The Genus Talinum (Portulacaceae) in Southern Africa

by

H. R. Tölken

ABSTRACT

A revision of the five species of Talinum indigenous to South Africa has been undertaken. A key to the species is provided.

INTRODUCTION

During a visit to South West Africa observations were made on plants of Talinum, but it was very difficult to find correct names for them as seeds were not always available and seed structure is the major key character used. Indeed, the seed characters are very reliable in this genus and the specific patterns of the papillae on the seed membrane can be seen at an early developmental stage. However, specimens without seeds and more specifically male plants of T. crispatulum could not be identified. This difficulty, particularly with regard to the four species with yellow flowers which are emphasized in this work, as well as the different interpretations of the species in the literature, indicated the need of taxonomic clarification of the species of this genus.

Further observations in the northern Cape Province convinced me that species can be recognized in the field even without flowers, which open only for a short time in the afternoon. The leaves, although they are very variable, show a few characteristics which may help in identification. For instance, the leaves of T. crispatulum have typical crisped leaf margins and are never revolute (see Fig. 1: 3), a combination of characters not found in any of the other species, although young leaves of T. arnotii often have a crisped leaf margin. Occasionally specimens of the other three species, especially T. arnotii, do not show the revolute leaf margin when grown under particularly humid conditions. The leaves of T. tenuissimum and T. caffrum are usually linear, but in young plants of T. caffrum rather broad leaves are produced and these are so similar to those of T. arnotii that flowers and fruits are needed for identification. The leaves of T. tenuissimum are always linear and the whole plant is smaller and more delicate than those of T. caffrum. Diagnostic characters of these four yellow-flowered species are summarized in Table 1 to illustrate the differences and variation found in this complex. The table will also facilitate the identification of specimens without fruits and/or flowers.

When working on this revision, it was realized that many of the syntypes of species described by Dinter no longer exist at Berlin Herbarium where, according to Lanjouw & Stafleau (1954) in the index of collectors in Index Herbariorum, the original sets of Dinter specimens were deposited. This, and the occurrence of mixed collections found on certain sheets of syntype material seen, made it necessary to select lectotypes. In this connection, specimens from Berlin should get preference as the original set was deposited there and, in addition, Dinter's own herbarium is now in Berlin Herbarium, having been acquired at a more recent date.
<table>
<thead>
<tr>
<th></th>
<th><strong>T. arnotii</strong></th>
<th><strong>T. caffrum</strong></th>
<th><strong>T. tenuissimum</strong></th>
<th><strong>male plants</strong></th>
<th><strong>female plants</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesh of tubers</td>
<td>white becoming reddish-brown</td>
<td>white</td>
<td>reddish-brown</td>
<td>white becoming brown</td>
<td>—</td>
</tr>
<tr>
<td>Branches</td>
<td>finely papillose, becoming glabrous</td>
<td>glabrous</td>
<td>glabrous</td>
<td>papillose to hairy</td>
<td>—</td>
</tr>
<tr>
<td>Leaves</td>
<td>lanceolate to broadly elliptic</td>
<td>linear to oblong, mucronate</td>
<td>linear</td>
<td>lanceolate</td>
<td>usually broadly lanceolate</td>
</tr>
<tr>
<td></td>
<td>(1-5) 2-4 (-5) cm long (0-5) 1-2 (-3) cm broad</td>
<td>(0-2) 0-3-0-6 (-1-2) cm broad</td>
<td>(1-5) 2-4 (-5) cm long (0-1-0-3) (-0-5) cm broad</td>
<td>1-1-5 (-2-5) cm long 0-4-0-6 (-0-8) cm broad</td>
<td>1-2-2-5 (-3) cm long 0-6-1 (1-5) cm broad</td>
</tr>
<tr>
<td>Leaf margin</td>
<td>revolute, crisped when young; leaf blade recurving</td>
<td>revolute; leaf blade recurving</td>
<td>revolute; leaf blade recurving</td>
<td>crisped; leaf blade never recurved</td>
<td>—</td>
</tr>
<tr>
<td>Inflorescence</td>
<td>1-3-flowered</td>
<td>1 (2)-flowered</td>
<td>1-3 (4)-flowered</td>
<td>2-4 (5)-flowered</td>
<td>1 or 2 (3)-flowered</td>
</tr>
<tr>
<td>Peduncle</td>
<td>2-3-5 (-4-5) cm long</td>
<td>0-5-1-5 (-2-5) cm long</td>
<td>0-5-1-5 cm long</td>
<td>2-3 (-5) cm long</td>
<td>1-1-5 (-2-5) cm long</td>
</tr>
<tr>
<td>Pedicel of lateral flowers</td>
<td>1 or 0 pair of bracteoles</td>
<td>1 or 0 pair of bracteoles</td>
<td>often 2 pairs of bracteoles</td>
<td>2 (3) pairs of bracteoles</td>
<td>1 (2) pairs of bracteoles</td>
</tr>
<tr>
<td>Sepals</td>
<td>4-6 (-7) mm long</td>
<td>6-8 (-15) mm long</td>
<td>3-4 (-5) mm long</td>
<td>4-5 mm long</td>
<td>3-4 (-5) mm long</td>
</tr>
<tr>
<td>Stamens</td>
<td>20-35 (-50)</td>
<td>25-35 (-50)</td>
<td>8-10 (-14)</td>
<td>20-30 (-35)</td>
<td>numerous staminodes</td>
</tr>
<tr>
<td>Style</td>
<td>(2-) 3-4 mm long, swollen below stigma</td>
<td>3-5 mm long, swollen below stigma</td>
<td>1-2 mm long, swollen</td>
<td>—</td>
<td>absent or very short</td>
</tr>
<tr>
<td>Ovules</td>
<td>25-40</td>
<td>25-40</td>
<td>10-12 (-15)</td>
<td>—</td>
<td>10-12 (-15)</td>
</tr>
<tr>
<td>Seeds</td>
<td>reniform, fine to coarse papillae, often concentric rows</td>
<td>spherical with concentric ridges with papillae between</td>
<td>reniform with elongate papillae radiating out from the hilum</td>
<td>—</td>
<td>reniform with elongate papillae radiating out from the hilum</td>
</tr>
<tr>
<td>Habitat</td>
<td>sandy to clayey soils</td>
<td>usually on rock outcrops</td>
<td>sandy soils</td>
<td>sandy soils</td>
<td>—</td>
</tr>
</tbody>
</table>
The author wishes to acknowledge with thanks the loan of specimens from the following herbaria: Albany Museum Herbarium; Herbarium Berlin-Dahlem; Royal Botanic Gardens, Kew; McGregor Museum Herbarium; National Botanic Gardens and South African Museum Herbaria at Kirstenbosch; Natal Herbarium; and Stellenbosch Herbarium.

**TALINUM**


Shrublets with annual branches from a perennial base, usually tuberous. *Leaves* linear to broadly elliptic, obovate, petiolate, succulent, alternate often irregularly spaced; stipules linear, setaceous, usually keeled, with membranous margin, 1–3 mm long, usually caducous. *Inflorescence* in panicles or axillary, cymose. *Sepals* 2, narrowly ovate to broadly-ovate, keeled, slightly hooded at the apex, green, usually with membranous margin. *Petals* (4) 5 (–7), ovate, pointed or mucronate, often faintly keeled at the apex. * Stamens* 10–30 (–50); filaments usually connate at the base. *Ovary* superior, one-chambered with three carpels, with 10^0 ovules on a free central placenta; style 1–3 mm long or absent; stigmas 3, papillose. *Fruit* a capsule, ovoid to conical, shiny yellow, dehiscing by 3 valves. *Seeds* spherical to reniform, often laterally compressed, with more or less distinct patterns of papillae, dark brown or black.

Species of *Talinum* occur in most parts of Africa, parts of Asia and North and South America. Five species are indigenous in South Africa and occur only in the summer rainfall areas. *T. paniculatum* (Jacq.) Gaertn. from North America is often cultivated and has been recorded a few times as a garden escape, but it does not seem to spread as a weed.

In the African species the pedicels are always swollen below the fruit and are more or less recurved when fruiting.

Leaves obovate, obtuse or rounded at the apex; inflorescence terminal, paniculate, with pink flowers.................................................. 1. *T. portulacifolium*

Leaves linear, broadly elliptic to ovate, tapering towards the apex; inflorescence axillary, cymose, with yellow flowers:

Leaf margin crisped, never revolute; leaves irregularly alternate with internodes usually longer than 1 cm, varying in length on the same branch; plant dioecious:

Leaves 1–1.5 (–2) cm long, 4–6 (–8) mm broad; anthers with pollen; ovary without ovules

4. *T. crispatulum* (male)

Leaves 1.5–2–5 (–3) cm long, 6–10 (–15) mm broad; anthers without pollen; ovary with 10–12 ovules................................................................. 4. *T. crispatulum* (female)

Leaf margin rarely crisped when young, revolute; leaves usually alternate with internodes usually longer than 1 cm and not varying in length on the same branch; plant monoecious:

Pedicel thread-like, with (1) 2 pairs of bracteoles; calyx 3–4 mm long; stamens 8–14; seeds 6–12 (–15) per capsule, 2–3 mm long.......................... 5. *T. tenuissimum*

Pedicel not thread-like, with 0 or 1 pair of bracteoles; calyx 5–15 mm long; stamens 20–50; seeds 20–40 per capsule, c. 1 mm long:

Inflorescence 1-flowered; seeds with concentric ridges perpendicular, elongate papillae between the ridges; leaves linear to oblanceolate.......................... 2. *T. caffrum*

Inflorescence 1 or 2 (3)-flowered; seeds without ridges, papillose (sometimes arranged in concentric rows, but without elongate papillae between them); leaves narrowly ovate to broadly elliptic.......................... 3. *T. arnotii*


*Orygia portulacifolia* Forsk., Fl. Aegypt.-Arab. 103 (1775).

*Portulaca cuneifolia* Vahl, Symb. Bot. 1: 33 (1790), nom. illegit. Type: the same as for *O. portulacifolia*. 

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1. **21**
FIG. 1.—1, *Talinum arnotii*, branch of broad leaved form, × 1 (Tölken 1281); 1a, branch of narrow leaved form, × 1 (Tölken 1284). 2, *T. caffrum*, branch with flower and fruits, × 1 (Tölken 1293). 3, *T. crispatulum*, branch of female plant, × 1 (Tölken 1282); 3a, branch of male plant, × 1 (Tölken 1283).

Shrubs with annual glabrous branches up to 1 m high from a perennial base. Leaves obovate, obtuse or rounded and mucronate at the apex, cuneate at the base, 2-6 (-10) cm long, 1-3 (-4) cm broad; petiole 1-3 mm long. Inflorescence terminal, paniculate, many-flowered, often with leaf-like bracts 5-15 mm long on the main axis, usually with one pair of pointed membranous bracteoles below each flower. Sepals broadly ovate, apiculate, 3-4 mm long, slightly keeled at the apex. Petals obovate, pointed at the apex, pink or mauve. Stamens 25-30 (-35) with terete filaments not connate at the base. Ovary spherical with 30-40 ovules; style 2-3 mm long, dividing into 3 stigmas 1-2 mm long, papillose. Capsule ovate, 5-8 mm long, 5-6 mm broad, shiny yellow. Seeds ovate to reniform, laterally compressed, up to 1 mm long, with indistinct elongate papillae radiating out from the hilum, black.

T. portulacifolium is a shade-loving plant in the northern and eastern Transvaal, but also occurs in most parts of Africa, Arabia and India.

Transvaal.—Letaba; Rooirotse, Van der Schijff 3322; Gravelotte, Van der Merwe 2323. Messina: Messina, Rogers s.n. in BOL 19280 (BOL). Potgietersrus: Soutpan, Brenekamp & Schweickerdt 281. Sibasa: Klopperfontein, Codd 5417; Van der Merwe 3563. Waterberg: 42 miles north of Vaalwater, Meuse & Strey 10454.

The type specimen of this species has not been seen, but Forskal's original description is so complete that there is no doubt as to the species concerned.

2. T. caffrum (Thunb.) Eckl. & Zeyh., Enum. 282, No. 1802 (1836); Sonder in Fl. Cap. 2: 385 (1862); von Poellnitz in Fedde Rep. 35: 12 (1934), partly, excl. specimens from S.W.A.; Wild in Fl. Zamb. 1, 2: 370 (1961). Type: Cape, Thunberg s.n. (UPS, 2 sheets; PRE, photo.).

Portulaca caffra Thunb., Prod. 85 (1800).


Claytonia caffra (Thunb.) Kuntze, Rev. Gen. 1: 57 (1891).

Plant erect or decumbent; tubers branched, with white flesh. Branches glabrous or almost so, 15-25 (-40) cm long. Leaves linear to oblong, 2-4 (-8) cm long, (2) 3-6 (-10) cm broad, with margins revolute or recurving; first leaves on branch short and broadly oblong; petiole 1-3 mm long. Inflorescence axillary, cymose, 1 (2)-flowered. Peduncle 0.5–1.5 (-2.5) cm long, often keeled or laterally compressed, ending in two keeled bracts with membranous margins. Pedicel 1–1.5 (-2) cm long, swollen, often ridged below the ovary; bracteoles usually absent, rarely one lateral flower with one pair of bracteoles. Sepals lanceolate, pointed, 5-8 (-15) mm long, keeled, slightly hooded, with membranous margins. Petals 5, obovate to elliptic, yellow. Stamens 25-30 (-50), with filaments becoming broader towards the base, fused into a ring c. 1 mm high. Ovary conical, with 25-35 (-40) ovules; style 2-3 (-4) mm long, dividing into 3 stigmas 2 mm long, papillose. Capsule ovoid, 6–10 mm long, 6-7 mm broad, shiny, yellow. Seeds spherical to comma-shaped, hardly laterally compressed, c. 1 mm long, with ridges with perpendicular grooves between the ridges, dark brown or black. Fig. 1: 2.
This species occurs mainly on rocky outcrops and has mainly an eastern distribution in Africa from the eastern Cape to Kenya, but also extends across Rhodesia and Zambia into north-eastern South West Africa.


**SWAZILAND.**—Lubombo: *Big Bend, Compton 30992 (NBG)*.

**SOUTH WEST AFRICA.**—Grooffontein: *Aris-Aukas, Dinter 730* (B, SAM); Otavipforte, *Dinter 730a* (B). Otjiwarongo, *Pillans in BOL 27947 (BOL)*.

This species has distinctive seeds, but is very variable in vegetative characters, especially the shape and size of the leaves. The broadly oblong leaves of young plants might be confused with those of *T. arnotii*. *T. caffrum*, can, however, be recognized by the presence of more than one flower per inflorescence on a short peduncle, while, in the more tropical areas where it sometimes produces more than one flower, the sepals are longer than 8 mm (see Fig. 1: 2).

Two sheets of this species are present in the Thunberg Herbarium (UPS) and both bear flowers and fruit.

The identity of *T. esculentum* Dinter & Schellenberg (1912) can be recognized from the original description on the basis of the characteristic linear leaves and the white flesh of the tuber, the combination of which applies only to this species. However, no specimens were cited together with this description. Of the specimens cited by Dinter (1927) under this species, two species are in Berlin Herbarium of which *Dinter 730a* is selected as lectotype. This specimen was collected in 1908, added to which it bears a note recording the white flesh of the tuber, thus providing evidence that it is probably one of the specimens on which the original description was based. The second specimen *Dinter 730* in Berlin Herbarium, belongs to the same species, but on
the sheet of this number in SAM is a mixed collection and seeds of _T. esculentum_ and _T. tenuissimum_ are present in the capsule. _T. esculentum_ is a synonym of _T. caffrum_, but t.42 in Neue und wenig bekannte Pflanzen Deutsch-Südwest-Afrikas appears to be a narrow-leaved form of _T. arnotii_. Several lateral flowers on a long peduncle and the recurved, narrowly ovate leaves are rarely found in _T. caffrum_. From the few specimens seen, it appears that _T. caffrum_ is not as common in South West Africa as Dinter (1912) estimated.


Shrublet, semi-erect, rarely decumbent; tubers long, branched, usually reddish-brown inside. _Branches_ slightly hairy, becoming glabrous, succulent, 30–40 (–60) cm long. _Leaves_ narrowly or broadly ovate or elliptic, mucronate, 2–4 (–5) cm long, 0.8–1.5 (–2.5) cm broad, with margins often irregularly recurved, appearing wavy; petiole 2–3 (–4) mm long. _Inflorescence_ axillary, cymose, 1–3-flowered. _Peduncle_ 0.5–1 cm long, swollen below the ovary, usually with lateral flowers with one pair of bracteoles. _Sepals_ 5–6 (7) mm long, ovate, keeled and slightly hooded at the apex, with membranous margin. _Petals_ (4) 5, ovate, mucronate, faintly keeled at the apex. _Stamens_ 20–30 (–50); filaments slightly broadened towards the base, fused into a ring c. 1 mm high. _Ovary_ conical with 25–40 ovules; style 2–3 (–4) mm long dividing into 3 stigmas 2–3 mm long, papillose. _Capsule_ ovate, 8–9 mm long, 5–6 mm broad, shiny yellow. _Seeds_ reniform, laterally compressed, 0.5–1.5 mm long, with fine elongate papillae or coarse papillae arranged in circular rows, dark brown or black. _Fig._ 1:1, la.

This species occurs usually in sandy, but often also in clay soils, and is distributed in and around the Kalahari basin and well into the centre of South West Africa.


**T. arnotii** is a very variable species. The leaves vary greatly in shape and size and are crisped along the margin when young. Among specimens of this species seen, two types of seeds were observed. Firstly, plants originating mainly from the northern Cape and southern and central South West Africa produce seeds with fine elongate papillae radiating out from the hilum. These seeds are very similar to those of **T. tenuissimum** and **T. crispatulum**, but are never longer than 1.5 mm. The second form occurs in the northern parts of the Cape Province, Transvaal, Botswana and South West Africa and also in Rhodesia and Zambia. The papillae of the seed membrane are coarse, about as long as broad and arranged in concentric rows. In the northern parts of the distribution of this form, the papillae become less clearly arranged in concentric rows and the seeds are usually less than 1 mm long. In the Transvaal the two forms were found together at two localities (near Thabazimbi *Tölken* 1284, 1281; near Makapanstad, *Tölken* 1278, 1277). The corresponding plants can usually also be distinguished. The plants with finer papillae occur on the more clayey soils and produce narrower leaves and normally one, rarely many, flowers on a long peduncle (see Fig. 1:1a). The plants with coarse seed papillae occur on sandy soils and have broad leaves usually irregularly reflexed and usually with three flowers per inflorescence (see Fig. 1:1). However, intermediates to all these characters, except the seed characters, were found in both localities and also in herbarium material. Specimens seen from north-eastern South West Africa and northern Cape also indicate that the two forms apparently occur together in these areas without any definite intermediates. In addition, specimens from the eastern central South West Africa have seeds with fine papillae approaching those of the second type. Specimens with definite intermediate seed characters have not been seen, but in view of insufficient material seen from Botswana, the complex is not thoroughly understood and can thus not be fully evaluated.


Plant dioecious, prostrate or decumbent; tubers branching from the top, with white flesh. **Male plants** with branches 25–40 cm long, little branched, papilllose to hairy when young, becoming almost glabrous; internodes rarely longer than 1 cm, varying greatly in length on the same branch. **Leaves** narrowly ovate, 1–1.5 (–2) cm long, 4–6 (–8) mm broad, with margins crisped, never revolute; petiole 1–2 (–3) mm long. **Inflorescence** axillary, 2–4 (–5)-flowered. **Peduncle** 2–3 (–5) cm long, thread-like, ending in two keeled bracts with membranous margin. **Pedicel** 1–1.5 cm long, of the central flower with 0 or 1 pair of bracteoles, of the lateral flowers with (1) 2 (3) pairs of bracteoles. **Sepals** 2–4 (–5) mm long, lanceolate, keeled and slightly hooded at the apex, with membranous margin. **Petals** 5, lanceolate, tapering to the base, yellow. **Stamens** 20–30 (–35); filaments broadened towards the base, fused into a ring c. 1 mm high. **Ovary** almost spherical with no ovules developed; style absent; three stigmas c. 1 mm long, stiff erect, not papilllose. **Female plants** with branches 20–30 cm long, branched, papilllose to hairy when young becoming almost glabrous; internodes rarely longer than 1 cm, varying in length on the same branch. **Leaves** lanceolate, 1.5–2.5 (–3) cm long, 0–6–1 (–1.5) cm broad, with margins crisped, never revolute; petiole 1–3 (–4) mm long. **Inflorescence** axillary, 1–2 (3)-flowered. **Peduncle** 1–1.5 (–2.5 cm long), thread-like, ending in two keeled bracts with membranous margin. **Pedicel** 0.5–1.5 cm long, swollen below the ovary, of lateral flowers with 1 (2) pairs of bracteoles. **Sepals** 3–4 (–5) mm long, ovate, keeled and slightly hooded at the apex, with membranous margin. **Petals** 5, ovate, pointed, sometimes uneven, yellow. **Staminodes**
25–30, fine; filaments broadened towards the base, usually fused into a ring. Ovary almost spherical with 10–12 ovules; style absent or less than 1 mm long; stigmas 3, 2 (~3) mm long, papillose-plumose. Capsule conical, pointed, 5–6 mm long, 3–4 mm broad shiny yellow. Seeds reniform, laterally compressed, 2–2.5 mm long, with fine elongate papillae radiating out from the hilum, dark brown or black. Fig. 1: 3, 3a.

This species is common in sandy soils in and around the Kalahari basin.

CAPE.—Barkly West: Newlands, Esterhuysen in NBG 5474 (NBG). Hay: Rietkloof, Acocks 8552 (BOL, GRA); Bermolin, Wilman s.n. (GRA, KMG). Kuruman: Kuruman, Esterhuysen 759; 2436 (BOL); Batharos, Silf 228 (KMG); 4 miles south of Olifantshoek, Tolken & Schieben 1190; 1191; Cotton End, Swan in KMG 5071 (KMG). Postmasburg: Klipbok, Repton 4794. Vryburg: between Armadillo Creek and Vergelegen, Burtt Davy 11166; Armadillo Creek, Burtt Davy 11180.


SOUTH WEST AFRICA.—Gobabis: Gobabis, Dinter in SAM 74148 (SAM); Sandfontein, Wilman in SAM 27105 (SAM); Uitsig, Merxmüller & Giess 1105; Sturmfeld, Tolken 1302. Grootfontein, Palmenhain, Dinter 2357 (SAM). Okavango: east of Karakwe, Maguire 2065 (NBG); Gautscha Pan, Maguire 2133 (NBG). Otjiwarongo: Quickborn, Bradfield 361.

I do not agree with Podlech that the author of this species should be “Dinter ex von Poellnitz” as the crisped leaves and smaller flowers mentioned in Dinter’s diagnosis plus the type cited amount to more than a nomen nudum (see Int. Code of Bot. Nomenclature, Article 32, 1966). Wild (1961) uses the name T. crispatulatum consistently, but there seems to be no reason to change the epithet from the originally published version, T. crispatulum.


Plant semi-erect or decumbent; tubers rarely longer than 5 cm, rarely branched, with reddish-brown flesh. Branches glabrous, 15–20 (~30) cm long. Leaves linear, 2–4 (~5) cm long, 2–4 mm broad, margins revolute; petiole 1–2 (~3) mm long. Inflorescence axillary, 1–2 (~3) flowered. Peduncle 0.4–1.5 mm long, thread-like, ending in two keeled bracts with membranous margin. Pedicle 1–2.5 cm long, swollen below the ovary, of central and lateral flowers with (0) 1 or 2 pairs of bracteoles often uneven long. Sepals 3–4 mm long, keeled and slightly hooded at the apex. Petals 5, oblong, obtuse, mucronate, hardly tapering towards the base, yellow. Stamens 8–14; filaments slightly broadened towards the base, not fused into a complete ring. Ovary almost spherical with 10–12 ovules; style c. 1 mm long, swollen, dividing into three spreading stigmas c. 1 mm long, papillose. Capsule conical, pointed or almost beaked, 6–7 mm long, 3–4 mm broad, shiny yellow. Seeds reniform to comma-shaped, much laterally compressed, 2–2.5 mm long with fine elongate papillae radiating out from the hilum, dark brown to black.

T. tenuissimum occurs on sandy Kalahari soils in South Africa, but its distribution extends into Mozambique, Rhodesia, Zambia and Tanzania.


Wild (1961) includes this species under *T. crispatulatum* and his Tab. 71, A1 depicts a plant of typical *T. tenuissimum*. Although the seeds of the two species are very similar, *T. tenuissimum* has flowers with 8–14 stamens and linear leaves with revolute margins. In cultivation (*Dinter* in SAM 74152), the leaves become slightly broader, but they retain their linear shape. In *T. crispatulum* the flowers always produce more than 20 stamens and the narrowly ovate leaves have crisped, never revolute margins.

*T. dinteri* von Poellnitz, a *nomen subnudum* based on *Dinter* 4204, is very similar to *T. tenuissimum* in that it produces linear leaves, more than one flower per peduncle, c. 12 stamens and 10 ovules. Unusual for *T. tenuissimum* is, however, the single pair of bracteoles on the pedicel, but this character is apparently variable as the absence of additional pairs of bracteoles can also be observed in the specimen *Dinter* 1794 (SAM), a specimen apparently growing under similar unfavourable conditions. This latter specimen, collected on sand dunes in the Bethanien district, provides a link between the distribution as well as the morphology of *Dinter* 4204 and the Kalahari population of *T. tenuissimum*.

The specimen *Pearson* 4162 (K!) collected at Jakkalskuppe confirms the identification of this plant as *T. tenuissimum* as it bears the typical seeds. This specimen is inscribed *T. lissospermum* C. A. Smith MS.

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