivia.

**Tradescantia** sect. 2. **Coholomia** *D. R. Hunt* sect. nov.; herbae perennes procumbentes vel ascendentes, ramosae, ad nodos radicantes; folia oblongo-lanceolata usque oblongo-ovata; inflorescentiae pseudoterminales bracteis 2 basi in tubum coalitis subtentae, cincinnis parallelis; petala et filamenta libera; embryotega dorsalis. Species typica: *T. guatemalensis* C. B. Clarke.

Monotypic. 'Coholom' is one of the vernacular names for *T. guatemalensis* noted by Standley & Steyermark Fl. Guatemala, in Fieldiana 24(3): 30 (1952). The plant also occurs in the adjacent Mexican state of Chiapas and in El Salvador.

**Tradescantia** sect. 3. **Austrotradescantia** *D. R. Hunt* sect. nov.; herbae suberectae vel procumbentes, ramosae, tuberosae, ad nodos radicantes; folia ovata usque oblongo-elliptica; inflorescentiae plerumque pseudoterminales et laterales bracteis 2 spathaceis vel subspathaceis subtentae; petala et filamenta libera; embryotega dorsalis; chromosomata pro genere perussilla. Species typica: *T. fluminensis* Vell.

The only wholly South American section, concentrated in SE Brazil. Cytologically, with their numerous ( $2n = 40-110$ ) small chromosomes, the species are so dissimilar from sect. *Tradescantia* that Jones & Jopling (in J. Linn. Soc. Bot. 65: 146 (1972)) would support their removal from the genus. They are also different in habit, but beyond this there does not seem a sound theoretical or practical basis for separate generic status.

Included species: *T. anagallidea* Seub. (distinct?), *T. blossfeldiana* Mildbr., *T. cerinthoides* Kunth, *T. crassula* Link & Otto, *T. fluminensis* Vell. (incl. *T. albiflora* Kunth?).

DISTRIBUTION: SE Brazil, Uruguay, Paraguay, N Argentina.

#### **Tradescantia** sect. 4. **Tradescantia**

series I. **Virginianae** *D. R. Hunt* ser. nov.; herbae perennes breviter rhizomatosae et saepe stoloniferae, radicibus fibrosis vel plus minusve carnosis, caulibus caespitosis vel fasciculatis; folia linearia usque anguste oblongo-lanceolata; inflorescentiae plerumque pseudoterminales, bracteis 2 (raro 3) foliaceis subaequalibus vel inaequalibus subtentae; pedicelli et calyces glandulosi vel glabri. Species typica: *T. virginiana* L.

About 17 species all endemic to the U.S.A. See Anderson & Woodson in Contr. Arn. Arb. 9 (1935), nos. 1-18; MacRoberts in Phytologia 42: 380-2 (1979); *T. bracteata* Small, *T. canaliculata* Rafin., *T. edwardsiana* Tharp, *T. ernestiana* Anderson & Woodson, *T. gigantea* Rose, *T. hirsuticaulis* Small, *T. hirsutiflora* Bush, *T. humilis* Rose, *T. longipes* Anderson & Woodson, *T. occidentalis* (Britton) Smyth, *T. obtensis* Rafin., *T. ozarkana* Anderson & Woodson, *T. reverchonii* Bush, *T. roseolens* Rafin., *T. subcaulis* Bush, *T. subspera* Ker-Gawl., *T. tharpii* Anderson & Woodson, *T. virginiana* L.

series II. **Sillamontanae** *D. R. Hunt* ser. nov.; herbae perennes lanatae, basi breviter rhizomatosae et ramosae, radicibus plus minusve carnosis; folia anguste oblongo-lanceolata usque elliptica vel oblonga; inflorescentiae pseudoterminales, bracteis 2 spathaceis vel subspathaceis subtentae; pedicelli et calyces eglandulosi. Species typica: *T. sillamontana* Matuda.

Two closely allied species in NE Mexico: *T. rozynskii* Matuda and *T. sillamontana* Matuda (*T. pexata* H. E. Moore).

series III. **Tuberosae** *D. R. Hunt* ser. nov.; herbae perennes tuberosae, caulibus solitariis vel fasciculatis; folia linearia usque anguste lanceolata; inflorescentiae plerumque pseudoterminales bracteis 2 (raro 1) foliaceis subtentae; pedicelli et calyces glandulosi vel eglandulosi. Species typica: *T. pinetorum* Greene (syn. *T. tuberosa* Greene non Roxb.)

Apart from *T. pinetorum*, which occurs in the Chihuahuan Desert Region (U.S.A.: S New Mexico and S Arizona; Mexico: Chihuahua, Sonora, Sinaloa, Durango, Coahuila (?)), I tentatively include here *T.wrightii* Rose & Bush (U.S.A.: Texas; Mexico: Chihuahua, Coahuila), and several mostly little-known species endemic to Mexico: *T. cirrifera* Mart. (*T. tolimanensis* Matuda); *T. nauenoleensis* Matuda and *T. polosina* D. R. Hunt; *T. mayvillei* Matuda, *T. subramosa* Matuda and *T. subtilis* Matuda; *T. monosperma* Brandegee and *T. stenophylla* Brandegee. Further species await description.

series IV. **Orchidophyllae** *D. R. Hunt* ser. nov.; herbae perennes subacaules tuberosae; folia anguste ovata usque orbicularia, inflorescentiae plerumque pseudoterminales bracteis 2 foliaceis usque subspathaceis subtentae; pedicelli et calyces glandulosi. Species typica: *T. orchidophylla* Rose & Hemsley ex Hemsley.

Two species endemic to the W Mexican states of Colima, Michoacan and Guerrero: *T. mirandae* Matuda, *T. orchidophylla*.

**Tradescantia** sect. 5. **Setcreasea** (*K. Schum. & Sydow*) *D. R. Hunt* in Kew Bull. 30: 448 (1975), q.v. Type species: *T. brevisfolia* (Torr.) Rose.

Included species: *T. brevisfolia*, *T. buckleyi* (I. M. Johnston) D. R. Hunt, *T. hirta* D. R. Hunt, *T. leiandra* Torrey, *T. pallida* (Rose) D. R. Hunt.

DISTRIBUTION: U.S.A. (Texas), Mexico (Coahuila to Veracruz).

**Tradescantia** sect. 6. **Separotheca** (*Waterfall*) *D. R. Hunt*, l.c. 454. Type species: *Zehria pumila* Greene (*T. pygmaea* D. R. Hunt).

Monotypic. *T. pygmaea* is endemic to the Mexican state of Durango.

**Tradescantia** sect. 7. **Mandonia** *D. R. Hunt* sect. nov.; herbae perennes tuberosae caulibus solitariis vel fasciculatis; folia anguste lanceolata usque elliptica, raro ovata vel orbicularia; inflorescentiae plerumque in axillis foliorum, sessiles, conjunctim spicam simulantes; pedicelli et calyces eglandulosi; petala libera; embryotega dorsalis. Species typica: *T. ambigua* Mart. (*Mandonia boliviana* Hassk.)

*Mandonia* Hassk. in Flora (1871): 260 (1871) (type: *M. boliviana* Hassk.), non *Mandonia* Wedd. in Bull. Soc. Bot. France 11: 50 (1864) (Compositae) nec *Mandonia* Sch. Bip. (1865) (Compositae). *Shofitzia* Hassk. & Kanitz in Oesterr. Bot. Zeit. [1872]: 147 (new name for *Mandonia* Hassk.).

