

# Notes on the genus *Ficinia*: *F. pygmaea*, *F. limosa*, *F. clandestina* and nine new taxa from the south-western Cape, South Africa

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## ABSTRACT

Nine new taxa are described and a new combination is made in the genus *Ficinia* (Cyperaceae). An examination of *F. pygmaea* Boeck. and *F. limosa* Levyns leads to the conclusion that these two species are conspecific. *F. clandestina* (Steud.) Boeck., endemic to Ethiopia, is considered not to belong to *Ficinia*. Its true identity is unknown.

## RÉSUMÉ

NOTES SUR LE GENRE *FICINIA*; *F. PYGMAEA*, *F. LIMOSA*, *F. CLANDESTINA* ET NEUF TAXA NOUVEAUX DU SUD-OUEST DE LA PROVINCE DU CAP, AFRIQUE DU SUD

On décrit neuf taxa nouveaux et l'on opère une combinaison nouvelle dans le genre *Ficinia* (Cypéracées). Un examen de *F. pygmaea* Boeck. et de *F. limosa* Levyns mène à la conclusion que ces deux espèces n'en font qu'une. *F. clandestina* (Steud.) Boeck., endémique pour l'Éthiopie, n'est pas considérée comme appartenant à *Ficinia*. Sa véritable identité est inconnue.

Due to poorly defined limits several species and species groups within *Ficinia* have become "dumping grounds" for specimens which could not readily be placed with other established taxa. The largest and perhaps most problematic of these groups is the *F. indica* (Lam.) Pfeiff./*F. pallens* (Schrad.) Nees complex which forms the major part of the section Bracteosae. All who have studied this complex have treated it differently. At one extreme (Schonland, 1922) the entities comprising it have been regarded as mere varieties, while at the other extreme (Levyns, 1950) five distinct species have been recognized within it. The work carried out so far is not entirely satisfactory and has tended to confound the existing confusion rather than to clarify it.

A study of the *F. indica*/*F. pallens* complex together with the remaining taxa comprising the section Bracteosae of *Ficinia* has made it possible to recognize several new taxa, none of which appears to have been previously described.

1. *Ficinia cedarbergensis* Arnold & Gordon-Gray, sp. nov., *F. levynsiae* Arnold & Gordon-Gray affinis, sed inflorescentia ochracea, parte dimidia vel tertia inferiore bractearum basibus dilatatis velata; styli ramis latis, crassis, sanguineis, adpectu granularibus, longitudine stylum aequantibus; costis bractearum pallidis, basim distincte latis.

Herba perennis, erecta, caespitosa, robusta, usque 0,6 m alta. *Rhizoma* contractum vel usque 20 mm longum,  $\pm 5$  mm latum, vel foliorum basibus persistentibus, ferrugineis, fibrosis vel squamis atroporphyræis, striatis, usque  $\pm 5$  mm longis celatum. *Stolones* nulli. *Foliorum vaginae* membranaceae, pallidae, maculis brunneis ornatae, vetustate laceratae. *Ligula* brevis, usque 3 mm longa, apice obliquo. *Foliorum laminae*  $\frac{1}{2}$ - $\frac{3}{4}$  longitudinis culmorum aequantes, complanatae, marginibus ex parte incurvis scabris. *Inflorescentia* capitulum terminale efformans, compacta, ovato-elliptica, ochracea,  $\pm 20$  mm longa,  $\pm 10$  mm lata, parte quarta vel tertia inferiore bractearum basibus dilatatis velata. *Bracteae* complures, infimae 6-7 vacuae, infimae 2-3 apicibus laminiformibus, usque 0,1 m longis, marginibus scariosis, maculis brunneis ornatae, apicibus obtusis, costis pallidis,

basi distincte lata, bracteis interioribus quaque spiculum singulam subtendentibus cum duobus prophyllis oppositi. *Spiculae* usque 9-florae. *Glumae*  $\pm 6$  mm longae,  $\pm 2$  mm latae, lineari-acuminatae, apicibus recurvatis. *Antherarum cristae* latitudinem basis aequantes vel eo breviores, apicibus rotundatis. *Stylus* achenium maturum longitudine aequans, latus, crassus, sanguineus, adpectu granulari, ramis stylum longitudine aequantibus. *Achenium* fuscum, longitudine  $\frac{3}{4}$ - $\frac{5}{8}$  glumarum aequans, ellipticum, trigonum, complanatum, apice retuso, porcis transversalibus notatum. *Gynophorum* dimidium longitudinem partis achenii intactae aequans, obconicum, margine crenatum. *Inflorescentiae axis*  $\pm 6$  mm longus,  $\pm 4$  mm latus, dimidio inferiore sine ramis, dimidio superiore ramos 5-8, subaequales gerente.

TYPE.—Cape, 3219 (Wuppertal): Uilsgat Vlakte, Middelberg, Cedarberg (-CB), *Esterhuysen 20065* (BOL, holo.; NBG).

*Perennial*, erect, up to 0,6 m high, tufted, robust. *Rhizome* contracted or up to 20 mm long,  $\pm 5$  mm wide, concealed by persistent, ferruginous, fibrous leaf bases, or enclosed in dark reddish brown striate scales,  $\pm 5$  mm long. *Stolons* wanting. *Leaf sheaths* membranous, pale, flecked with brown, tearing with age. *Ligule* short, up to 3 mm long, apex oblique. *Leaf blades*  $\frac{1}{2}$ - $\frac{3}{4}$  length of flowering stems, flattened, margins partially infolded and scabrid. *Inflorescence* a terminal compact head, ovate to elliptical, pale yellowish-brown,  $\pm 2$  cm long,  $\pm 1$  cm wide, lowest  $\frac{1}{4}$ - $\frac{1}{3}$  enveloped by dilated bract bases. *Bracts* several, lowest 6-7 empty, lowermost 2-3 of these with leafy, blade-like tips up to 0,1 m long, margins scariosus, flecked with brown, apex obtuse, midrib pale, broad at bract base; inner bracts each subtending a single spikelet with two oppositely arranged prophylls at its base. *Spikelets* up to 9 flowered. *Glumes*  $\pm 6$  mm long,  $\pm 2$  mm wide, linear-acuminate, apices recurved. *Anther* crests shorter than or equal to breadth at crest base, apex rounded. *Style*  $\pm$  mature achene length, branches equalling style length, broad, stout, dark red, surface granular. *Achene* dark brown,  $\frac{3}{4}$ - $\frac{5}{8}$  glume length, elliptical, longitudinal axis asymmetrical, trigonous, apex flattened to retuse, surface transversely ridged. *Gynophore*  $\frac{1}{2}$  exposed length of achene, obconical, margin crenate. *Inflorescence axis*  $\pm 6$  mm long,  $\pm 4$  mm wide, lower half unbranched, upper half with 5-8 subequal appendages. (FIG. 1.)

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FIG. 1.—*Ficinia levynsiae* 1–10, and *F. cedarbergensis* 11–20: 1 & 11, habit ( $\times \frac{1}{2}$ ). 2 & 12, leaf sheath apex ( $\times 6$ ). 3 & 13, inflorescence ( $\times 2$ ). 4 & 14, inflorescence axis ( $\times 4$ ). 5 & 15, lowest inflorescence bract (abaxial view,  $\times 2$ ). 6 & 16, inner bract (abaxial view,  $\times 2$ ). 7 & 17, glume ( $\times 2$ ). 8 & 18, style & branches ( $\times 10$ ). 9 & 19, anther crest ( $\times 10$ ). 10 & 20, achene ( $\times 8$ ). —

Restricted to the Cedarberg Mountains between Clanwilliam and Porterville (Fig. 2). Plants grow on sandy or rocky slopes at altitudes from 1 000–1 550 m. Flowering period September to April.

In general facies plants resemble a compact form of *F. pallens*, thus many specimens have been named *F. lithosperma* var. *compacta* in the past. The species also closely resembles *F. levynsiae*, and is very similar vegetatively, but differs in the inflorescence form.

Plants of *F. cedarbergensis* may be recognized by the coarse, irregularly branching rhizome, the membranous leaf sheaths that are flecked with brown, the broad (especially at the base) pale coloured midrib of the inflorescence bracts, the thick red style with its granular branches and the inflorescence axis which is similar only to that of *F. levynsiae*.

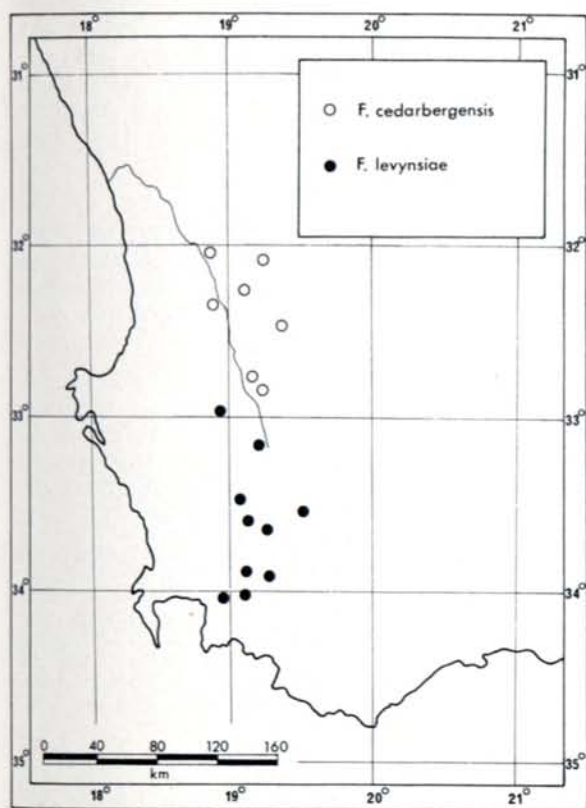


FIG. 2.—Distribution of *Ficinia cedarbergensis* and *F. levynsiae*.

CAPE.—3218 (Clanwilliam): Pakhuis Pass (—BB), *Stokoe* s.n. (SAM); Boontjiesvlei, Cedarberg (—BB), *Stokoe* s.n. (SAM); Plateau on 24 Rivers Mt above Porterville (—DD), *Esterhuysen* 16613 (BOL). 3219 (Wuppertal): Boontjieskraal, Cedarberg (—AA), *Esterhuysen* 8071 (BOL); 4.0 km along jeep track from Heuningvlei, between Station and Brugkraal (—AA), *Taylor* 8489 (STE); slopes in kloof on peak at Konpoort (—AC), *Esterhuysen* 12150 (BOL); Boontjieskloof hut area (—AC), *Taylor* 8472 (STE); Blaauwberg (—AC), *Drège* s.n. (SAM); N. slopes of Krom River kloof (—AC), *Taylor* 8472 (STE); Blaauwberg (—AC), *Drège* s.n. (SAM); N. slopes of Krom River kloof (—CB), *Esterhuysen* 17978 (BOL); Koudeberg (—CC), *Schlechter* 8754 (BOL; K; PRE; NH).

2. *Ficinia levynsiae* Arnold & Gordon-Gray, sp. nov., *F. petrophyllae* Arnold & Gordon-Gray affinis, sed foliorum laminis  $\frac{1}{2}$ – $\frac{3}{4}$  longitudinem culmorum aequantibus, marginibus incurvis, achenii axe longitudinali asymmetrico; inflorescentiae axe dimidio inferiore sine ramis, dimidio superiore ramis 4–6 subaequalibus; *F. cedarbergensis* Arnold & Gordon-Gray etiam affinis, sed inflorescentia fusca, dimidio vel parte tertia infima basibus bractearum velata, ramis stylo 2–4plo longioribus.

*Herba* perennis, erecta, usque 0,15 m alta, laxae caespitosa, *Rhizoma* usque  $\pm 20$  mm longum,  $\pm 3$  mm latum, obliquum, ad bases culmorum leviter

tumidum, foliorum basibus persistentibus, brunneoferrugineis, papyraceis usque fibrosis celatum. *Stolones* nulli. *Foliorum vaginiae* scariosae, rugosae, brunneis, maculis ferrugineis ornatae, vetustate laceratae. *Ligula* usque 1 mm longa, apice obliquo. *Foliorum laminae*  $\frac{1}{2}$ – $\frac{3}{4}$  longitudine culmi aequantes, complanatae, marginibus incurvis (interdum contiguis), scabris. *Inflorescentia* capitulum terminale efformans, arcte compacta, globosa, fusca, usque 15 mm longa,  $\pm 10$  mm lata, dimidio vel parte tertia infima basibus bractearum velata. *Bracteae* complures, infimae 7–8 vacuae, infimae 2–3 apicibus laminiformibus, usque 60 mm longis praeditae, basibus dilatatis, marginibus scariosis apicibus obtusis; bracteae ceterae interiores spiculas singulas subtendentes; prophylla nulla. *Spiculae* usque 8-florae. *Glumae* lineares,  $\pm 5$  mm longae,  $\pm 2$  mm latae, apice acutae. *Antherarum cristae* leviter evolutae, breviores quam basi latiores, apice acuto. *Stylus* longitudine dimidium achenium maturum aequans; ramis stylo 4–5plo longioribus, latis, rubris, adpectu granularibus. *Achenium* fuscum, trigonum, maturum gluma subtendente longius axe longitudinali asymmetrico, adpectu granulare, transverse porcatum. *Gynophorum* sanguineum, longitudine  $\frac{2}{3}$  partis achenii intactae aequans, margine crenatum. *Inflorescentiae axis*  $\pm 5$  mm longus,  $\pm 3$  mm latus, dimidio inferiore sine ramis, dimidio superiore ramis 4–6 subaequalibus.

TYPE.—Cape, 3319 (Worcester): Michells Pass near Ceres (—AC), *Arnold* 749 (PRE, holo.; K).

Perennial erect, up to 0,15 m high, loosely tufted. *Rhizome* up to 20 mm long,  $\pm 3$  mm wide, oblique, slightly swollen at shoot bases. *Stolons* wanting. *Leaf bases* persistent, brown to ferruginous, papery to fibrous. *Leaf sheaths* scariosus, wrinkled, light brown, flecked with ferruginous markings, tearing with age. *Ligule* up to 5 mm long, apex oblique. *Leaf blades*  $\frac{1}{2}$ – $\frac{3}{4}$  length of flowering stem, flattened, margins infolded (occasionally touching) and scabrid. *Inflorescence* a terminal head, highly compacted, globose, dark brown, up to 15 mm long,  $\pm 10$  mm wide, lowest  $\frac{1}{2}$ – $\frac{3}{4}$  enveloped by dilated bract bases. *Bracts* several, lowest 7–8 empty, 2–3 with leafy, blade-like tips up to 60 mm long, bases dilated with margins scariosus, obtuse at apex, remaining inner bracts each subtending single spikelets, prophylls wanting. *Spikelets* up to 8-flowered. *Glumes* linear,  $\pm 5$  mm long,  $\pm 2$  mm wide, apices acute. *Anther crests* poorly developed, shorter than breadth at crest base, apex acute. *Style*  $\frac{1}{2}$  length of mature achene, branches 4–5 times style length, thick, red, surface granular. *Achene* greyish-brown, exceeding glume length when mature, trigonous, longitudinal axis asymmetrical, surface transversely ridged. *Gynophore* dark red,  $\frac{2}{3}$  exposed length of achene, margin crenate. *Inflorescence axis*  $\pm 3$  mm wide, lower half unbranched, upper half with 4–6 subequal appendages. (FIG. 1.)

Distributed along the western Cape mountains from Porterville to Stellenbosch and Caledon (Fig. 2). Plants grown in kloofs and on rocky mountain slopes between 750–1222 m altitude. Flowering period October to January.

This species is named in honour of the late Dr (Mrs) M. R. Levyns who has contributed materially to the knowledge of South African Cyperaceae, including *Ficinia*.

For a long time plants of this species were misidentified as *F. lithosperma* var. *compacta* [considered by the present authors to be a form of *F. indica* (Lam.) Pfeiff.]. C. B. Clarke (1898) described the inflorescence of *F. lithosperma* var. *compacta* as a "head  $\frac{1}{2}$  in (7 mm) broad, very tightly packed, chestnut coloured (as

are the shiny bracts)". He also stated that the leaf sheaths were not conspicuous. In *F. levynsiae* (Fig. 1) the inflorescence is also tightly compacted, but much more so than in *F. lithosperma* var. *compacta*; It is 5–10 mm broad and has shiny dark brown bracts. The leaf sheaths, however, are highly conspicuous, being scarious and white flecked with brown. Despite the superficial resemblance between these taxa, which is over-emphasized when described in words, these two taxa are not closely allied to one another.

*F. levynsiae* is most closely allied to *F. cedarbergen-sis* and *F. petrophylla*. It may be distinguished from these species by its conspicuous leaf sheaths with well developed ligules, its globose, dark brown inflorescences, its inflorescence bracts which have scarious margins and obtuse apices, its thick, red, granular styles and style branches and the greyish-brown, longitudinally asymmetrical achene, which when mature, exceeds the glumes in length.

CAPE.—3319 (Worcester): plateau on 24 Rivers Mt above Porterville (—AA), *Esterhuysen 16613* (NBG); Michells Pass near Ceres (—AC), *Arnold 749* (PRE); in the mountains near Tulbagh cataracts (—AC), *Bolus 7588* (BOL); rocky S.E. slopes Ceres Peak (—AD), *Esterhuysen 17529* (BOL); Visgat, between Schurfteberg and Great Winterhoek Mt (—AD), *Stokoe s.n.* (NBG); Zachariashoek, Kasteelkloof catchment (—BC), *Smith 59* (STE); Matroosberg (—BC), *Gillett 3600* (BOL); Audensberg Ridge Peak near Worcester (—CB), *Esterhuysen 16667* (GRA, BOL, PRE); west end of Du Toits Peak, Worcester (—CC), *Esterhuysen 16069* (BOL; NBG); Du Toits Kloof (—CC), *Taylor 5424* (STE); hills at foot of Du Toits Peak, above Du Toits Kloof (—CC), *Esterhuysen 16661* (BOL); summit French Hoek Pass (—CC), *Esterhuysen 18901* (BOL, PRE); French Hoek Pass (—CC), *Stokoe s.n.* (NBG); summit French Hoek Pass, parking area (—CC), *Boucher 2276* (STE); nek between Stettynskloof and Louwshoek (—CD), *Esterhuysen 17646* (BOL); E. slope of Stettynsberg (—CD), *Esterhuysen 15603* (BOL). 3418 (Simonstown): Kogelberg Forest Reserve near Somersfontein (—BB), *Boucher 61* (STE). 3419 (Caledon): Viljoens Pass (—AA), *Rogers s.n.* (NBG).

3. *Ficinia petrophylla* Arnold & Gordon-Gray, sp. nov., *F. levynsiae* Arnold & Gordon-Gray affinis, sed foliorum laminis culmum aequantibus vel eo longioribus, complanatis, 2–4 mm latis, inflorescentiarum axe elliptico, sine ramis.

Herba perennis, erecta, usque 0,3 m alta. *Rhizoma* usque 12 mm longum,  $\pm 5$  mm latum, obliquum, basibus foliorum persistentibus, ferrugineis papyraceis celatum. *Stolones* nulli. *Foliorum vaginæ* scariosae, rugosae, ferrugineae, vetustate laceratae. *Ligula* usque 4 mm longa, apice biloba vel subobliqua. *Foliorum laminæ* culmum aequantes vel eo longiores, complanatae, 2–4 mm latae, margine subtiliter scabrae, raro incurvae. *Inflorescentia* capitulum terminale efformans, arcte compacta, globosa, ferruginea et luteola, usque 12 mm longa,  $\pm 6$  mm lata, parte tertia vel dimidia inferiore bractearum basibus dilatatis velata. *Bracteae* complures, infimae 2–3 apicibus laminiformibus,  $\pm 6$  cm longis instructae, partibus basalibus dilatatis, apice obtusis vel retusis, infimae 2–8 vacuae bracteae interiores florem singularem bisexuallem subtendentes; prophylla nulla. *Antherarum cristæ* basi breviores quam latiores, complanatae, apicibus rotundatae. *Stylus* achenium maturum longitudine aequans, crassus,  $\pm$  trigonus, ferrugineus, adspectu granularis, ramis stylum bis excedentibus. *Achenium* brunneum,  $\frac{2}{3}$  longitudinis bracteae subtendentis aequans, late ovatum, plano-convexum, adspectu laeve. *Gynophorum*  $\frac{2}{3}$  longitudinis partis achenii intactae aequans, obconicum, margine crenatum. *Inflorescentiae axis*  $\pm 6$  mm longus,  $\pm 2$  mm latus, sine ramis, sectione transversa ellipticus.

TYPE.—Cape, 3320 (Montagu): summit of Witteberg (—BC), *Compton 7993* (NBG, holo.).

Perennial erect, up to 0,3 m high. *Rhizome* up to 12 mm long,  $\pm 5$  mm wide, concealed by persistent, ferruginous, papery leaf bases. *Stolons* wanting. *Leaf-sheaths* scarious, wrinkled, ferruginous, tearing with age. *Ligule* up to 4 mm long, apex suboblique to two-lobed. *Leaf blades* equal to or longer than flowering stems, flattened, 2–4 mm broad, margins finely scabrid, rarely infolded. *Inflorescence* a terminal, tightly compacted head, globose up to 12 mm long,  $\pm 6$  mm wide, ferruginous and yellow, lowest  $\frac{1}{3}$ – $\frac{1}{2}$  enveloped by dilated bract bases. *Bracts* several, lowest 2–3 with extended, blade-like tips up to 60 mm long, bases dilated with apices obtuse to retuse, lowest 7–8 empty, inner bracts each subtending a single bisexual floret prophylls wanting. *Anther crests* shorter than breadth at crest base, apex flat to rounded. *Style* equal to length of mature achene, stout,  $\pm$  three-angled, branches twice style length, ferruginous, surface granular. *Achene* brown,  $\frac{2}{3}$  length of subtending bract, broadly ovate, plano-convex, surface smooth. *Gynophore*  $\frac{2}{3}$  length of exposed portion of achene, obconical, margin crenate. *Inflorescence axis*  $\pm 6$  mm long,  $\pm 2$  mm wide, unbranched, elliptical. (FIG. 3.)

Restricted in distribution to the Witteberg, Anysberg and Zwartberg mountains of the southern Cape Province (Fig. 4). Plants grow in rocky crevices at altitudes between 1 200–1 800 m. Flowering period October to January.

The species derives its name from the rocky terrain in which it commonly grows. It is very closely allied to *F. levynsiae* from which it may quite readily be distinguished by its broad flattened leaf blades, its golden inflorescence and its characteristic inflorescence axis which is elliptical and unbranched.

CAPE.—3320 (Montagu): south side of Witteberg Range (—AD), *Esterhuysen 28853* (BOL); north slope of Witteberg (—BC), *Compton 2655* (NBG, BOL); top of Witteberg (White Hill) (—BC), *Compton 3168* (BOL); near summit of Witteberg (—BC), *Henderson 1907* (NBG); south slope of Anysberg, Swellendam (—DA), *Esterhuysen 17037* (BOL; NBG). 3321 (Ladismith): north side Seven Weeks Port Mts (—AD), *Andreae 1308* (STE). 3322 (Oudtshoorn): Zwartberg Pass area (—AC), *Stokoe 9118, 9318* (BOL).

4. *Ficinia grandiflora* Arnold & Gordon-Gray, sp. nov., *F. deustae* (Berg.) Levyns affinis, sed bracteis 3–4 infimis laminiformibus, apice foliaceis, bracteis interioribus acuminatis; *F. nigrescenti* (Schrad.) J. Rayn. etiam affinis, sed foliorum vaginis scariosis bracteis interioribus apice non recurvatis.

Herba perennis, erecta, 0,35–0,7 m alta, caespitosa, rigida, robusta. *Rhizoma* compactum,  $\pm 3$  mm longum,  $\pm 2$  mm latum, foliorum basibus persistentibus, ferrugineis, fibrosis, celatum. *Stolones* nulli. *Foliorum vaginæ* scariosae, rugosae, albae, maculis brunneis ornatae, vetustate laceratae. *Ligula* usque 10 mm longa, apice obliquo. *Foliorum laminæ*  $\frac{1}{2}$ – $\frac{2}{3}$  longitudinem culmorum aequantia, complanatae, 2–3 mm latae, rigidae, dimidio superiore plerumque siccitate crispo, marginibus scabris non incurvis. *Inflorescentia* capitulum terminale efformans, elliptica, ochracea, 20–45 mm longa, 10–20 mm lata, parte tertia infima basibus dilatatis velata. *Bracteae* complures, acuminatae, infimis 3–4 foliaceis vacuis, apicibus laminiformibus, usque 120 mm longis, basibus dilatatis, bracteis interioribus fertilibus,  $\pm 12$  mm longis,  $\pm 4$  mm latis, apicibus acuminatis non recurvatis, quaque bractea florem singularem bisexuallem subtendentes; prophyllis nullis. *Antherarum cristæ* lineares, latitudine basis cristæ parum longiores, subtiliter scabrae, apice acuto. *Stylus* gracilis, achenium maturum duplo longior, ramis stylum  $1\frac{1}{2}$  plo

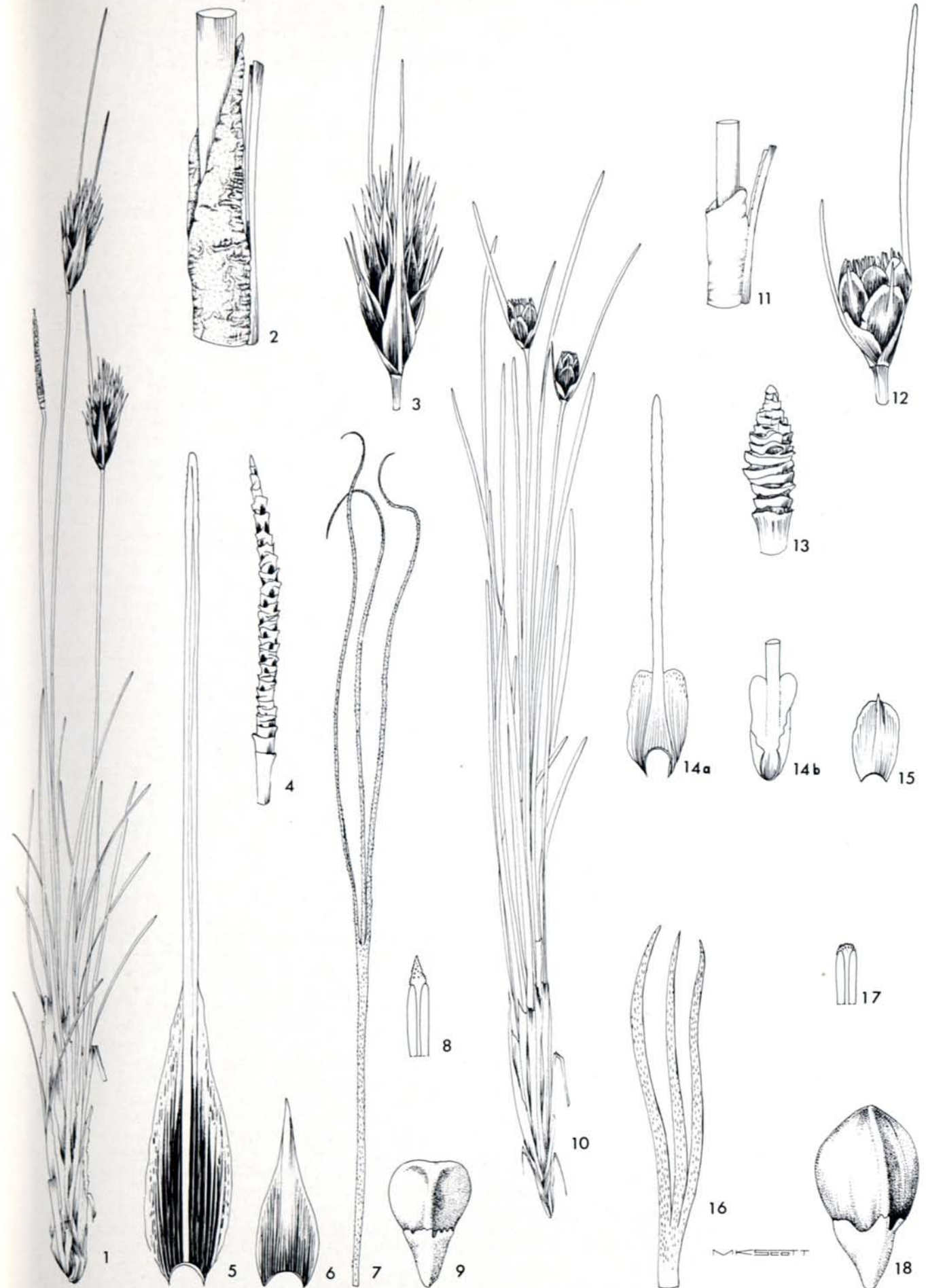


FIG. 3.—*Ficinia grandiflora* 1-9 and *F. petrophylla* 10-18: 1 & 10, habit ( $\times \frac{1}{3}$ ). 2 & 11, leaf sheath apex ( $\times 6$ ). 3 & 12, inflorescence ( $\times 1.3$  & 2). 4 & 13, inflorescence axis ( $\times 2$  & 4). 5 & 14, lowest inflorescence bract ( $\times 2$ ). 6 & 15, inner bract ( $\times 2$ ). 7 & 16, style & branches ( $\times 10$ ). 8 & 17, anther crest ( $\times 10$ ). 9 & 18, achene ( $\times 8$ ).

longioribus, subtiliter papillatis. *Achenium*  $\frac{1}{3}$  longitudinis bractearum fertilium aequans, obovoideum, trigonum, apice rotundatum. *Gynophorum* dimidium longitudinem achenii partis intactae aequans, obconicum, margine crenatum. *Inflorescentiae axes* strobiliformes, solitarii vel raro 2, sine ramis,  $\pm 25$  mm longus,  $\pm 2$  mm latus.

TYPE.—Cape, 3318 (Cape Town): Jonkershoek, Stellenbosch (–DD), Taylor 5058, (PRE, holo.; K; STE).

Perennial erect, 0,35–0,7 m high tufted, robust. *Rhizome* compacted,  $\pm 3$  mm long  $\pm 2$  mm wide, concealed by persistent, ferruginous, fibrous leaf bases. *Stolons* wanting. *Leaf sheaths* scarious, wrinkled, white with brown flecks, tearing with age. *Ligule* up to 10 mm long, apex oblique. *Leaf blades*  $\frac{1}{2}$ – $\frac{2}{3}$  length of flowering stems, flattened, 2–3 mm broad, rigid, upper  $\frac{1}{2}$  usually curled when dry, margins scabrid, not infolded. *Inflorescence* a terminal, elliptical, brownish-yellow head, 20–45 mm long, 10–20 mm wide, lowest  $\frac{1}{3}$  enveloped by dilated bract bases. *Bracts* several, lowest 3–4 with leafy, blade-like tips up to 120 mm long, dilated bases with margins tapering gradually to meet extended tips, lowest 3 empty, inner fertile bracts  $\pm 12$  mm long,  $\pm 4$  mm wide, acuminate apices not recurved, each subtending a single bisexual flower, prophylls wanting. *Anter crests* linear, slightly longer than breadth of crest base, finely scabrid, apex acute. *Style* slender, twice length of mature achene, branches  $1\frac{1}{2}$  times style length, finely papillate. *Achene*  $\frac{1}{3}$  length of fertile bracts, obovoid, trigonous, apex flattened. *Gynophore*  $\frac{1}{2}$  exposed length of achene, obconical, margin crenate. *Inflorescence axis* strobiliform, solitary or rarely 2, unbranched,  $\pm 25$  mm long,  $\pm 2.0$  mm wide (FIG. 3).

Restricted in distribution to the area between the Du Toitsberg mountain near Worcester and the Hottentot Hollands mountains near Caledon (FIG. 4).

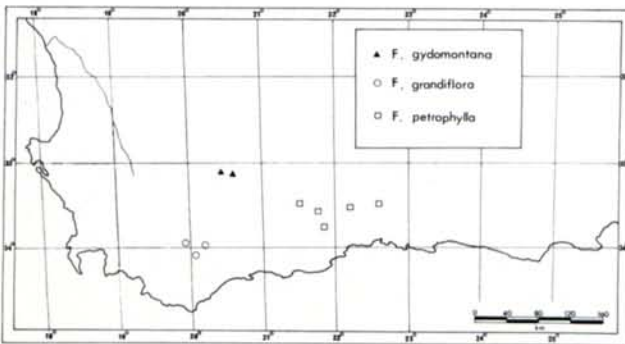


FIG. 4.—Distribution of *Ficinia petrophylla*, *F. grandiflora* and *F. gydomontana*.

Plants grow in sandy soils on rocky mountain slopes between altitudes of 600–950 m. Flowering period July to October.

This species is named for its large, attractive inflorescence. With the exception of *F. radiata*, it has probably the most striking inflorescence in *Ficinia*.

*F. grandiflora* appears morphologically intermediate between *F. deusta* and *F. nigrescens*. It may well have arisen as a result of interspecific hybridization between these species. The diagnostic features that distinguish it from these and other related species such as *F. ixioides* are the long, acuminate, fertile bracts which are not recurved at the apex, the 3–4 leaf-like sterile bracts and the markedly scarious leaf sheaths. It also has a more restricted distribution than any of its relatives.

CAPE.—3318 (Cape Town): E. slope Dwarsberg trail, Jonkershoek valley (–DD), Bos 488 (PRE; STE); Langriver, Jonkershoek, (–DD), Kerfoot 5335 (STE); Jakkalsvlei, Jonkershoek (–DD), Taylor 6501 (PRE); Swartboskloof, Stellenbosch (–DD), Van der Merwe 2262 (PRE). 3319 (Worcester): Peak above Du Toits Kloof, near Mt Club hut (–CC), Esterhuysen 16076 (NBG). 3418 (Caledon): E. slope of Hottentots Holland Mts near Somerset Sneeuwkop (–AA), Stokoe s.n. (NBG).

5. *Ficinia gydomontana* Arnold, sp. nov., *F. nigrescenti* (Schr.) J. Rayn. affinis, sed foliorum laminis nullis vel rudimentariis; inflorescentiae bracteis 1–2 infimis aristatis, bracteis superioribus vix recurvis, achenii pagina laevi.

Herba perennis, erecta, rigida, usque 0,4 m alta, confertim caespitosa. *Rhizoma* maxime contractum, vix 2 mm longum,  $\pm 1$  mm latum, surculos sympodiales simul tenens, foliorum basibus persistentibus, rubiginosis, fibrosis celatum. *Stolones* nulli. *Foliorum vaginae* scariosae, superiores albae, infimae rubiginosae, vetustate laceratae. *Ligula* usque 6 mm longa, apice obliqua. *Foliorum laminae* nullae vel rudimentariae (raro usque 50 mm longae, marginibus incurvis). *Inflorescentia* capitulum terminale efformans, obovoidea vel ellipsoidea, pallida vel atrorubiginosa,  $\pm 20$  mm longa,  $\pm 5$  mm lata. *Bractearum complures*, obovatae, acutae, infimae 2–3 apicibus aristatis (laminiformibus rudimentariis, 1–2 mm longis), bractea infima vacua, 1–2 sequentes spiculas singulas subtendentes; bractearum interiores ovatoacuminatae,  $\pm 10$  mm longae,  $\pm 4$  mm latae, quaque bractea florem singulum bisexualem subtendenti; prophylla nulla. *Spiculae* usque 8-florae. *Glumae* lineari-acutae,  $\pm 7$  mm longae,  $\pm 3$  mm latae. *Antherarum cristae* glabrae, latitudine basali parum longior, ramis gracilibus, stylo  $1\frac{1}{2}$  plo longioribus, subtiliter papillatis. *Achenium* atrobrunneum  $\frac{1}{2}$ – $\frac{2}{3}$  longitudinis bractearum fertilium aequans, obovoideum, trigonum, apice  $\pm$  complanato, pagina laevi. *Gynophorum* dimidium longitudinem achenii partis intactae aequans, obconicum, margine crenatum. *Inflorescentiae axis* usque 12 mm longus, sine ramis vel ramis 2–3, inaequalibus digitiformibus instructus.

TYPE.—Cape, 3319 (Worcester): summit of Gydo Mountain, 30 km east of Ceres (–AB), Arnold 942 (PRE, holo.; K).

Perennial, erect, rigid, up to 0,4 m high compactly tufted. *Rhizome* strongly contracted, scarcely 2 mm long,  $\pm 1$  mm wide, holding sympodial shoots together, concealed by persistent, reddish brown, fibrous leaf bases. *Stolons* wanting. *Leaf sheaths* white above, reddish brown below, scarious, tearing with age. *Ligule* up to 6 mm long, apex oblique. *Leaf blades* absent or rudimentary (rarely up to 50 mm long with margins infolded). *Inflorescence* a terminal compact head, light or dark reddish brown, obovate to elliptical,  $\pm 20$  mm long,  $\pm 5$  mm wide. *Bracts* several, obovate-acute, lowest 2–3 with apices aristate (blade-like tips rudimentary 1–2 mm long), lowermost bract empty, following 1–2 bracts subtending single spikelets, remaining inner bracts ovate-acuminate,  $\pm 10$  mm long,  $\pm 4$  mm wide, subtending solitary bisexual florets only; prophylls wanting. *Spikelets* up to 8-flowered. *Glumes* linear-acute,  $\pm 7$  mm long,  $\pm 3$  mm wide. *Anther crests* glabrous, slightly longer than broad at the base, apex acute. *Style* slightly longer than length of mature achene; branches slender,  $1\frac{1}{2}$  times style length, finely papillate. *Achene* blackish brown,  $\frac{1}{2}$ – $\frac{2}{3}$  length of fertile bracts, obovoid, trigonous, apex  $\pm$  flattened, surface smooth. *Gynophore*  $\frac{1}{2}$  exposed length of achene, obconical, margin crenate. *Inflorescence axis* up to 12 mm long unbranched or with 2–3 unequal, finger-like branches (FIG. 5).

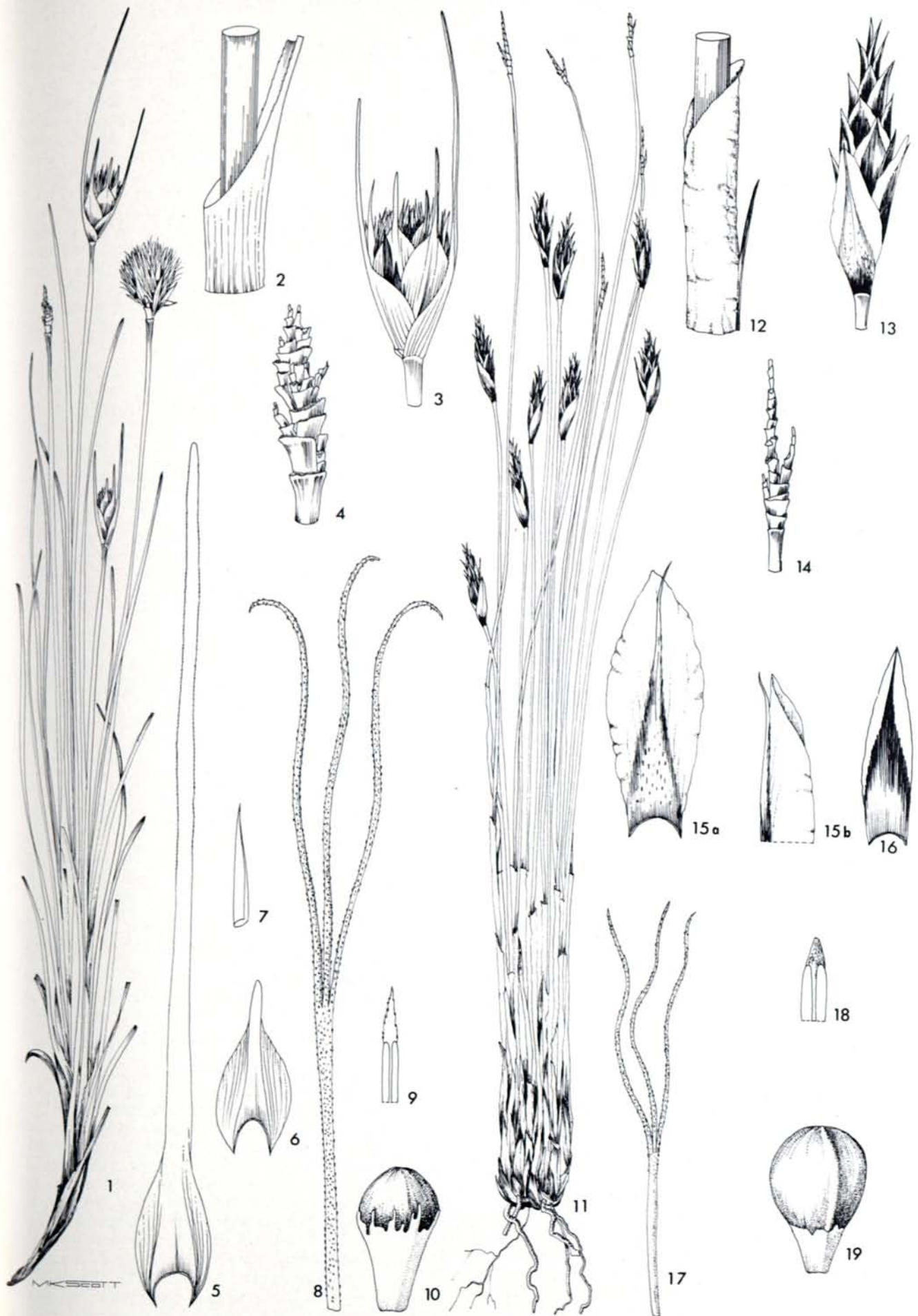


FIG. 5.—*Ficinia latifolia* 1–10 and *F. gydomontana* 11–19: 1 & 11, habit ( $\times \frac{1}{3}$ ). 2 & 12, leaf sheath apex ( $\times 6$ ). 3 & 13, inflorescence ( $\times 1.3$  & 2). 4 & 14, inflorescence axis ( $\times 2$ ). 5 & 15, lowest inflorescence bract (a. abaxial view, b. profile,  $\times 2$ ). 6 & 16, inner bract ( $\times 2$  & 4). 7, glume ( $\times 2$ ). 8 & 17, style & branches ( $\times 10$ ). 9 & 18, anther crest ( $\times 10$ ). 10 & 19, achene ( $\times 8$ ).

This species is known only from the Gydoberg Mountains to the east of Ceres, and the neighbouring Hottentotskloof (Fig. 4). It has been recorded growing at an altitude between 1 060–1 800 m, it forms part of a typically fynbos type of vegetation.

*F. gydomontana* is most closely allied to *F. nigrescens* (Schrad.) J. Rayn. (= *F. bracteata* Boeck.), which it resembles very closely. It can be easily distinguished from the latter species by its lack of leaf blades which if present are rarely up to 50 mm long and have incurved margins, the two lowermost inflorescence bracts which are aristate, the innermost fertile bracts which are scarcely recurved and the smooth surface of its achene.

CAPE.—3319 (Worcester): Gydo Mountain, 30 km east of Ceres (–AB), Arnold 942 (PRE, holo.; K); Hottentotskloof (–BA), Acocks 23770 (PRE).

6. *Ficinia latifolia* Arnold & Gordon-Gray, sp. nov. *F. pallens* (Schrad.) Nees affinis, sed foliorum laminis complanatis, 3–4 mm latis, marginibus non incurvis; ligula nulla; achenium sanguineum, subsphaericum, apice rotundatum, pagina rugosa; margine gynophori processibus 7–9 valde evolutis, digitiformibus praedito.

*Ficinia lithosperma* Boeck., Pfeiff., Rev. 40 (1920) (in part); *F. striata* (Thunb.) Kunth var. *pallens* (Schrad.) Schonl., Mem. bot. Surv. S. Afr. 3: 47 (1922) (in part).

Herba perennis, erecta, usque 0,15 m alta, caespitosa. Rhizoma usque 25 mm longum, acute obliquum, foliorum basibus fuscis, papyraceis, interdum celatum. Stolones nulli. Foliorum vaginae membranaceae, ferrugineae, vetustate laceratae, vaginis infimis sine foliis, vaginis superioribus apice obliquis. Ligula nulla. Foliorum laminae laxae, 3–4 mm latae, complanatae, marginibus non incurvis. Inflorescentia capitulum terminale efformans, obovata, olivacea, ±20 mm longa, ±15 mm lata, dimidio vel tribus partibus infimis basibus bractearum dilatatis velata. Bracteae complures, infimae 4–7 apicibus laminiformibus, usque 80 mm longis praeditae, marginibus partium baselium dilatatis pallentibus, apicibus gradatim decrescentibus, vetustate caducae; inflorescentiae partiales prophyllis 2 oppositis in quaque axilla instructae. Spiculae 6–12-florae. Glumae lanceolato-acuminatae, ±9 mm longae, ±3 mm latae. Antherarum cristae lineares, basi 2–3plo longiores quam latiores, apice acuminatae. Stylus gracilis, achenium maturum aequans vel eo leviter longior, ramis stylo 1½–3plo longiores, gracilibus, subtiliter papillatis. Achenium sanguineum, ¾–¾ longitudinis glumae aequans, subsphaericum, adpectu rugosum, apice rotundato. Gynophorum atosanguineum, subcylindricum, ¾ longitudinis partis achenii intectae aequans, margine processibus 7–9 valde evolutis, digitiformibus praeditum. Inflorescentiae axis ±12 mm longus, ±3 mm latus, bractearum cicatricibus magnis ramos subsidiarios compositos subtendentibus.

TYPE.—Cape, 3419 (Bredasdorp): hills near Rietfontein (–CA), Schlechter 10587 (PRE, holo.; GRA; K).

Perennial, erect, up to 0,15 m in height, tufted. Rhizome up to 25 mm long, acutely oblique, sometimes concealed by dark brown papery leaf bases. Stolons wanting. Leaf sheaths membranous, pale brown, tearing with age, lowest often bladeless, upper with apices oblique. Ligule wanting. Leaf blades lax, 3–4 mm broad, flattened, margins not infolded. Inflorescence a terminal head, obovate, dull greenish-brown, ±20 mm long, ±15 mm wide, lowest ¼–¾ enveloped by dilated bract bases. Bracts

several, lowest 4–7 with leafy blade-like tips, up to 80 mm long, dilated bases with margins pale, narrowing gradually to meet extended tips, whole bracts abscising with age, partial inflorescence with 2 prophylls per axis. Spikelets 6–12-flowered. Glumes lanceolate-acuminate, ±3 mm wide. Anther crests linear, 2–3 times longer than broad at the base, apex acuminate. Style long, slender, equalling or slightly exceding mature achene, branches slender 1½–3 times style length, finally papillate. Achene red, ¾–¾ glume length, subspherical, surface wrinkled, apex rounded. Gynophore dark reddish-black, subcylindrical, ¾ to equalling exposed length of achene, margins with 7–9 well developed finger-like projections. Inflorescence axis ±12 mm long, ±3 mm wide, major bract scars subtending compound subsidiary branches. (FIG. 5.)

Restricted to the Bredasdorp and Cape Agulhas districts (Fig. 6). Plants grow on dry sandy slopes of the coastal limestone hills at altitudes from 30–60 m.

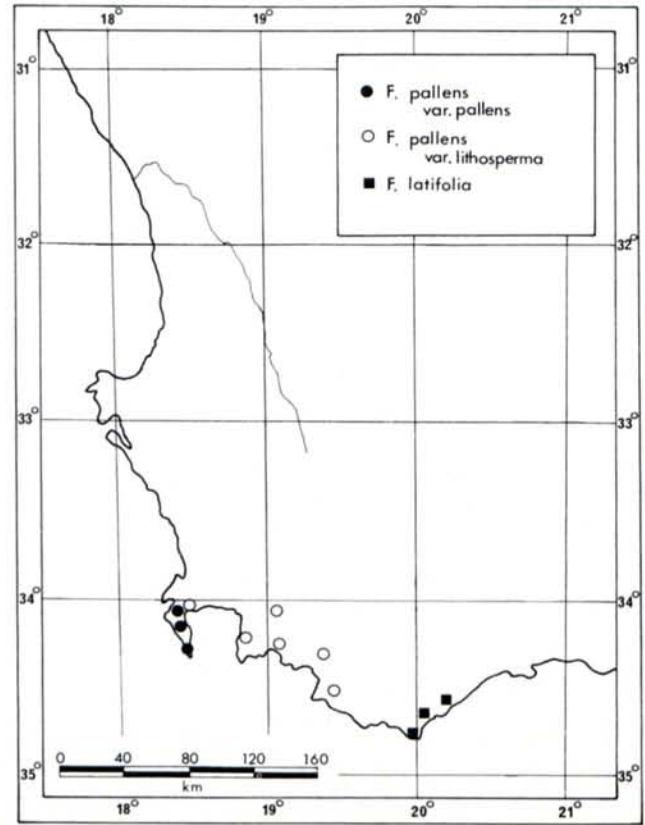


FIG. 6.—Distribution range of *Ficinia latifolia* and *F. pallens*.

This species is closely allied to *F. pallens* (Schrad.) Nees and many specimens of it have been cited in the literature as *F. lithosperma* Boeck., a synonym of *F. pallens*. Apart from morphological differences these two taxa also have different geographical ranges. The characters which best distinguish *F. latifolia* from *F. pallens* and other allied species, viz. *F. arenicola* are its broad leaf blades from which the name of the species is derived, the dark brown, papery leaf bases, the acutely oblique rhizome, the dark red sub-spherical achene with its distinct gynophore and the restricted distribution of this taxon.

CAPE.—3419 (Bredasdorp): hills near Rietfontein, (–CA), Schlechter 10587 (GRA; K; PRE); Northumberland Point (–CC), Acocks 2426 (PRE); hills east of lighthouse, Cape Agulhas (–CC), Arnold 703 (PRE).



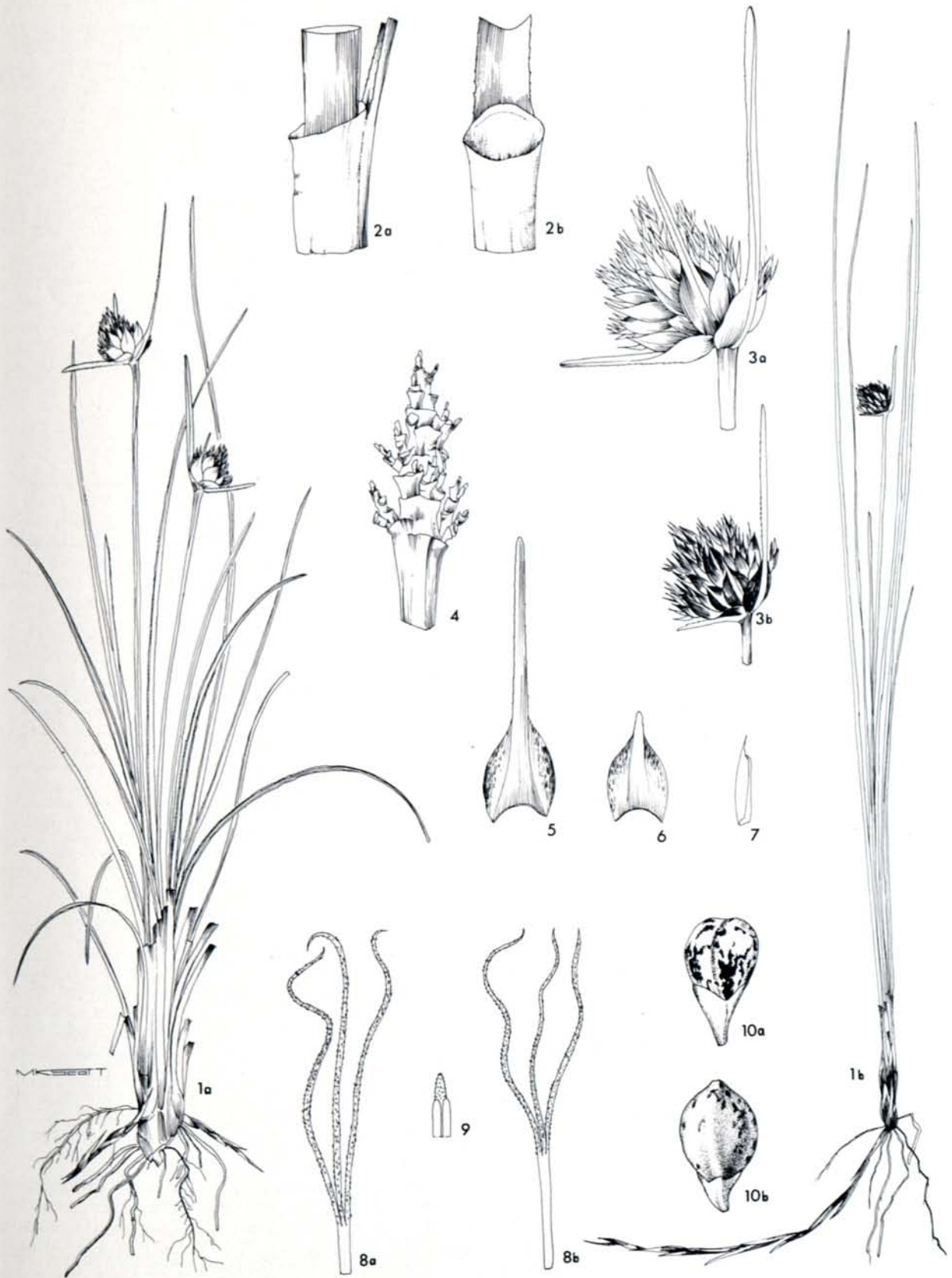


FIG. 7.—*Ficinia arenicola* 1–10. a, var. *arenicola*, b, var. *erecta*: 1, habit ( $\times \frac{1}{3}$ ). 2, leaf sheath apex ( $\times 6$ ). 3, inflorescence ( $\times 2$ ). 4, inflorescence axis ( $\times 4$ ). 5, lowest inflorescence bract (abaxial view,  $\times 2$ ). 6, inner bract (abaxial view,  $\times 2$ ). 7, glume ( $\times 2$ ). 8, style & branches ( $\times 10$ ). 9, anther crest ( $\times 10$ ). 10, achene ( $\times 8$ ).

7. *Ficinia arenicola* Arnold & Gordon-Gray, sp. nov., *F. pallenti* (Schrad.) Nees affinis, sed foliorum laminis laxis vel erectis, complanatis, usque 3 mm latis, bracteis 2 (interdum 3) infimis apice laminiformibus, achenio griseo-brunneo interdum nigro-maculato.

*Herba* perennis, erecta, usque 0,3 m lata, caespitosa, stolonifera. *Rhizoma* contractum vel usque 10 mm longum,  $\pm 5$  mm latum, obliquum, basibus foliorum persistentibus, ferrugineis, papyraceis celatum. *Stolones* usque 150 mm longi,  $\pm 3$  mm lati, squamis ferrugineis striatis, lanceatis,  $\pm 15$  mm longis,  $\pm 3$  mm latis vestiti. *Foliorum vaginae* membranaceae, ferrugineosanguineae, apicibus truncatis usque subobliquis. *Ligula* nulla vel usque 2 mm longa. *Foliorum laminae* laxae vel erectae, rigidae, dimidium longitudinem culmorum aequantes vel iis aequilongae, complanatae et usque 3 mm latae, vel subcylindrico-crescentiformes, marginibus incurvis, varie scabris. *Inflorescentia* capitulum terminale efformans, compacta, ovato-globosa, flavovirens, nonnunquam rubro-tincta, usque 15 mm longa,  $\pm 12$  mm lata, dimidio inferiore basibus dilatatis bractearum velata. *Bracteae* complures, infimae 2 (interdum 3) apicibus laminiformibus, usque 50 mm longis praeditae basibus dilatatis, marginibus sensim decrescentibus vel obtusis. *Spiculae* usque  $\pm 6$  florum. *Glumae* ovatae,  $\pm 5$  mm longae,  $\pm 2$  mm latae, apicibus acutis mucronatis. *Antherarum cristae* lineares, apicibus obtusis, latitudine basi duplo longiores. *Stylus*  $\frac{1}{4}$ – $\frac{1}{2}$  longitudinis partis intactae achenii maturi aequantis, ramis longis, gracilibus, stylo 3–10plo longioribus, subtiliter papillatis. *Achenium* griseobrunneum vel nigro-maculatum,  $\frac{2}{3}$  longitudinis glumae aequans, obovoideo-ellipsoideum, trigonum, pagina conspicue cellulata. *Gynophorum*  $\frac{1}{4}$ – $\frac{1}{2}$  longitudinis partis achenii intactae aequans, obconicum, margine crenato vel sine lobis. *Inflorescentiae axis* usque 10 mm longa, bractearum cicatricibus magnis ramos subsidiarios subtendentibus 1–3 mm longis.

**TYPE.**—Cape, 3326 (Grahamstown): at turnoff to South Wells on road from Bushmans River mouth (–BC), Arnold 602 (PRE, holo.; K).

Perennial erect, up to 0,3 m high tufted, stoloniferous. *Rhizome* contracted, or up to 10 mm long,  $\pm 5$  mm wide, oblique, concealed by persistent, light brown, papery leaf bases. *Stolons* up to 150 mm long,  $\pm 3$  mm wide, clothed in light brown striate, lanceolate scales,  $\pm 15$  mm long,  $\pm 3$  mm wide. *Leaf sheaths* membranous, pale brown to dark red, with truncate to suboblique apices. *Ligule* wanting or up to 2 mm long. *Leaf blades* lax or erect and rigid,  $\frac{1}{2}$  to exceeding length of flowering stems, flattened and up to 3 mm broad or crescentiform with edges infolded, or subcylindric, margins variously scabrid. *Inflorescence* a terminal, compact head, ovate to globose, greenish-yellow, tinged with red, up to 15 mm long,  $\pm 12$  mm wide, lowest  $\frac{1}{2}$  enveloped by dilated bract bases. *Bracts* several, lowest 2 (occasionally 3) with leafy, blade-like tips up to 50 mm long, dilated bases with margins tapering gradually to meet leafy tips or with apices obtuse. *Spikelets* up to 6-flowered. *Glumes* ovate,  $\pm 5$  mm long,  $\pm 2$  mm wide, apices acute, mucronate. *Anther* crests linear, twice as long as broad at crest base, apex obtuse. *Style*  $\frac{1}{4}$ – $\frac{1}{2}$  exposed length of achene, branches long, slender, 3–10 times style length, finely papillate. *Achene* greyish-brown or mottled black and greyish-brown,  $\frac{2}{3}$  glume length, obovate to elliptical, trigonous, surface conspicuously celled or not. *Gynophore*  $\frac{1}{4}$ – $\frac{1}{2}$  exposed length of achene, obconical, margin without conspicuous lobes or

crenate. *Inflorescence axis* up to 10 mm long, major bract scars subtending branches 1–3 mm long. (Fig. 7.)

Plants of this species are distributed along the coastal flats of the south-eastern Cape from Mossel Bay to East London: they also extend inland as far as Grahamstown (Fig. 8). Plants grow mainly in very sandy habitats, especially in grassveld immediately behind sand dunes, but are also found in damp depressions with dense, clay soils. Flowering period August to November.

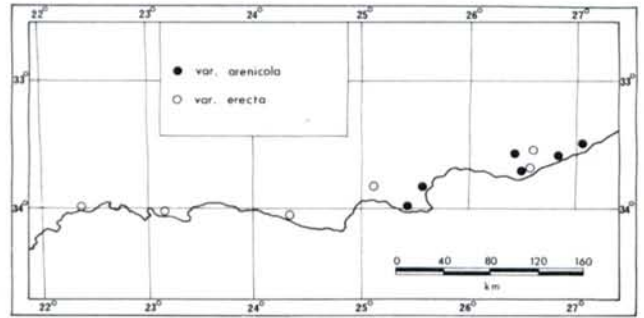


FIG. 8.—Distribution of *Ficinia arenicola*.

The name *arenicola* has been chosen as this species frequently grows in sandy soils. Variation within the species is such that two infraspecific entities can be recognized which differ morphologically and in habitat preferences. Significant differences in culm and leaf blade anatomy were also observed. These two entities are recognized as varieties of a single species.

**Key to varieties**

- Leaf blades lax, flattened,  $\pm 3$ –4 mm broad, margins scabrid, style branches 6–10 times style length, achene mottled, black and greyish-brown, surface without conspicuous cells, gynophore  $\frac{1}{2}$  exposed length of achene, margin two-lobed. Plants growing in very sandy soils.....(a) var. *arenicola*
- Leaf blades erect, rigid, crescentiform to sub-cylindrical,  $\pm 2$  mm broad, margins infolded, scarcely scabrid, style branches 3–4 times style length, achene grey, elliptical, surface with conspicuous cells, gynophore  $\frac{1}{2}$  exposed length of achene, margin without lobes. Plants growing in depressions with dense clay soils.... (b) var. *erecta*

(a) var. *arenicola*. Type: as above.

Plants compactly tufted with 1–6 flowering stems per tuft. *Rhizomes* concealed by persistent pale brown papery leaf bases. *Stolons* up to 150 mm long, leaf sheaths with ligules wanting or minute, inconspicuous,  $\pm 2$  mm long. *Leaf blades* lax, drooping, 3–4 mm broad, margins scabrid. *Inflorescence* obovate, usually greater than 10 mm in diameter. *Style*  $\frac{1}{2}$  length of mature achene, branches 6–10 times style length. *Achene* mottled black and greyish-brown, obovate, trigonous, apex flattened to retuse. *Gynophore*  $\frac{1}{2}$  length of exposed achene, margin two-lobed.

Plants are distributed between Port Elizabeth and East London. They grow in very sandy habitats especially in grassveld immediately behind sand dunes.

This variety is allied to *F. pallens*. In the past many specimens of it were cited in the literature as *F. lithosperma*, a synonym of *F. pallens* (Schrad.) Nees. Besides differing morphologically, these two taxa also have different geographical ranges. The characters which best distinguish *F. arenicola* var. *arenicola* from *F. pallens* are its stoloniferous habit (but *F. pallens* var. *pallens* is also stoloniferous), its long,

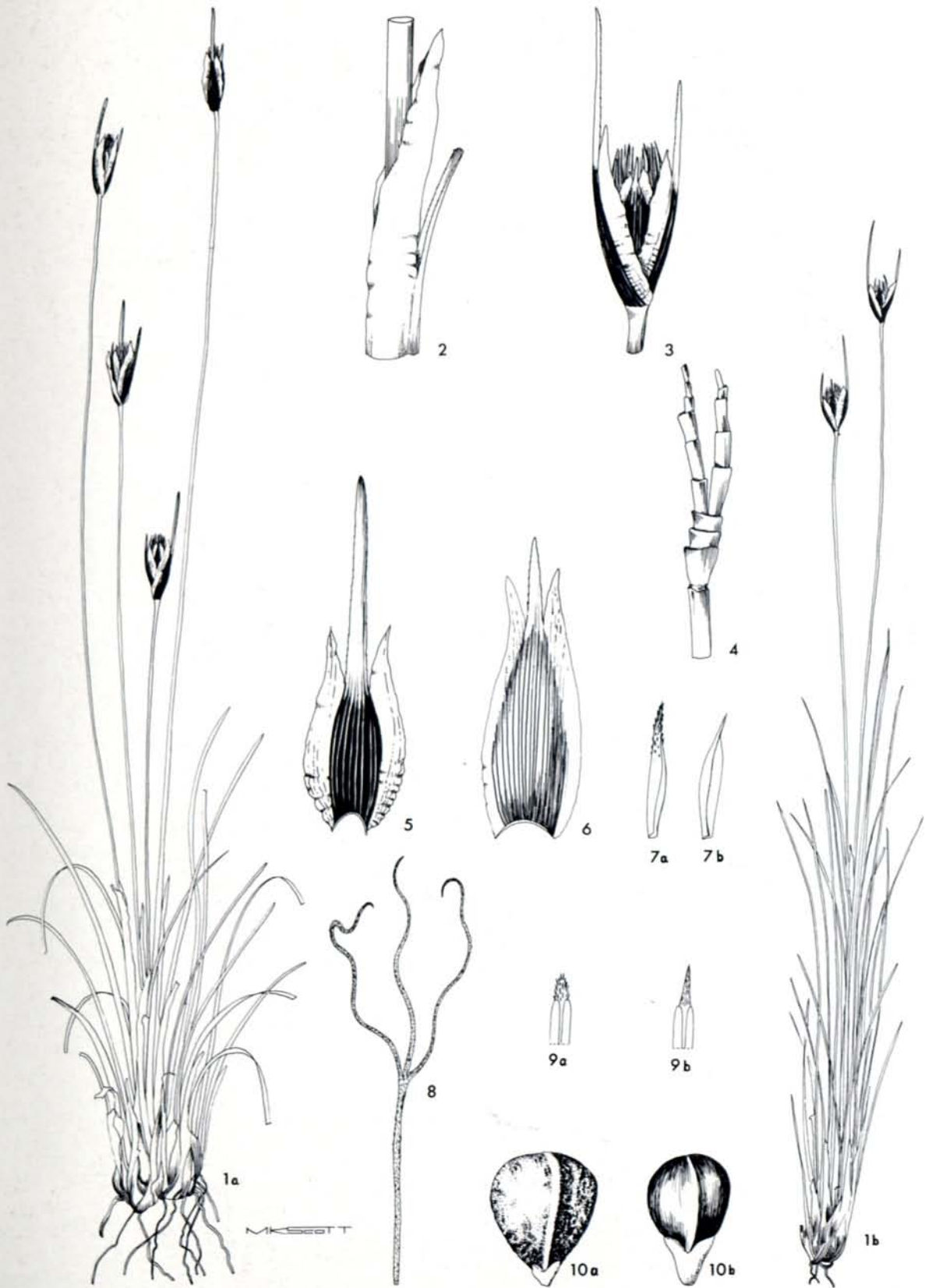


FIG. 9.—*Ficinia ixioides* 1–10, a. subsp. *ixioides*, b. subsp. *glabra*: 1, habit ( $\times \frac{1}{2}$ ). 2, leaf sheath apex ( $\times 6$ ). 3, inflorescence ( $\times 2$ ). 4, inflorescence axis ( $\times 4$ ). 5, lowest inflorescence bract ( $\times 2$ ). 6, inner bract ( $\times 2$ ). 7, glume ( $\times 2$ ). 8, style & branches ( $\times 10$ ). 9, anther crest ( $\times 10$ ). 10, achene ( $\times 8$ ).

lax leaf blades, with a distinct band of yellow tissue along the centre of the adaxial surface its two (rarely three) leafy bracts the lowest of which stands erect and nearly vertical, with the second almost horizontal and at right angles to the first, the style which has exceptionally long branches, and the achene which is generally black, mottled with greyish-brown.

CAPE.—3325 (Port Elizabeth): Port Elizabeth (-DC), *Kemsley 24* (GRA); Humewood, Port Elizabeth (-DC), *Paterson 2575* (BOL); Humewood, Port Elizabeth (-DC), *Paterson 2302* (GRA); Red House near Port Elizabeth (-DC), *Paterson s.n.* (BOL). 3326 (Grahamstown): Coldstreams near Grahamstown (-AD) *Schonland 1554* (PRE); Cannon Rocks (-DA) *Acocks 23902* (PRE); Coast Rd. at Cape Padrone, Alexandria Div. (-DA), *Archibald 5531* (PRE); flats on west back of Kowie, Port Alfred (-DB), *Britten 1901* (GRA); Port Alfred (-DB), *Burt-Davy 7903* (BOL); hills overlooking ocean, Kasuka (-DB), *Dahlstrand 2869* (GRA, STE); River near Port Alfred (-DB), *Tyson 154* (GRA, PRE); Sandy flats, Kowie (-DB), *Tyson s.n.* (BOL). 3327 (Peddie): Fish River mouth (-CA), *Arnold 585* (PRE); Kleinemont River (-CA), *Arnold 587* (PRE). 3425 (Skoenmakerskop): 5 km S.W. of Sea View near Port Elizabeth (-AB), *Arnold 643* (PRE).

(b). var. *erecta* Arnold & Gordon-Gray, var. nov., var. *arenicolae* affinis, sed foliorum laminis erectis, rigidis, subcylindricis, marginibus incurvis, vix scabris.

Plantae laxae caespitosae (surculis singulis inter se usque 80 mm distantibus). Stolones usque 150 mm longi. Foliorum bases persistentes, brunneo-sanguinei, papyracei. Foliorum laminiae erectae, rigidae, crescentiformes usque subcylindricae, marginibus incurvis, vix scabris. Inflorescentia globosa, usque 10 mm diametro. Stylus achenio maturo dimidio longior; rami graciles, stylo 3-4plo longiores. Achenium griseum, paupere maculatum, ellipticum, trigonum, apice acuto, pagina cellulis conspicuis notata. Gynophorum dimidium longitudinem partis intactae achenii aequans, marginis lobis minutis vel nullis.

TYPE.—Cape, 3326 (Grahamstown): at turnoff to South Wells from Bushmans River mouth (-BC), *Arnold 603* (PRE, holo.; K).

Plants loosely tufted (individual shoots up to 80 mm apart). Stolons up to 150 mm long. Leaf bases persistent, brown to dark red, papery. Leaf blades erect, rigid, crescentiform to sub-cylindrical, margins infolded, hardly scabrid. Inflorescence globose, up to 10 mm in diameter. Style  $\frac{1}{2}$  exposed length of mature achene, branches slender, 3-4 times style length. Achene grey, poorly mottled, elliptical, trigonous, apex acute, surface with conspicuous cells. Gynophore  $\frac{1}{2}$  exposed length of achene, margin with lobes minute or absent (FIG. 7).

Plants are distributed from Mossel Bay to Grahams-town. This variety prefers soils that are compact and clayey and therefore occurs commonly in depressions. Plants do, however, sometimes grow in  $\pm$  sandy soils.

The name of this variety recognizes its tall erect rigid habit, particularly the stance of the leaf blades, as opposed to those of var. *arenicola* which are relatively soft, lax and drooping.

It has a distinctly smaller inflorescence than var. *arenicola* and very closely resembles the inflorescence of the typical form of *F. indica*. It may be distinguished from this entity, however, by its loosely tufted habit, its leaves that are longer than the flowering stems, the ligule which is up to 3 mm long and the achene which is elliptical, greyish-brown and provided with conspicuous epidermal cells.

CAPE.—3325 (Port Elizabeth): Van Stadens River mouth (-CC), *Arnold 648* (PRE). 3326 (Grahamstown): Grahamstown Nature Reserve, Dassic Kranz (-BC), *Dyer 143* (GRA); at turnoff of South Wells from Bushmans River mouth (-BC), *Arnold 603* (PRE). 3422 (Mossel Bay): between Knysna and George, at turnoff to Rugte Vlei (-BB), *Arnold 675* (PRE); Rugte Vlei, near Knysna (-BB), *Fourcade 1573* (BOL; PRE).

8. *Ficinia ixiooides* Nees in *Linnaea* 9: 292 (1834) et 10: 180 (1836); Kunth, *Enum. Pl.* 2: 264 (1837); Steud., *Nom. Bot. ed. 2*, 1: 634 (1840) et *Syn. Pl. Glum.* 2: 124 (1855); Boeck. in *Linnaea* 37: 57 (1871); C.B. Cl. in *Dur. & Schinz, Consp. Fl. Afr.* 5: 639 (1894) et *This.-Dyer, Fl. Cap.* 7: 238 (1898) et III. *Cyp. t.* 54, fig. 6-8 (1909); Pfeiff., *Rev.* 43 (1920); Schönl., *Mem. bot. Surv. S. Afr.* 3: 44 et pl. 44 (1922); Levyns in *Adamson & Salster, Fl. Cape Penins.* 111 (1950). Syntypes: at waterfall near Tulbagh, (collector unknown); in Winterhoekberg, Worcester, *Zeyher s.n.*

*Ficinia scariosa* Drège, *Zwei Pfl. Doc.* 83 et 185 (1843) non Nees.

*Melaneranis ixiooides* Kuntze, *Rev. Gen.* 2: 756 (1891).

Perennial, erect, up to 0,3 m high, compactly tufted. Rhizome contracted, up to 30 mm long,  $\pm 3$  mm wide, oblique, concealed by persistent dark brown, striate, fibrous leaf bases; stolons wanting. Leaf sheath scarios, wrinkled, white occasionally flecked with brown, tearing with age, apex oblique. Ligule well developed, up to 10 mm long. Leaf blades  $\frac{1}{2}$ - $\frac{3}{4}$  length of flowering stems, lax, drooping, flattened,  $\pm 2$  mm broad, or erect, rigid, cylindrical and stem-like,  $\pm 1$  mm broad. Inflorescence a terminal compact, oblong, shiny brown or black and white head, up to 12 mm long,  $\pm 6$  mm wide, completely enveloped by dilated bract bases. Bracts several, lowest 2 empty with extended blade-like tips up to 40 mm long, bases dilated with margins scarios, wrinkled, white flecked with brown, the apices forming two free lobes, one on either side of the midrib; fertile bracts each subtending a spikelet or a solitary bisexual floret (heads usually with spikelets only, or spikelets and florets only, rarely with florets only) where spikelets are present, each carries 2 prophylls at the base of the axis. Glumes  $\pm 7$  mm long,  $\pm 2$  mm wide, lanceolate-acuminate, apex aristate, glabrous or with upper  $\frac{1}{3}$  scabrid. Anther crests linear, 2-4 times longer than breadth at crest base, conspicuously spined or spines wanting. Style long, slender, branches equal to style length. Achene dark brown to black,  $\frac{1}{3}$  glume length, apex obtuse or retuse, surface shiny, smooth or minutely muricate. Gynophore  $\frac{1}{3}$ - $\frac{1}{2}$  length of exposed portion of achene, 2-lobed. Inflorescence axis bearing 1-4 subequal, linear finger-like appendages. (FIG. 9.)

Distributed from Clanwilliam and Wuppertal in the western Cape to Cape Town. There are also two isolated collections from the Uniondale and Uitenhage districts of the south-eastern Cape (Fig. 10). Plants grow in marshy and damp situations at altitudes from 600-1 800 m.

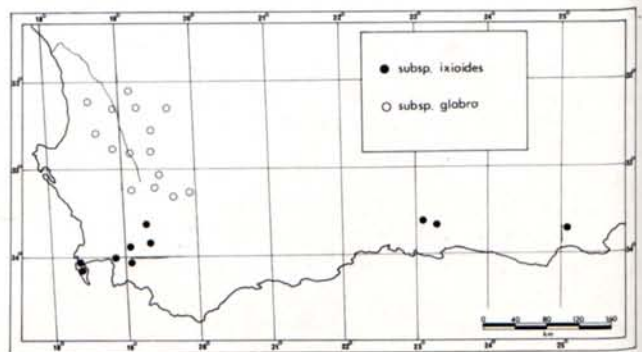


FIG. 10.—Distribution range of *Ficinia ixiooides*.

In the western Cape the leaf blades are erect, cylindrical and stem-like, while the glumes, together with their aristate apices, and the anther crests are glabrous. This is in contrast to plants from the southern and

south-eastern distribution areas where the leaf-blades are flat and the upper third of the abaxial surfaces of the glumes, the glume awns and the anther crests are scabrid. This variation has permitted the establishment of two subspecies. The rank of subspecies has been chosen for these infraspecific entities since they are allopatric.

#### Key to subspecies

- Glumes scabrid abaxially in the upper third of their length; anther crests twice as long as broad at crest base, spinescent; leaf blades flattened,  $\pm 3$  mm in width .....9(a) subsp. *ixioides*  
 Glumes glabrous abaxially in the upper third of their length; anther crests 3–4 times as long as breadth at crest base, not spinescent; leaf blades cylindrical, stem-like,  $\pm 1$  mm in width .....(b) subsp. *glabra*

(a) subsp. *ixioides*. Type: as above.

Flowering stems with 12–14 prominent ridges. *Leaf blades* lax, flattened, up to 2 mm broad, margins not infolded. *Glumes* with distal  $\frac{1}{3}$  of abaxial surface and aristae scabrid. *Anther crests* twice as long as breadth at crest base, rounded, spinescent. *Achene* brown, apex obtuse, surface minutely muricate.

Distributed from Cape Town and Worcester to Port Elizabeth. Flowering period August to December.

CAPE.—3318 (Cape Town): top of Table Mt. (–CD), *Rehmann s.n.* (STE); summit Table Mt. (–CD), *Zeyher s.n.* (SAM). 3319 (Worcester): Du Toits Kloof, Drakenstein Mt. (–CB), *Drège 7382* (SAM); Wemmerhoek Peak (–CC), *Stokoe s.n.* (SAM); E. slope of Stettynsberg, Worcester Div. (–CD), *Esterhuysen 15604* (NBG). 3418 (Simonstown): Constantiaberg, Cape Peninsula (–AB), *Compton 15152* (NBG); Wynberg, Cape Peninsula (–AB), *Wolley-Dod 2964* (PRE); Sneeuwberg, Somerset (–BB), *Stokoe s.n.* (SAM). 3419 (Caledon): top of Canary Peak, Villiersdorp (–AA), *Stokoe s.n.* (NBG); head of Jonkershoek Valley, Dwarsberg, Stellenbosch (–AA), *Taylor 5030* (PRE). 3323 (Willowmore): 4 km from Haarlem towards Avontuur (–CA), *Schonland 3096* (GRA); near summit Kouga Peak, near Joubertina (–CB), *Esterhuysen 16234* (NBG, PRE). 3325 (Port Elizabeth): summit Cockscorb, Gt Winterberg Mt. (–CA), *Esterhuysen 28039* (PRE).

(b) subsp. *glabra* Arnold & Gordon-Gray, subsp. nov., subsp. *ixioidi* Nees affinis, sed foliorum laminis cylindricis, cauliformibus, rigidis; glumae glabrae, nitentes, laeves.

Culmus ad aspectu laevis, sed porcis 16–18 paupere evolutis praeditus. *Foliorum laminae* cylindricae, cauliformes, rigidae. *Glumae* glabrae, nitentes, laeves. *Antherarum cristae* lineares, basi latitudine cristae 3–4plo longiores, acuminatae, spinis nullis. *Achenium* fuliginosum, apice retuso, pagina laevi, nitenti.

TYPE.—Cape, 3219 (Wuppertal): slopes of peak at Konpoort (–AC), *Esterhuysen 12194* (NBG, holo.; PRE).

Flowering stems appearing smooth, but with 16–18 poorly developed ridges. *Leaf blades* cylindrical, stem-like,  $\pm$  rigid. *Glumes* glabrous, shiny, smooth, aristae without scabrid projections. *Anther crests* linear, 3–4 times longer than breadth at crest base, acuminate, without spines. *Achene* blackish-brown, apex retuse, surface smooth, shiny (Fig. 9).

Restricted to the western Cape between Clanwilliam and Ceres. Flowering period October to January, which is distinctly later than that of subsp. *ixioides*.

CAPE.—3219 (Wuppertal): Heuningvlei, Cedarberg Mt. (–AA), *Esterhuysen 7478* (PRE); Heuningvlei (–AA), *Stokoe s.n.* (SAM); slopes of Peak at Konpoort (–AC), *Esterhuysen 12194* (NBG, PRE); E. side of Sneeuwberg (–CB), *Esterhuysen 13068* (PRE); Koude Bokkeveld (–CC), *Schlechter 8888* (NH, PRE); Sneeuwberg (–CD), *Esterhuysen 18052* (NBG, PRE). 3319 (Worcester): Hansiesberg (–AB), *Compton 16682* (NBG); Elands Kloof (–AC), *Levyens 8113* (PRE); slopes Matroosberg (–BD), *Esterhuysen 14218* (PRE).

#### 9. *Ficinia pallens* (Schrad.) Nees in Linnaea 10: 169 (1836).

*Schoenus pallens* Schrad., Anal. Fl. Cap. 25 (1832); Nees in Linnaea 7: 85 (1832). Type: without locality, *Sieber 102* (K, holo.).

*Ficinia lithosperma* Boeck. in Linnaea 37: 72 (1871); C.B. Cl. in Dur. & Schinz, Consp. Fl. Afr. 5: 640 (1894) et in T.-Dyer, Fl. Cap. 7: 253 (1898); Pfeiff., Rev. : 40 (1920) (in part); Levyns in Adamson & Salter, Fl. Cape Penins. 115 (1950). Type: South Africa, Cape Prov., Nieuwklouf, Houw Hoek Mts. *Burchell 8152* (K!, holo.).

*Melanranis lithosperma* Kuntze, Rev. Gen. 2: 756 (1891).

*Ficinia bolusii* Boeck. in Bot. Jb. 5: 506 (1884). Type: South Africa, Cape Prov., Muizenberg near Kalk Bay, *Bolus 4233* (BOL!, holo.; GRA!; NBG!).

*Melanranis bolusii* Kuntze, Rev. Gen. 2: 756 (1891).

*Ficinia striata* (Thunb.) Kunth var. *pallens* (Schrad.) Schönl., Mem. bot. Surv. S. Afr. 3: 47 (1922).

Perennial, erect, up to 0.15 m high, compactly or loosely tufted, or stoloniferous (var. *pallens*). *Rhizome* contracted, horizontal to oblique, serving to hold sympodial shoots together, concealed by persistent, light to dark brown, papery or fibrous leaf bases, or up to 25 mm long, swollen at shoot bases, clothed in pale striate scales. *Stolons* wanting or up to 100 mm long,  $\pm 2$  mm wide, clothed in light brown, lanceolate, striate scales up to 15 mm long. *Leaf sheaths* membranous, pale brown, tearing with age, lowest often bladeless, upper with apices oblique to subtruncate. *Ligule* wanting or up to 2 mm long. *Leaf blades*  $\frac{1}{3}$ – $\frac{2}{3}$  (occasionally equalling) length of flowering stems, erect, rigid, crescentiform, up to 2 mm broad, margins scabrid. *Inflorescence* a terminal, obovate to subglobose, greenish-yellow sometimes red-tinged head,  $\pm 20$  mm long,  $\pm 15$  mm wide, lowest  $\frac{1}{3}$ – $\frac{2}{3}$  enveloped by dilated bract bases. *Bracts* several, lowest 4–5 with leafy, blade-like tips up to 80 mm long, dilated bases with margins tapering gradually to meet extended tips, whole bracts abscising with age; partial inflorescences subtended by 2 prophylls. *Spikelets* 3–8-flowered. *Glumes* lanceolate-acuminate,  $\pm 9$  mm long,  $\pm 3$  mm wide. *Anther crests* linear, 2–3 times longer than breadth at crest base, apex acuminate. *Style* long, slender, equalling or slightly longer than mature achene, branches slender  $1\frac{1}{2}$ –3 times style length, finely papillate. *Achene* brown  $\frac{2}{3}$ – $\frac{3}{4}$  glume length, obovate to elliptical with apex acute, surface smooth. *Gynophore*  $\frac{1}{2}$  exposed length of achene, obconical to sub-cylindrical, margins crenate. *Inflorescence axis*  $\pm 12$  mm long,  $\pm 3$  mm wide, each bract scar subtending a compound unit of 1–2 subsidiary branches.

*F. pallens* is based on *Schoenus pallens* Schrad. the type of which is *Sieber 102*. This specimen clearly belongs to the same species as does *Burchell 8152* which is the type of *F. lithosperma* Boeck. Schrad. name antedates Boeckeler's and thus Boeckeler's species must become a synonym of *F. pallens* (Schrad.) Nees.

Clarke (1898: 253) cited both *Burchell 8152* and *Sieber 102* under *F. lithosperma* thus indicating their relationship to one another. Unfortunately on the same page he erroneously cited *F. pallens* Nees in Linnaea 10: 169, and *Schoenus pallens* Schrad., Anal. Fl. Cap. 25 (1832), as synonyms of *F. setiformis* Schrad. l.c.: 45, which name is antedated by *Schoenus indicus* Lam., Encycl. 1: 740 (1785) (tab. cit. excl.) and Tabl. Encycl. 1: 135 (1791), so that *F. setiformis* is now known as *F. indica* (Lam.) Pfeiff. Thus Clarke, while correctly associating *F. lithosperma* with *F. pallens*, brought about confusion by citing the last named species as a synonym of *F. indica*.

Clarke (1898: 253) under *F. lithosperma* established