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A TAXONOMIC REVISION OF THE
OTHONNA BULBOSA GROUP
(ASTERACEAE: SENECTIONEAE:
OTHONNINAE)¹

Simon L. Magoswana,^{2,3*} James S. Boatwright,³
Anthony R. Magee,^{2,4} and John C. Manning^{2,5}

ABSTRACT

Othonna L. (Asteraceae: Senecioneae: Othonninae) is a genus of some 120 species concentrated in the Greater Cape Floristic Region (GCFR) of South Africa, with a few species extending into southern Namibia, Angola, and Zimbabwe. The South African species of *Othonna* were last revised more than a century ago, and many species, particularly from the southern African winter rainfall region, remain poorly understood. This study focused on the geophytic species comprising the *O. bulbosa* group, distinguished by their tuberous rootstock and annual, leafy, aerial stems. A comprehensive taxonomic treatment is presented, including descriptions, complete nomenclature and typification, illustrations, and geographical distribution. Twenty-five species are recognized, of which four are newly described (*O. lilacina* Magoswana & J. C. Manning, *O. nigromontana* Magoswana & J. C. Manning, *O. revoluta* Magoswana & J. C. Manning, and *O. sinuata* Magoswana & J. C. Manning), and 18 names are reduced to synonymy. The species differ in habit, shape and incision of foliage, capitulum type (radiate vs. disciform), number of involucre bracts, pappus length, and cypselae (myxogenic vs. nonmyxogenic). We place the species into four morphologically diagnosable series (*Heterophyllae* Magoswana & J. C. Manning, series *Disciformes* Magoswana & J. C. Manning, series *Perfoliatae* Magoswana & J. C. Manning, and series *Undulosae* Magoswana & J. C. Manning) based on habit and capitulum type.

Key words: Asteraceae, Compositae, geophytic, Greater Cape Floristic Region, new species, nomenclature, *Othonna*, series, southern Africa, succulents.

Othonna L. is a polymorphic genus of ca. 120 species of succulent or subsucculent perennial herbs or shrubs, concentrated in the Greater Cape Floristic Region

(GCFR) of South Africa but extending into southern Namibia, Angola, and Zimbabwe (Leistner, 2001; Nordenstam, 2007, 2012; Manning & Goldblatt, 2012;

¹ We thank the curators and staff of the herbaria cited, and CapeNature and the Northern Cape Province Department of Environmental and Nature Conservation for providing collecting permits. This research was supported by the South African National Research Foundation, the University of the Western Cape, and the South African National Biodiversity Institute. Additional funding was provided by Elizabeth Parker of Elandsberg Nature Reserve. Nick Helme is acknowledged for the use of his photographs.

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Glavich, 2016). Species of *Othonna* occur in a variety of habitats, from damp, sandy flats to dry, rocky slopes and granite outcrops (Nordenstam, 1967; Bremer, 1994; Rowley, 1994; Leistner, 2001; Anderberg et al., 2007; Nordenstam, et al., 2009; Manning & Goldblatt, 2012). The genus was established by Linnaeus (1753) to accommodate 14 species, with *O. coronopifolia* L. subsequently designated as the lectotype (Hitchcock & Green, 1929). Of those original species, only four are still retained in *Othonna*, while the others were subsequently transferred to several related and unrelated genera, namely *Cineraria* L., *Euryops* (Cass.) Cass., *Hertia* Less., *Ligularia* Cass., *Senecio* L., and *Tephrosieris* (Rchb.) Rchb. (Nordenstam & Illarionova, 2005).

In his revision of southern African *Othonna*, Harvey (1865) divided the species into six unranked groups based largely on habit and branching of the inflorescence (namely *Caulescentes*, *Carnosae*, *Fruticosae*, *Paniculatae*, *Scapigerae*, and *Suffruticosae*). The majority of the geophytic species (the main focus of the present study) were treated in the *Caulescentes*, although some were placed within the *Carnosae*, *Paniculatae*, and *Scapigerae*.

The geophytic species of *Othonna* are distinguished from others in the genus by the presence of an underground tuber and often basal or tufted leaves ranging in length from 10 to 70 cm. Harvey's (1865) *Scapigerae* were recognized by the rosulate habit with short, condensed caudex, and his *Caulescentes* by the well-developed stem with cauline leaves. Here we consider the geophytic species with an aerial stem, hereafter termed the *O. bulbosa* group. All members of the *O. bulbosa* group are deciduous geophytes with annual stems bearing yellow, purple, or pink, radiate or disciform capitula on solitary or branched peduncles.

As a start to a complete revision of the genus *Othonna*, we provide a comprehensive taxonomic treatment of the *O. bulbosa* group, including complete nomenclature and typifications, detailed descriptions and illustrations, and the known geographical distribution for all species.

MATERIALS AND METHODS

All relevant types as well as the entire collections from BOL, NBG, PRE, and SAM, the primary holdings of South African plants, were studied (acronyms following Holmgren et al., 1990; Thiers, 2017). If the collecting number was not cited in the protologue but was present in the actual specimen, then we have included this number in square brackets after the collector's name. In addition, extensive fieldwork was undertaken and vouchers collected are deposited

in NBG. Eighteen of the 25 recognized species were observed and collected in situ. Maps of each species were produced from information provided on the associated herbarium labels. Collecting localities and associated grid references are cited following the Quarter Degree Reference System as described by Leistner and Morris (1976). Specimens examined are cited under each species treatment and are arranged by country, then province, and quarter degree grid. Drawings were made with the aid of an Olympus (Tokyo, Japan) stereomicroscope and a Zeiss (Oberkochen, Germany) Axioskop compound microscope.

RESULTS AND DISCUSSION

VEGETATIVE MORPHOLOGY

The tuberous geophytes of *Othonna* are distinguished by a thickened or swollen tuberous rootstock from which annual shoots arise. The species can be subdivided into two smaller groups: (1) the *O. bulbosa* group with 25 species; and (2) the *O. auriculifolia* group with ca. three species. Members of the *O. bulbosa* group have the crown or growth point of the subterranean rootstock with its renewal buds buried well below the soil surface, thus with the lower portion of the annual flowering stem underground and the exposed portion usually well developed and more or less branched from aerial nodes (Fig. 1A, B). The leaves are clearly cauline and emerge from the aboveground portion of the stem, except in *O. hederifolia* B. Nord., in which the stem remains subterranean and the leaves protrude vertically aboveground from slender subterranean petioles (Fig. 2B). In most species in the group the leaves are clustered near the base of the aerial portion just above ground level, and the capitula are borne well above ground level on one or more peduncles from the upper nodes of the stem (Fig. 1A, B). In contrast, the species of the *O. auriculifolia* group have the crown at or near ground level and the annual stem is highly condensed without evident internodes, thus appearing unbranched.

Plants of the *Othonna bulbosa* group are small to medium sized and up to 70 cm tall (Fig. 2A–C). The tuberous root is usually turnip-shaped in most species but conical or oblong in a few species, and felted at the crown with a characteristically dark brown to black surface, rough or smooth in texture. The rootstock is usually deep seated, buried more than 10 cm below the surface in most species. The stems are erect or sometimes scandent in *O. perfoliata* (L. f.) Jacq. (Fig. 2G), *O. rufibarbis* Harv., and *O. undulosa* J. C. Manning & Goldblatt (Fig. 2H), and simple or sparsely branched in the upper half or from near the base. The

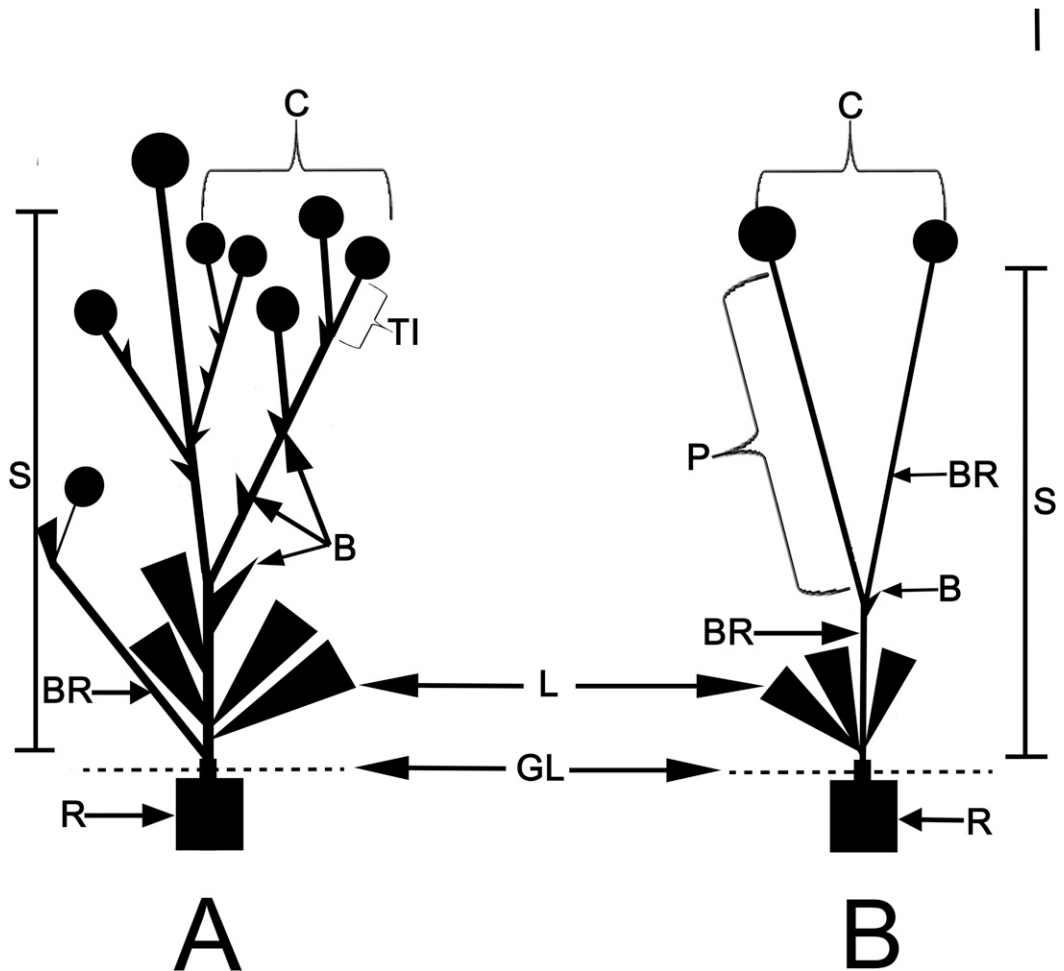


Figure 1. Schematic diagrams (S, stem; R, rootstock; GL, ground level; L, leaf; B, bract; BR, branch; P, peduncle; TI, terminal internode; C, capitula). —A. *Othonna tephrosioides* Sond., showing the inflorescence with heads one to three. —B. *Othonna oleracea* Compton, showing the inflorescence with solitary to two heads. A, from *Zeyher 999* (SAM). B, from *Compton 6438* (NBG). Scale bar: A, B = 2 cm.

stems and branches are green or greenish red. The crown and leaf axils are typically woolly, but the remainder of the stem is glabrous, except in *O. bulbosa* L., *O. digitata* L. f., *O. hederifolia*, and *O. heterophylla* L. f., which have the lower half of the branches pubescent or woolly, and in *O. revoluta* Magoswana & J. C. Manning, which has the stem covered in long, soft, shaggy hairs.

The leaves are alternately arranged on the aerial stem and usually congested basally (Fig. 2A–I). The size, shape, and degree of incision of the blades are important diagnostic characters (Fig. 3A–O). The leaves are mostly fleshy or somewhat succulent (e.g., *Othonna intermedia* Compton and *O. cuneata* DC.) (Fig. 2C, D) but in some species are leathery or herbaceous (e.g., *O. heterophylla*, *O. macrophylla* DC., *O. oleracea* Compton, and *O. petiolaris* DC.). The

lowermost leaves are largest and usually sessile but sometimes narrowed into a petiole-like base or rarely conspicuously petiolate. In *O. hederifolia* the petioles are often subterranean and consequently pale yellow in color, both fresh and when dry. The upper leaves are progressively smaller, invariably sessile, and usually less incised than the lower, while the uppermost are small and bractlike (Fig. 1A, B). The lowermost leaves are usually erect to spreading or sometimes decumbent in plants of *O. pinnata* L. f. growing in exposed conditions (Fig. 2I). The basal leaves vary in size from less than 20 mm long in some individuals of *O. bulbosa*, *O. hederifolia*, and *O. pinnata* to more than 300 mm long in *O. macrophylla*, *O. petiolaris*, and *O. rosea* Harv.—one basal leaf of large individuals of *O. macrophylla*, *O. petiolaris*, and *O. rosea* can fill an entire herbarium sheet (Figs. 2F, 3A, B, D).



Figure 2. General morphology of the *Othonna bulbosa* group of *Othonna* L.—A. Habit of *O. bulbosa* L. showing ovate to oblong or oblanceolate basal leaves and capitula with 12 or 13 ray florets. —B. Habit of *O. hederifolia* B. Nordl. showing leaves protruding vertically above ground. —C. Habit of *O. intermedia* Compton showing fleshy or somewhat succulent leaves. —D. Habit of *O. cuneata* DC. showing fleshy cuneate leaves with variously coarsely toothed apices. —E. Habit of *O. heterophylla* L. f. showing cuneate to oblanceolate leaves puberulous on both surfaces and with undulate-incised or crenate margins. —F. Large basal leaves of *O. petiolaris* DC. (> 30 cm long), and capitula in lax corymbs, with eight or nine involucre bracts. —G. Characteristic scandent habit and sessile, amplexicaul leaves of *O. perfoliata* (L. f.) Jacq. and radiate capitula with eight or nine involucre bracts. —H. Habit of *O. undulosa* (DC.) J. C. Manning & Goldblatt showing straggling or scandent stems and disciform capitula. —I. Decumbent habit of *O. pinnata* L. f., pinnatisect or rarely simple or trifid, lanceolate to ovate leaves and solitary capitula. Photographs A, C–I, by J. Manning; B, by N. Helme.

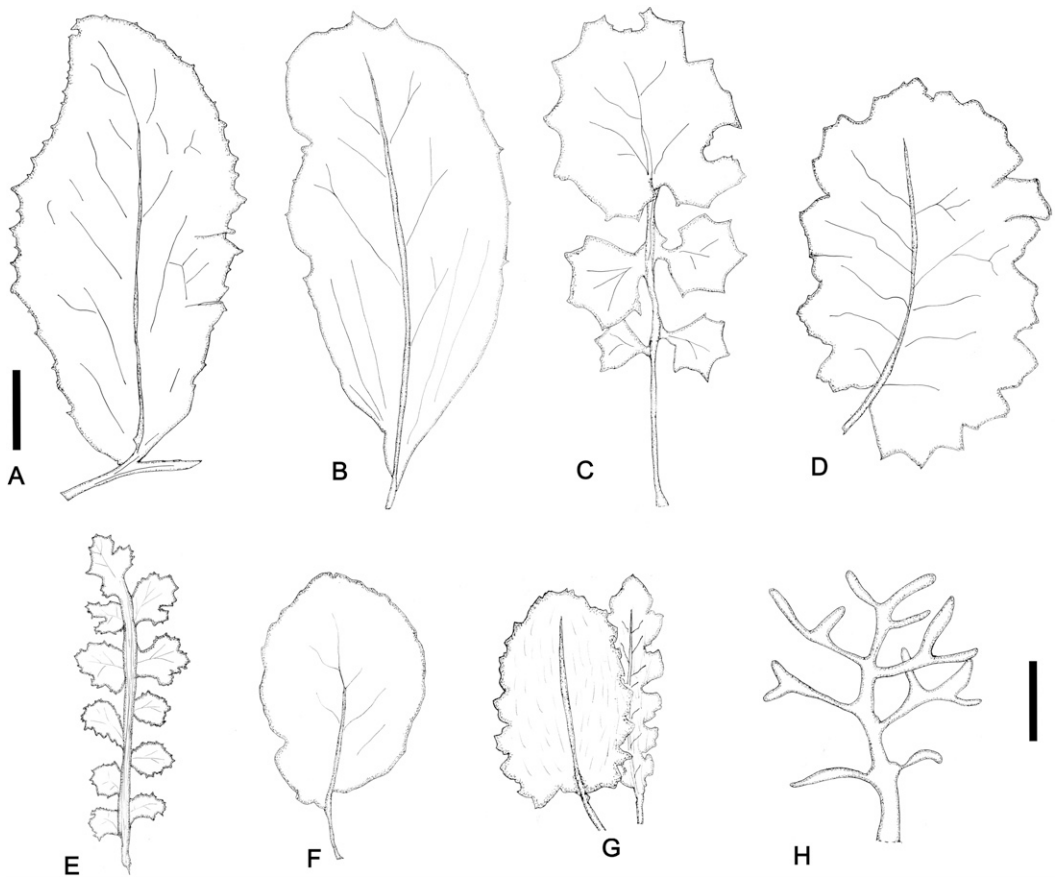


Figure 3A. Variation in leaf shape of selected species of the *Othonna bulbosa* group. —A. *Othonna macrophylla* DC. Sparsely denticulate to dentate or sharply pinnatifid (Compton 11094, NBG). —B. *Othonna rosea* Harv. Large leaves (up to 30 cm long) with sparsely denticulate to dentate or sharply pinnatifid margins (Compton 20672, NBG). —C. *Othonna lyrata* DC. Lyrate leaves (Jakoet & Magee 50, NBG). —D. *Othonna petiolaris* DC. Lacerate leaves (Compton 10983, NBG). —E. *Othonna rotundiloba* DC. Pinnatisect leaves with quadrate lobes equally spaced along the axis (Van Zyl 4403, NBG). —F. *Othonna oleracea* Compton. Obovate leaves (Ebrahim CR2625, NBG). —G. *Othonna heterophylla* L. f. Cuneate to oblanceolate leaves puberulous on both surfaces and with undulate-incised or crenate margins (Hugo 2659, NBG). —H. *Othonna cakilefolia* DC. Trifid to pinnatisect leaves with narrow, obtuse lobes (Rourke 1422, NBG). Scale bars: A–F, H = 2 cm; G = 1 cm.

The shape and division of the blades of the lowermost leaves are variable among species, either simple and entire or variously dentate to sinuate, lacerate or lobed, trifid or pinnatisect. Most species have simple leaves with entire or variously incised or lobed margins, but *Othonna cakilefolia* DC., *O. digitata*, *O. petiolaris*, *O. pinnata*, *O. rosea*, and *O. rotundiloba* DC. have the lowermost leaves typically or invariably trifid or pinnatifid to pinnatisect. Leaf margins are typically plane but are revolute in *O. revoluta*. The leaves of most species are glabrous, but those of *O. heterophylla* (Fig. 2E) are invariably pubescent, while in *O. bulbosa* they are sometimes pubescent toward the base and are pubescent along the midvein in *O. sinuata* Magoswana & J. C. Manning.

There is considerable variation in foliage within some species or even individuals. Thus, *Othonna incisa*

Harv. and *O. rosea* were distinguished essentially by the shape and division of the leaves, based on limited material studied (Harvey, 1865), but additional collections reveal that they represent extreme forms of a single species (Manning & Goldblatt, 2010). Leaf variation in the ovate- to lanceolate-leaved *O. bulbosa* (Figs. 2A, 3N) and the narrowly lanceolate- to obovate-leaved *O. gymnodiscus* (DC.) Sch. Bip. (Fig. 3K) led authors such as de Candolle (1837) to recognize multiple species. With more herbarium specimens available for study and field examinations, we recognize only the two species.

REPRODUCTIVE MORPHOLOGY

The capitula are terminal, and solitary or few to several, borne on brittle peduncles subtended by the

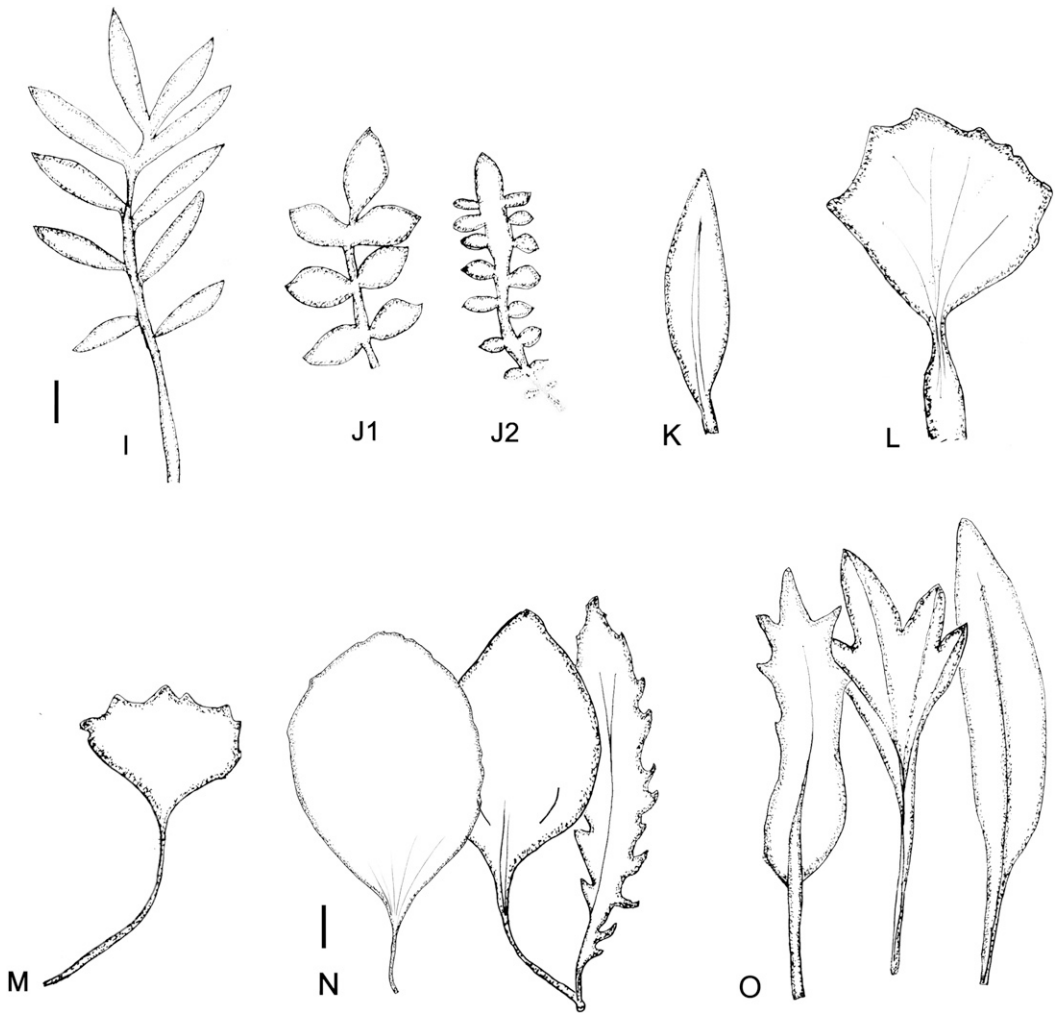


Figure 3B. Variation in leaf shape of selected species of the *Othonna bulbosa* group. —I. *Othonna tephrosioides* Sond. Pinnatisect or rarely simple or trifid, lanceolate to ovate leaves (Zeyher 999, SAM). —J1, J2. *Othonna pinnata* L. f. Resembles *O. tephrosioides* Sond. in its pinnatisect or rarely simple or trifid, lanceolate to ovate leaves (Nicholson & Roets 107, NBG). —K. *Othonna gymnodiscus* (DC.) Sch. Bip. Oblanccolate to elliptic leaves (Compton 19620, NBG). —L. *Othonna cuneata* DC. Cuneate leaves variously coarsely toothed apically (Hall s.n., NBG). —M. *Othonna hederifolia* B. Nord. Cuneate leaves with coarsely toothed apices arising from slender subterranean petioles (Pretorius 250, NBG). —N. *Othonna bulbosa* L. Oblanccolate, sometimes trilobed or pinnatifid leaves with entire margins (Taylor 8129, NBG). —O. *Othonna digitata* L. f. Digitate or pinnatifid or rarely simple leaves (Dümmer 624, NBG). Scale bars: I–O = 1 cm.

reduced, bractlike upper cauline leaves (Fig. 1). Peduncle length ranges from as short as 10 mm in *Othonna cakilefolia*, *O. petiolaris*, and *O. tephrosioides* Sond. to as long as 390 mm in *O. sinuata*. Peduncles are usually green in color and tend to be mottled purple, at least near the inflorescence (Fig. 2D).

Involucres are campanulate in all species and vary in diameter from as little as 5–10 mm in *Othonna stenophylla* Levyns to more or less 20 mm in several species, or even up to 30 mm in *O. undulosa*. The number of involucre bracts is critical in

distinguishing species, which fall into two groups, those with (seven) eight to 10 involucre bracts and those with 10 to 14 bracts. De Candolle (1837) was the first to identify the importance of this character in delimiting taxa and it was subsequently used by Harvey (1865) and later authors. The number of involucre bracts is usually consistent with the number of ray or peripheral florets, with the exception of *O. rosea*, in which the number of ray or peripheral florets can be more than the number of involucre bracts. *Othonna macrophylla* and *O. petiolaris* were frequently confused with one another but are readily distinguished by

the number of involucre bracts (12 or 13 in *O. macrophylla* and eight or nine in *O. petiolaris*) among other characters. Other species are similarly consistent in the number of involucre bracts, with the exception of *O. pinnata* and *O. rosea*, in which the number of bracts was found to vary widely from eight to 13 in both species.

The involucre bracts are lanceolate or oblanceolate to elliptic, green with darker apices, completely glabrous and with scarious margins. They are uniseriate, fleshy, and either free or variously connate basally. In the majority of the species the involucre bracts are more or less free to the base but adherent in the basal third to half, i.e., the membranous margins of adjacent bracts overlap one another with the margin of the overlapping bract tucked under and concealed by the leathery central zone of the flanking bract. In a few species, however (*Othonna bulbosa*, *O. cuneata*, *O. digitata*, *O. heterophylla*, *O. intermedia*, and *O. revoluta*), the bracts are completely connate for one third to one half of their length into a smooth cup.

The capitula in all species are heterogamous, with female-fertile marginal florets and bisexual disc florets. The capitula are either radiate with ligulate marginal florets (Fig. 2A–G, I) or disciform with filiform marginal florets (Fig. 2H). Species of *Othonna* are consistent for capitulum type. As in the rest of the genus, most members of the *O. bulbosa* group have radiate capitula, but *O. digitata*, *O. gymnodiscus*, *O. linearifolia* (DC.) Sch. Bip., *O. revoluta*, and *O. undulosa* have disciform capitula. The disciform species were treated as the genus *Doria* by Thunberg (1800), but de Candolle (1837) suggested that these species might be more appropriately treated as a section within *Othonna*. This suggestion was subsequently implemented by Schultz (1844), who transferred the species of *Doria* to *Othonna*, where they have remained.

The limbs of the ligulate florets are deflexed-spreading, varying in shape from oblanceolate to oblong, and 3-toothed. The limb is usually pale to bright yellow in color, sometimes flushed maroon beneath, but entirely pink to magenta in three species, namely *Othonna cakilefolia*, *O. lilacina* Magoswana & J. C. Manning, and *O. rosea* (Fig. 4). In the disciform species, the limb of the marginal florets is suppressed and the corolla is abruptly truncate and narrowly cylindrical. The corolla tube is obconic in all species and ranges in length from 1 to 2 mm in *O. linearifolia* to 6 mm in *O. undulosa*. Rarely, we have seen threadlike staminodes, representing stamen filaments, in some florets of *O. revoluta*. The style is branched, with a slightly thickened base, and the style branches are narrowly obovate and shortly papillate, with discrete lateral stigmatic areas.

The disc florets are bisexual and concolorous with the rays. The corolla is funnel-shaped, comprising a narrow tube below the stamen insertion, a widened limb above, and five apically spreading, lanceolate to ovate lobes. The tube is usually the same length as the limb, which is campanulate in all species. The anthers are uniform throughout the entire genus *Othonna*. They are obtuse at the base with ovate apical appendages, and the filament collar is baluster-shaped. However, in the disc florets the styles are simple or minutely bifid in all species, a diagnostic generic character for *Othonna*.

The pappus comprises numerous, slender, barbed bristles. Among the species of the *Othonna bulbosa* group, the ray pappus can be as long as 20 mm in *O. undulosa* and *O. rufibarbis* but usually ranges from 5 to 10 mm. The disciform species *O. gymnodiscus* is anomalous within the group as it usually lacks a pappus in the disc florets, although sometimes one or two bristles or very rarely ca. 10 bristles can be present. The pappus in the other genera of Othonninae is usually snow white or rarely yellowish brown (Nordenstam, 1967; Magoswana et al., 2016). In *Othonna* (including the *O. bulbosa* group), the pappus of the marginal florets is invariably creamy buff and in some species strikingly banded with maroon or brown at maturity (*O. digitata*, *O. perfoliata*, *O. revoluta*, and *O. rufibarbis*). In the disc florets of all species the pappus is uniformly white or colorless. The pappus in most species elongates only slightly during ripening, but in *O. undulosa*, *O. revoluta*, and *O. rufibarbis* (and other disciform species in the genus) the bristles elongate to twice the length of the cypselae.

The cypselae are relatively uniform in shape across the group, usually oblong to obovoid, with eight or 10 ribs and significant variation in vestiture. In most species the cypselae are appressed-pubescent on the ribs with silky, white, myxogenic or nonmyxogenic twin hairs, but in *Othonna gymnodiscus* and *O. revoluta* they are puberulous, and are glabrous in *O. digitata* and *O. linearifolia*. The cypselae range in length from 2 to 3 mm in the group, but length was not found to be a useful character in distinguishing species within the group as there is often overlap among species. The myxogenic hairs become mucilaginous in water and produce long threads of mucus that form a thick, slimy cover around the cypselae (Makouate et al., 2012). Myxospermy has proven to be an important survival mechanism for plants from arid regions and restricts dispersal by means of anchorage (Makouate et al., 2012). This phenomenon has been shown to be taxonomically useful in other southern African Asteraceae (Magee & Tilney, 2012; Ruiters et al., 2016) and requires further investigation.

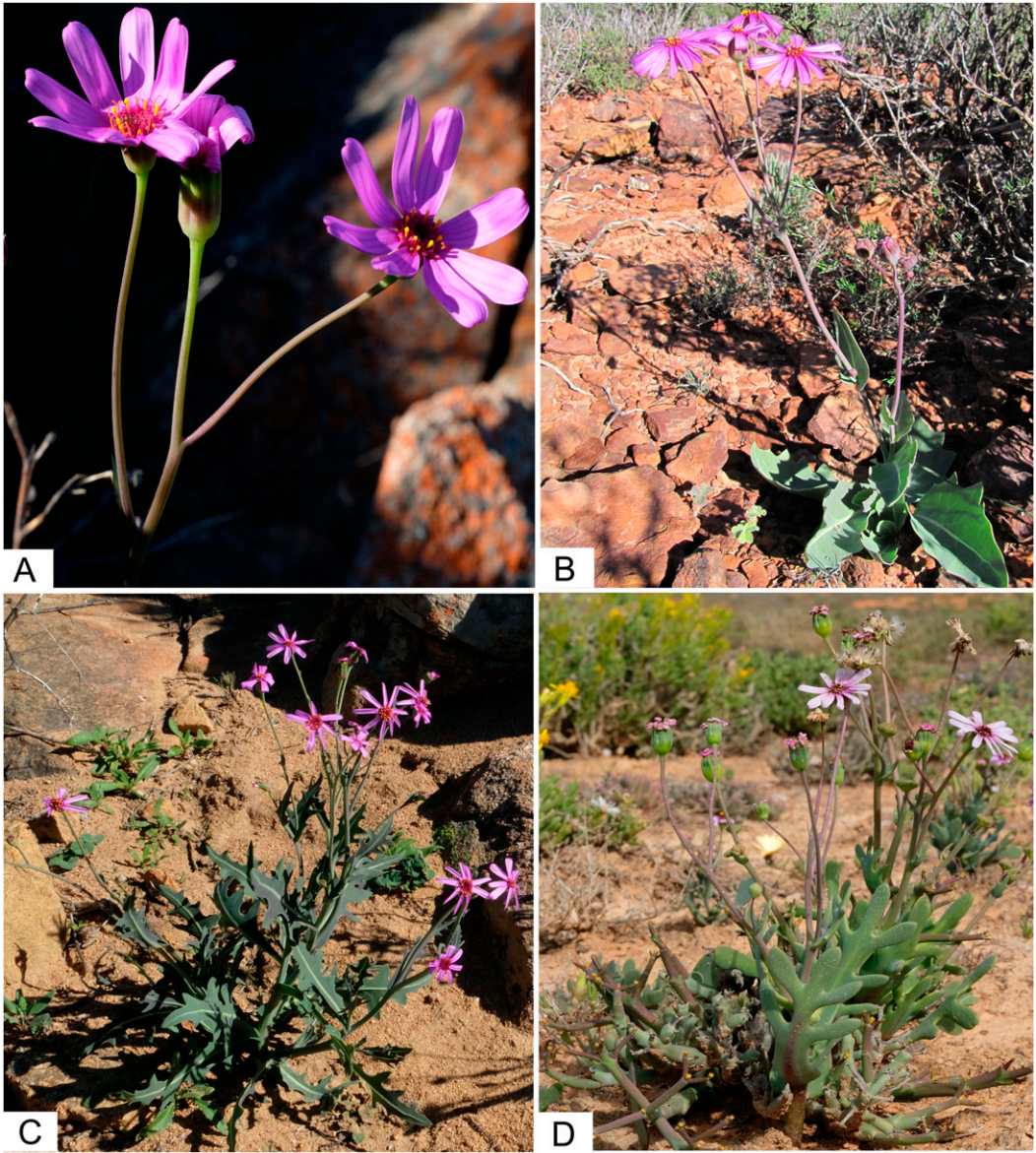


Figure 4. General morphology of the pink- to mauve-flowered species of the *Othonna bulbosa* group of *Othonna* L. —A. Pink radiate capitula of *O. rosea* Harv. —B. Habit of *O. rosea* Harv. showing the sparsely denticulate to dentate leaves. —C. Habit of *O. rosea* Harv. showing the sharply pinnatifid leaves. —D. Habit of *O. cakilefolia* DC. showing trisect to pinnatisect leaves with narrow, obtuse lobes, and 10 to 12 involucre bracts. Photographs A–D by N. Helme.

INFRAGENERIC CLASSIFICATION

We divide the species of the *Othonna bulbosa* group into the following four morphologically diagnosable groups based on habit and capitulum type. These four groups are treated as series *Heterophyllae* Magoswana & J. C. Manning (18 species), distinguished by the tufted habit with basally congested foliage, radiate capitula with yellow or pink to magenta florets, and the

pappus of the marginal florets more or less as long as the cypselae (Fig. 2A–G, I); series *Disciformes* Magoswana & J. C. Manning (four species), with erect stems and basally congested foliage, and disciform capitula (Fig. 2H); series *Perfoliatae* Magoswana & J. C. Manning (two species), with scandent or sometimes erect stems with cauline leaves scattered evenly along the stem, sessile and clasping or auriculate (Fig. 2G), and radiate capitula with the pappus of the

marginal florets more or less as long as the cypselae; and series *Undulosae* Magoswana & J. C. Manning (one species), also with scandent or sometimes erect stems with cauline leaves scattered evenly along the stem, sessile and clasping or auriculate, but with disciform capitula (Fig. 2H), and the pappus of the marginal florets enlarging to twice the length of the cypselae. Outgroup comparison with related genera in the *Crassothonna* B. Nord.–*Euryops*–*Gymnodiscus* Less. lineage of the subtribe Othonninae (Pelser et al., 2007; Nordenstam et al., 2009) suggests that disciform capitula and pink to magenta ray florets are derived conditions for *Othonna*. Species of the genera in the *Crassothonna*–*Euryops*–*Gymnodiscus* lineage are largely shrubs or shrublets or rarely annual herbs with consistently radiate, yellow capitula. Based on this comparison, we interpret that the ancestral states in *Othonna* are probably simple leaves and radiate capitula with yellow flower heads.

Of the four series recognized herein, all but series *Heterophyllae* are diagnosed by presumed synapomorphies and are thus believed to be monophyletic.

TAXONOMIC TREATMENT

Othonna L., Sp. Pl. 2: 924. 1753. TYPE: *Othonna coronopifolia* L. (lectotype, designated by Hitchcock & Green [1929: 184]).

Doria Thunb., Nov. Gen. Pl. [Thunberg] 12: 162. 1800. TYPE: Not designated.

Shrubs or subshrubs, or geophytic or succulent perennial herbs, up to 2 m tall, stems erect or suberect to decumbent or sprawling, crown and leaf axils cobwebbed; sometimes with tuberous rootstock. Leaves alternate, sometimes crowded basally, prostrate or spreading to suberect, sessile or pseudopetiolate, linear to ovate or obovate-spatulate or lyrate to pinnatisect, subsucculent or leathery. Inflorescence terminal, pedunculate, capitula solitary or laxly cymose or paniculate, peduncles glabrous or pubescent basally. Capitula heterogamous, radiate or disciform. Involucre campanulate, bracts uniseriate, either free and adherent or connate up to 1/2, lanceolate to elliptic or oblong, glabrous, green with scarious margins and darker apices. Receptacle conical, punctate, glabrous, epaleate. Outer florets female-fertile, usually yellow and sometimes white, rarely pink to mauve, either filiform without a limb or ligulate with an oblanceolate to elliptic or oblong limb; staminodes rarely present as filiform remnants of the filaments; ovary ellipsoid to obovoid, glabrous or appressed-puberulous with white, twin hairs; style terete, with slightly thickened base, branches with discrete lateral stigmatic areas, apices oblanceolate

and shortly papillate. Cypselae ellipsoid to obovoid, 8- or 10-ribbed, dark brown, densely appressed-puberulous with myxogenic or nonmyxogenic, white, twin hairs, rarely glabrous; pappus bristles many, 2–20 mm, basally united, barbellate, persistent, beige or sometimes banded with brown or purple. Disc florets functionally male, numerous, corolla yellow or white to blue or pink, tube funnel-shaped, 5-lobed, lobes spreading; anthers obtuse at base with ovate apical appendages, filament collar baluster-shaped; ovary narrowly ellipsoid, glabrous; style simple and cone-tipped, rarely bifid with short branches but then without lateral stigmatic zones; pappus of ± 10 barbellate bristles, sometimes reduced to 1 or 2 bristles and lacking in one species, united basally, white.

Distribution and ecology. There are ca. 120 species of *Othonna*, largely restricted to the Greater Cape Floristic Region, with a few species in the eastern summer rainfall regions of South Africa and some extending to southern Namibia, Angola, and Zimbabwe; they are usually found on sandy flats or rocky slopes, rarely on seasonally damp sandy flats.

OTTHONNA BULBOSA GROUP

Deciduous geophytes with short underground stem branching shortly above ground level or sparsely branched in upper half, stems erect or suberect to decumbent or sprawling, usually felted in axils, otherwise usually glabrous but rarely thinly cobwebbed; rootstock obovoid to turnip-shaped, felted at crown. Leaves crowded basally or evenly spaced above, lowermost largest, spreading to erect, sessile and clasping or base narrowed and petiole-like, blade linear to ovate or obovate-spatulate or lyrate to pinnatisect, subsucculent or leathery, upper leaves progressively smaller, sessile and sometimes clasping, uppermost leaves bractlike, cordate to linear. Capitula radiate or disciform. Marginal florets usually yellow, rarely pink to magenta; ovary appressed-puberulous with twin hairs or rarely glabrous. Cypselae densely appressed-puberulous with myxogenic or nonmyxogenic, white, twin hairs, rarely glabrous; pappus bristles 2–20 mm, beige or sometimes banded brown or deep red. Disc florets usually yellow, rarely white to blue or magenta; pappus of ca. 10 barbellate bristles or lacking in 1 species.

Distribution and ecology. The *Othonna bulbosa* group contains 25 species, restricted to the GCFR, from southern Namibia through the Core Cape Floristic Region as far east as St. Francis Bay in Eastern Cape; they are usually found on sandy flats or gentle slopes in sandy soils or damp, sandy flats.

KEY TO THE SPECIES OF THE OTHONNA BULBOSA GROUP

- 1a. Capitula disciform, marginal florets filiform.
- 2a. Plants erect or scandent, often growing through surrounding shrubs; leaves strictly cauline, clasping or amplexicaul; involucre bracts 10 or 12 (series *Undulosae* Magoswana & J. C. Manning) 21. *O. undulosa* (DC.) J. C. Manning & Goldblatt
- 2b. Plants erect, freestanding; leaves crowded at base of stem, lowermost leaves narrowed at base or subpetiolate; involucre bracts 8 to 14 (series *Disciformes* Magoswana & J. C. Manning).
- 3a. Involucre bracts 8 or 9; cypselae and marginal ovaries glabrous.
- 4a. Leaves linear to narrowly lanceolate, 4–8 mm wide; florets yellow 24. *O. linearifolia* (DC.) Sch. Bip.
- 4b. Leaves elliptic to oblanceolate, sometimes lobed sometimes cuneate, 10–60 mm wide; florets bluish 22. *O. digitata* L. f.
- 3b. Involucre bracts 10 to 14; cypselae and marginal ovaries puberulous.
- 5a. Leaf margins strongly revolute; leaf blade narrowed and petiole-like or weakly clasping; base of branches covered with long, soft, and shaggy hairs; disc florets always with pappus 25. *O. revoluta* Magoswana & J. C. Manning
- 5b. Leaf margins plane; leaf blade variously attached; base of branches glabrous; disc florets usually without pappus or with 1 or 2 bristles, rarely pappus present 23. *O. gymnodiscus* (DC.) Sch. Bip.
- 1b. Capitula radiate, marginal florets ligulate.
- 6a. Plants erect or scandent, often growing through surrounding shrubs; leaves strictly cauline, clasping or amplexicaul (series *Perfoliatae* Magoswana & J. C. Manning).
- 7a. Plants erect, freestanding; involucre bracts 12 or 13; plants from Jeffreys Bay to Port Elizabeth 20. *O. rufibarbis* Harv.
- 7b. Plants usually straggling through surrounding shrubs; involucre bracts 8 or 9; plants from Namaqualand to Knysna 19. *O. perfoliata* (L. f.) Jacq.
- 6b. Plants erect, freestanding; leaves crowded at base of stem, lowermost leaves narrowed at base or subpetiolate (series *Heterophyllae* Magoswana & J. C. Manning).
- 8a. Ray florets pink to magenta.
- 9a. Involucre 5–15 mm diam., bracts 9 or 10; leaf blade 20–70 × 20–50 mm 7. *O. lilacina* Magoswana & J. C. Manning
- 9b. Involucre 10–25 mm diam., bracts 12 or 13; leaf blade 25–375 × 20–155 mm.
- 10a. Leaves denticulate to dentate or sharply pinnatifid with acute lobes 14. *O. rosea* Harv.
- 10b. Leaves trifid to pinnatisect with obtuse lobes 2. *O. cakilefolia* DC.
- 8b. Ray florets yellow, sometimes flushed reddish beneath.
- 11a. Leaves pinnate, leaflets separated along rachis, elliptic with conspicuous hyaline margins.
- 12a. Capitula usually solitary, sometimes paired; stem branched from the lower 1/2, peduncles 15–200 mm long 13. *O. pinnata* L. f.
- 12b. Capitula usually up to 3 in clusters, rarely solitary; stem branched from upper 1/3, peduncles 10–60 mm long 18. *O. tephrosioides* Sond.
- 11b. Leaves simple to pinnatisect.
- 13a. Involucre bracts 7 to 10.
- 14a. Leaves linear or filiform, 2–10 mm wide; capitula small, involucre 5–10 mm diam.; plants from seasonal wetlands 17. *O. stenophylla* Levyns
- 14b. Leaves lanceolate to obovate-spatulate, 10–75 mm wide; capitula larger, involucre 8–20 mm diam.; plants from drier flats and slopes.
- 15a. Leaves twice as long as broad, deeply pinnatisect, with quadrate lobes equally spaced along axis 15. *O. rotundiloba* DC.
- 15b. Leaves usually less than twice as long as broad, entire, pinnatifid or variously lobed but lobes not evenly spaced along axis.
- 16a. Leaves obovate-spatulate.
- 17a. Leaves without lobes; flowering stem twice as long as leaves; involucre bracts 8 to 10, connate more or less halfway; plants from Piketberg to Roggeveld 6. *O. intermedia* Compton
- 17b. Some or all leaves with 1 or 2 subulate lobes on each side near base of blade; flowering stem several times longer than leaves; involucre bracts 7 or 8, free but adherent in the basal 1/2; plants known only from the Swartberg Mountains 10. *O. nigromontana* Magoswana & J. C. Manning
- 16b. Leaves elliptic to ovate.
- 18a. Leaf margins sinuate, blade oblanceolate, narrowed and winged to a short petiole more or less 10 mm long; plants from Piketberg 16. *O. sinuata* Magoswana & J. C. Manning
- 18b. Leaf margins lyrate or lacerate, blade oblong to ovate, conspicuously petiolate with petiole up to 70 mm long; plants from Vanrhynsdorp to Wuppertal.
- 19a. Basal leaves lyrate-pinnatisect 8. *O. lyrata* DC.
- 19b. Basal leaves elliptic 12. *O. petiolaris* DC.

- 13b. Involucral bracts 12 to 14.
 - 20a. Petioles often subterranean 4. *O. hederifolia* B. Nord.
 - 20b. Petioles always inserted above ground level.
 - 21a. Basal leaves roughly puberulous on both surfaces, margins undulate-incised or crenate 5. *O. heterophylla* L. f.
 - 21b. Basal leaves glabrous, margins entire, variously lobed or pinnately cut.
 - 22a. Basal leaves sessile, 5–30 cm long 9. *O. macrophylla* DC.
 - 22b. Basal leaves narrowed below or petiolate, 1–15.5 cm long excluding petiole.
 - 23a. Corolla tube of ray florets 5–6 mm long 11. *O. oleracea* Compton
 - 23b. Corolla tube of ray florets 3–5 mm long.
 - 24a. Basal leaf blades ovate to oblong or oblanceolate, entire or sometimes trilobed or pinnatifid; peduncles sometimes puberulous in basal 1/2; involucre 10–25 mm diam. 1. *O. bulbosa* L.
 - 24b. Basal leaf blades cuneate to obovate and sometimes pandurate, coarsely dentate or undulate-incised; peduncles glabrous; involucre 8–15 mm diam. 3. *O. cuneata* DC.

I. *Othonna* L. ser. *Heterophyllae* Magoswana & J. C. Manning, ser. nov. TYPE: *Othonna heterophylla* L. f.

Diagnosis. This series can be distinguished from the other series of the *Othonna bulbosa* group by the following combination of characters: short, underground stem branching shortly above ground level; foliage congested basally, sessile or conspicuously petiolate, entire or revolute or lobed to pinnatifid; capitula radiate with yellow or pink to magenta ray florets; pappus not or slightly elongating, 3–12 mm long.

1. *Othonna bulbosa* L., Sp. Pl. 2: 924. 1753. TYPE: illustration in Breyne, in *Exot. Pl. Cent.*: 138, t. 66. 1678 (lectotype, designated by Nordenstam in Jarvis [2007: 714]).

Othonna lingua L. f., *Suppl. Pl.*: 387. 1782. Basionym: *Doria lingua* (L. f.) DC., *Prodr.* [A. P. de Candolle] 6: 471. 1838. TYPE: South Africa. s. loc., *C. P. Thunberg s.n.* (presumed holotype, UPS-THUNB-20882!). [Note: The basionym has been attributed by some authors to either Jacquin or Lessing (Manning & Goldblatt, 2010)].

Othonna tuberosa Thunb., *Prodr. Pl. Cap.* 2: 168. 1800. TYPE: South Africa. s. loc., *C. P. Thunberg s.n.* (presumed holotype, UPS-THUNB-20902!).

Othonna adscendens DC., *Prodr.* [A. P. de Candolle] 6: 480. 1838, syn. nov. TYPE: South Africa. [Western Cape], “in Africae Capensi circa urbem,” s.d., *C. F. Ecklon* [1786] (holotype, G-DC microfiche!; isotype, HAL image!).

Othonna oblongifolia DC., *Prodr.* [A. P. de Candolle] 6: 480. 1838, syn. nov. TYPE: South Africa. [Western Cape], “in Africae Capensi circa urbem,” s.d., *C. F. Ecklon* [1559] (lectotype, designated here, G-DC microfiche!; isolecotypes, HAL image!, M image!).

Othonna elliptica DC., *Prodr.* [A. P. de Candolle] 6: 480. 1838, syn. nov. TYPE: South Africa. Western Cape, Worcester (3319): “in Africa Capensi ad Draakenstenberg,” (–CC), s.d., *C. F. Drège* [6072] (holotype, G-DC microfiche!).

[*Othonna lingua* Thunb. ex. Harv. in Harv. & Sond., *Fl. Cap.* 3: 342. 1865, nom. nud.]

Deciduous geophyte, 29–35 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock

oblong or turnip-shaped. Leaves crowded basally, erect, conspicuously petiolate, petiole 2–10 cm, blade ovate to oblong or oblanceolate, 2.5–14 × 1–8.5 cm, entire or sometimes trilobed or pinnatifid, lobes acute, leathery to subsucculent, glabrous or rarely puberulous, upper leaves sessile and sometimes clasping, 2–6 × 1–2.5 cm, uppermost leaves lanceolate to elliptic, 2–10 × 1–5 mm. Inflorescence of 1 to 2 capitula, sometimes with lateral axes. Capitula radiate, rays yellow, sometimes darker below, disc yellow. Involucre 10–25 mm diam., involucral bracts 12 or 13, lanceolate, 5–12 × 2–2.5 mm, connate in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 3–5 mm, limb elliptic-ovate, 9–11 × 2–3 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae ellipsoid-ovoid, 5.5–6.5 × 1.5–2 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 5–7 mm, beige. Disc florets numerous, corolla tube 1–1.8 mm, lobes lanceolate to ovate, 0.6–1 mm; filaments 1–1.7 mm; ovary 3–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna bulbosa* occurs along the west coast and near interior of Western Cape from the Cold Bokkeveld north of Ceres to Bredasdorp and Albertinia on the south coast, with an outlying population inland near Oudtshoorn in the Little Karoo (Fig. 5); it is found on sandy slopes and flats, where it flowers best after fire. Flowering occurs from April to October.

Discussion. *Othonna bulbosa* is a vegetatively variable species, with glabrous (rarely puberulous), petiolate, oblanceolate leaves, sometimes trilobed or pinnatifid (Fig. 3N), and moderately large capitula with the involucre 10–25 mm diam. and with 12 or 13 involucral bracts and ray florets. *Othonna heterophylla* has similar capitula but roughly hairy peduncles and leaves, with the margins mostly slightly toothed to crenate.

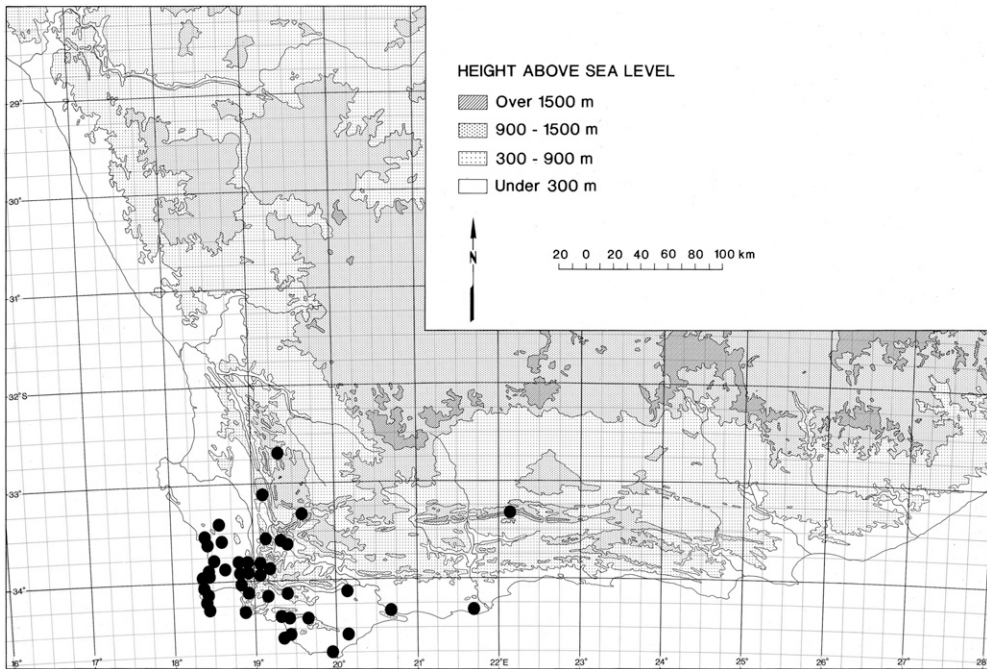


Figure 5. Distribution of *Othonna bulbosa* L.

Notes. De Candolle's (1837) and Harvey's (1865) incorrect applications of the name *Othonna lingua* arose from a misunderstanding in Jacquin's (1797) illustration of a plant described as an erect-stemmed, tuberous geophyte with petiolate, radical, lanceolate cauline leaves and disciform capitula. Although the cypselae of *O. lingua* (Linnaeus, 1781) were described as glabrous, this observation was based on immature fruits, and in such cases the hairs are usually not readily seen. With more material available to him, Harvey (1865) described the cypselae of *Doria lingua* as "hispidulous."

The variation in leaf shape and leaf margin in *Othonna bulbosa* led de Candolle (1837) to recognize a number of these forms as species. *Othonna elliptica*, based on a collection from the Drakenstein Mountains near Stellenbosch, was distinguished by elliptic leaves; *O. ascendens*, from an unlocalized collection, by its oblong-lanceolate leaves, and *O. oblongifolia*, from the flats around Cape Town, by its oblong to elliptic leaves. There are no differences in bract number among these taxa and *O. bulbosa*, and the variation in leaf shape is taxonomically insignificant.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3219 (Wuppertal):** on R303 to Ceres & Citrusdal, Blinkberg Pass, foothills below Bloukop (-CB), s.d., *Koekemoer 2399* (PRE). **3318 (Cape Town):** Cape Town to Malmesbury Rd. (-BC), 6 Sep. 1973, *Montgomery 513* (NBG); Kersefontein Farm (-AB), 10 Sep. 1979, *Boucher 4672* (NBG); Buffels River Dam site (-CB), 28 Aug. 1971,

Bohlman & Bornowski 12 (NBG); Mamre, Groenekloof (-CB), Nov. 1878, *Bolus 4290* (BOL); Isoëtes Vlei (-CD), 13 Aug. 1962, *Barker 9745* (NBG, PRE); Table Mtn. above Cecelia Gorge (-CD), 27 Aug. 1980, *Esterhuysen 17413* (BOL); near Camps Bay (-CD), Sep. 1919, *Flanagan s.n.* (PRE); Table Mtn. (-CD), Sep. 1912, *Marloth 2592* (PRE); slopes above Cape Town (-CD), Sep. 1917, *Marloth 8104* (PRE); Kenilworth Racecourse (-CD), 5 July 1903, *Phillips 195* (NBG); Table Mtn. slopes (-CD), Aug. 1881, *Tyson 2477* (NBG); Brackenfell (-DC), 13 Aug. 1948, *Compton 20737* (NBG); Kuilsriver flats (-DC), Aug. 1918, *Duthrie 814* (NBG); Stellenbosch, Guardian Peak, (-DD), 21 May 1942, *Esterhuysen 7836* (BOL, PRE); Jonkershoek State Forest, Biesievlei Catchment (-DD), 18 July 1945, *Rycroft 885* (NBG). **3319 (Worcester):** Haalhoek Sneeuwkop (-AA), 24 May 1953, *Esterhuysen 21399* (BOL); Ceres, Karooport (-BC), Aug. 1919, *Marloth 9004* (PRE); Bain's Kloof Pass (-CA), 26 Aug. 2015, *Manning & Magoswana 3532* (NBG); Waaihoek Sneeuwkop (-CB), 24 May 1953, *Esterhuysen 21399* (PRE); Goudini Valley (-CB), Aug. 1925, *Leipoldt s.n.* (BOL); Zachariashoek experimental site, Kasteelkloof catchment (-CC), 13 July 1978, *Lamb 93* (PRE). **3322 (Oudtshoorn):** Boomplaasfontein, Cango Valley (-AC), 27 June 1974, *Moffett 246* (NBG). **3418 (Simonstown):** Wynberg (-AB), Sep. 1884, *Bolus s.n.* (BOL); Muizenberg Mtn. (-AB), 11 July 1942, *Compton 13295* (NBG); Schuster's Kraal (-AB), 26 July 1942, *Compton 13341* (NBG); Gleincain, Jonkersdam along path through Solole Game Reserve (-AB), 28 Aug. 2006, *Cowell, Nurrish & Peuker MSBP3168* (NBG); Vlakkenberg (-AB), 5 May 1935, *Levyns 6570* (BOL); Red Hill (-AB), 31 May 1915, *Pillans 3004* (BOL); Red Hill (-AB), 5 Aug. 1963, *Taylor 4974* (NBG); Retreat (-AB), 1 July 1940, *Salter 7179* (BOL); Cape Point, Olifantsbos (-AD), 28 Aug. 1944, *Compton 15845* (NBG); Plathoom (-AD), 20 July 1942, *Compton*

13319 (NBG); Cape of Good Hope Nature Reserve, Kromrivier (–AD), 9 Aug. 1967, *Taylor 7119* (BOL, PRE); Cape of Good Hope Nature Reserve, enclosure at Gifkommetjie turnoff (–AD), 7 Sep. 1972, *Taylor 8190* (NBG); Sir Lowry's Pass (–BB), Oct. 1880, *Bolus 5546* (BOL); Kogelberg State Forest (–BB), 9 Aug. 1977, *Durand 234B* (PRE); Kogelberg Forest Reserve, above Oudebos Forest (–BD), 21 June 1969, *Boucher 395* (NBG, PRE); 10 May 1970, *Boucher 1286* (NBG). **3419 (Caledon):** Boesmansklouf (–AA), 21 May 1979, *Hugo 1815* (NBG); [Caledon] Swartberg (–AB), 10 Oct. 1951, *Esterhuysen 18952* (BOL); Vogelgat (–AD), 11 June 1982, *Williams 3552* (NBG); rd. to Pearly Beach (–CB), 10 June 1950, *Martin 363* (NBG); along dirt rd. past Franskaal in SE direction (–CB), 4 July 1976, *Neethling s.n.* (NBG); Aasfontein Reserve (–DD), 10 Aug. 1983, *Esterhuysen 35997* (BOL, PRE). **3420 (Bredasdorp):** The Poort (–AA), 10 Aug. 1949, *Steyn 352* (NBG); De Hoop, Potberg Nature Reserve (–BC), 25 July 1979, *Burgers 2005* (NBG, PRE); 27 July 1962, *Acocks 22510* (PRE); Zeekoewlei, on hillock near the Heuningklip River bridge (–CA), Sep. 1926, *Smith 3094* (PRE). **3421 (Riversdale):** Albertinia rd., 2 km W of Dekriet (–BC), 26 July 1974, *Bohnen 606/2* (NBG, PRE).

2. *Othonna cakilefolia* DC., Prodr. [A. P. de Candolle] 6: 482. 1838; Harv. in Harv. & Sond., Fl. Cap. 3: 340. 1865. TYPE: South Africa. Northern Cape, Vanrhynsdorp (3118): “in Africa Capensi ad Klein Namaqualand [Bei Holrivier],” (–CB), s.d., *Drège* [2872] (holotype, G-DC image!; isotypes, K image!, P image!).

Deciduous geophyte, 20–50 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock conical or oblong. Leaves crowded basally, spreading, 2.5–12 × 2–11 cm, base narrowed and petiole-like, blade ovate to elliptic or rarely linear, trisect to pinnatisect, lobes oblanceolate to elliptic, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 0.5–3.5 × 0.2–0.5 cm, uppermost leaves oblanceolate to elliptic, 0.5–1.5 × 0.2–0.4 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays magenta or pink, sometimes darker basally, disc magenta. Involucre 10–15 mm diam., involucre bracts 10 to 12, oblanceolate to elliptic, 6–8 × 1–2 mm, connate in basal 1/3 to 1/2. Ray florets 10 to 12, corolla tube 2–3 mm, limb oblong, 10–12 × 2–4 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly above mouth of tube. Cypselae obovoid, 3–5 × 0.5–1 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 5–6 mm, beige. Disc florets numerous, corolla tube 2–3 mm, lobes ovate, 1–1.5 mm; filaments 2–3 × 0.5 mm; ovary 4–6 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna cakilefolia* is a poorly collected species known from a few collections

between Kamieskroon and Holrivier, with an isolated collection near Lutzville along the west coast (Fig. 6); on sandy flats or quartz outcrops below 500 m. Flowering occurs from June to September. The rediscovery of this little known species by the South African horticulturalist Harry Hall in 1956 is documented by Rowley (1994). It has recently been recorded by botanist Nick Helme (pers. communication, June 2019) as quite common but seemingly very local on loamy shales.

Discussion. *Othonna cakilefolia*, *O. lilacina*, and *O. rosea* are the only species in the genus with pink to magenta ray florets. They are distinguished by leaf shape and number of involucre bracts, *O. cakilefolia* with trisect to pinnatisect leaves with narrow, obtuse lobes, and 10 to 12 involucre bracts. In the other two species, the leaves are entire or variously toothed to pinnatisect.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3018 (Kamiesberg):** Eenkokerboom (–CC), 3 Sep. 1897, *Schlechter 4297* (PRE). Western Cape. **3118 (Vanrhynsdorp):** 15 mi. (24 km) W of Nuwerust (–AA), 5 Aug. 1956, *Hall 1029* (NBG); NW of Nuwerust (–AA), 27 July 1971, *Hall 4734* (NBG); 4 mi. (6.4 km) NW Nuwerust, on rd. to Rietputs, near the farm “Middleputs” (–AB), 9 Aug. 1974, *Rourke 1422* (NBG, PRE). **3318 (Cape Town):** Vaalkrans, ca. 6 km SW of Lutzville (–CB), 15 Aug. 2018, *Helme s.n.* (NBG).

3. *Othonna cuneata* DC., Prodr. [A. P. de Candolle] 6: 481. 1838. TYPE: South Africa. Western Cape, Clanwilliam (3218): “Cap. Bonae Spei in Lange-Valey et ad Olifantsrivier,” (–BC), s.d., *C. F. Drège* [2876] (holotype, G-DC microfiche!; isotype, K image!, P image!).

Deciduous geophyte, 15–30 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock obovoid to oblong. Leaves crowded basally, spreading, 1–15.5 × 1.5–9.5 cm, base narrowed and petiole-like, auriculate, blade cuneate to obovate and sometimes pandurate, margins entire or coarsely dentate or undulate-incised, leathery to succulent, glabrous, upper leaves sessile and sometimes clasping, 1–7 × 0.5–5 cm, uppermost leaves lanceolate to elliptic, 0.5–2 × 0.2–0.4 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 8–15 mm diam., involucre bracts 12 to 14, oblanceolate to elliptic, 7–12 × 1–4 mm, connate in basal 1/3 to 1/2. Ray florets 12 to 14, corolla tube 3–5 mm, limb oblanceolate to oblong, 9–12 × 2–3 mm; ovary ellipsoid to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae ellipsoid-ovoid, 4–7 × 1–3 mm, densely appressed-puberulous on ribs with myxogenic, white,

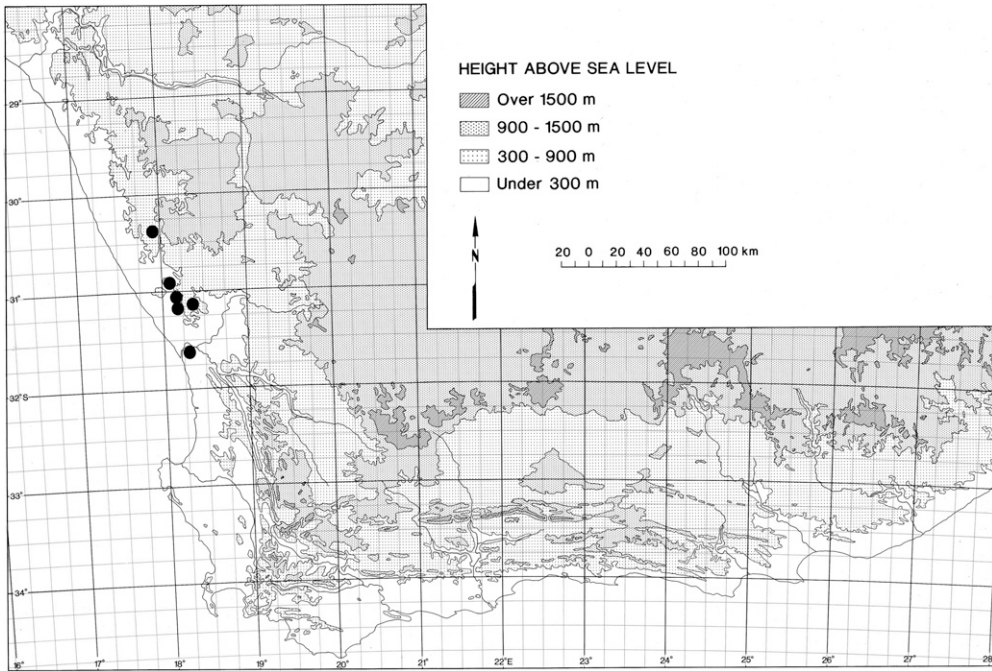


Figure 6. Distribution of *Othonna cakilefolia* DC.

twin hairs; pappus 3–8 mm, beige. Disc florets numerous, corolla tube 1–2 mm, lobes ovate, 0.5–1 mm; filaments 2–3 mm; ovary 2–6 mm; style simple and cone-tipped, rarely with short branches in some individuals but then without lateral stigmatic zones; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna cuneata* is relatively narrowly distributed in the drier western parts of South Africa, from the Piketberg and Cederberg through the Knersvlakte in the Western Cape into central Namaqualand in Northern Cape and also on the Roggeveld (Fig. 7); on quartz patches and sandstone flats. Flowering occurs from May to September.

Discussion. *Othonna cuneata* shares cuneate leaves (Fig. 3L) with the apices variously coarsely toothed with *O. hederifolia* (Fig. 3M) but is distinguished by smaller capitula, the involucre 8–15 mm in diameter versus 12–20 mm in diameter; glabrous, branching peduncles; and somewhat succulent leaves narrowed below but without the filiform petioles of *O. hederifolia*. *Othonna cuneata* can sometimes be confused with *O. bulbosa*, but that species has oblanceolate leaves, sometimes trilobed or pinnatifid, and larger capitula.

As circumscribed here, *Othonna cuneata* displays a wide range of leaf shapes, ranging from cuneate to obovate and sometimes pandurate. It grows usually but not exclusively among white quartz pebbles.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3017 (Hondeklipbaai):** Leliefontein (–AB), 11 Sep. 1992, *Bruyns 5944* (BOL); Namaqualand National Park, S of Riethuis on track to Taaibosduin (–AB), 13 Aug. 2006, *Koekemoer 3352* (PRE); Namaqualand, Riethuis (–AB), s.d., *Lauranos 8050* (PRE); Namaqualand National Park, on track N of Oubees to Oubees-se-sand (–AB), 18 Aug. 2007, *Steyn 1337* (PRE); Namaqualand National Park, on rd. to Soebatsfontein (–BA), 1 Sep. 2004, *Koekemoer 2847* (PRE); Garies (–CB), 25 July 1941, *Compton 11079* (NBG); Grasberg, Paulshoek, Rooiwal just W of Grootberg (–CB), 20 Aug. 1999, *Desmet 162* (NBC). **3018 (Kamiesberg):** Bitterfontein, Perdekop (–CD), 14 July 2006, *Bruyns 10486* (NBG). **3019 (Loeriesfontein):** Platklip (–CC), 17 May 2006, *Bruyns 10503* (NBG). **3220 (Sutherland):** 11 mi. (18 km) S of Sutherland (–BC), 31 July 1953, *Acocks 16839* (PRE). Western Cape. **3118 (Vanrhynsdorp):** Nuwerus (–AB), Aug. 1949, *Compton 11079* (NBG); Bitterfontein, hills E of Nuwerus (–AB), 12 July 2006, *Bruyns 10469* (NBG); 7 km N of Kliprand rd. E of Nuwerus (–AB), 9 Sep. 1976, *Hugo 466* (NBG, PRE); 7.8 km on Douse the Glim turnoff, 24 km N of Vanrhynsdorp (–BB), 5 Aug. 1977, *Le Roux 2070* (NBG); ± 3 km on Douse the Glim turnoff (–BB), 18 Aug. 2015, *Manning & Magoswana 3525* (NBG); Knersvlakte (–BC), 23 Aug. 1941, *Compton 11329* (NBG); Farm “Liebendal” (–BC), 7 Sep. 1981, *Hall 5143* (NBG); Knersvlakte, Flaminkvlakte (–BC), 4 Aug. 2012, *Koekemoer 4295* (PRE); Knersvlakte (–BC), 6 Sep. 1950, *Maguire 284* (NBG); Knersvlakte, turnoff at Groot-Graafwater (–BC), 18 Aug. 2015, *Manning & Magoswana 3523* (NBG); Heerenlogementsberg (–DC), 21 July 1941, *Compton 10982* (NBG). **3218 (Clanwilliam):** betw. Leipoldtville & Graafwater (–AB), 7 July 1941, *Leipoldt 3642* (BOL); Graafwater, near old quarry on rd. to Clanwilliam (–BA), 4 June 1969, *Wisura 313* (NBG); Piketberg Mtns. (–DA), 12 Sep. 1954,

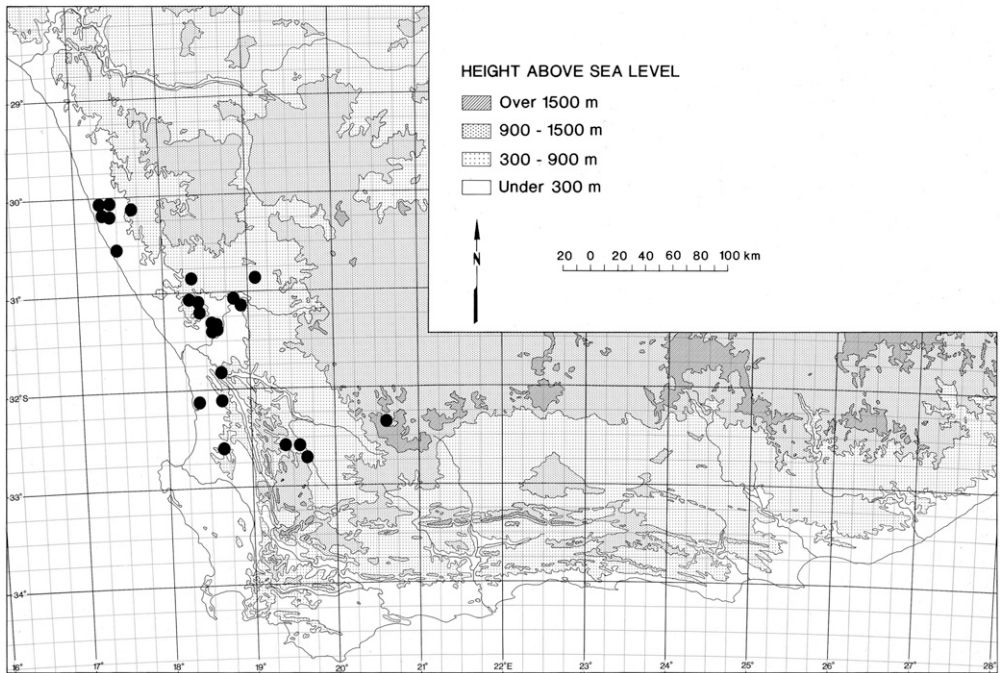


Figure 7. Distribution of *Othonna cuneata* DC.

Esterhuysen 23109a (BOL); ca. 10 km E of Vredendal, Vaderlandsche, Rietkruil 308 (–DA), 20 July 2010, *Helme 6622* (NBG). **3219 (Wuppertal)**: Kromriver–Eselbank sandy plains (–CB), 7 Feb. 1995, *Linder 5953* (BOL); Kaggakamma Nature Reserve, 4 × 4 section betw. Bobbejaanskraans Camp & Joubertswerf (–DA), 10 Aug. 2012, *Koekemoer 4304* (PRE); Wuppertal (–DA), 31 Aug. 1896, *Schlechter 8787* (BOL, PRE).

4. *Othonna hederifolia* B. Nord., Bot. Not. 124(1): 14. 1971. TYPE: South Africa. Northern Cape, Calvinia (3119): “top of Van Rhyn’s Pass,” (–AC), 19 July 1962, *B. Nordenstam 679* (holotype, S image!; isotypes, AD image!, BM image!, BOL image! C image!, G image!, GZU image!, K image!, M image!, MO image!, NBG!).

Deciduous geophyte, 25–30 cm high, with short subterranean stem branching shortly below or above ground level, branches erect to suberect; stem puberulous in lower 1/2; rootstock oblong or turnip-shaped. Leaves crowded basally, erect, conspicuously petiolate, petiole filiform, 1–6 cm, often subterranean, blade cuneate, 0.8–7.5 × 1–8 cm, margins coarsely and ± irregularly 8- or 9-dentate, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 1.5–4 × 0.5–1 cm, uppermost leaves lanceolate to elliptic, sessile, 0.6–1.3 × 0.1–0.3 cm. Inflorescence of 1 capitulum, sometimes with lateral axes. Capitula radiate, rays yellow, sometimes purple beneath, disc yellow. Involucre 10–20 mm diam.,

involucral bracts 12 or 13, lanceolate to elliptic, 8–15 × 2–4 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 2–4 mm, limb elliptic-ovate, 10–15 × 2–4 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to obovoid, 4–7 × 2–3 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 4–6 mm, beige. Disc florets numerous, corolla tube 1.5–2 mm, lobes ovate, 1.5–2 mm; filaments 2–3 mm; ovary 3–6 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna hederifolia* is distributed along the drier mountains of western South Africa, from the Bokkeveld Mountains in Northern Cape through the Cederberg and Cold Bokkeveld to the Witteberg in Western Cape (Fig. 8); it is found in shallow, sandy soils on sandstone sheets in arid fynbos at elevations above 1500 m. Flowering occurs from June to August.

Discussion. *Othonna hederifolia* is readily recognized by conspicuously petiolate leaves with cuneate, coarsely toothed blades protruding vertically above the ground from slender subterranean petioles (Fig. 3M) and by peduncles that are puberulous in the lower half.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3119 (Calvinia)**: top of Van Rhyn’s Pass

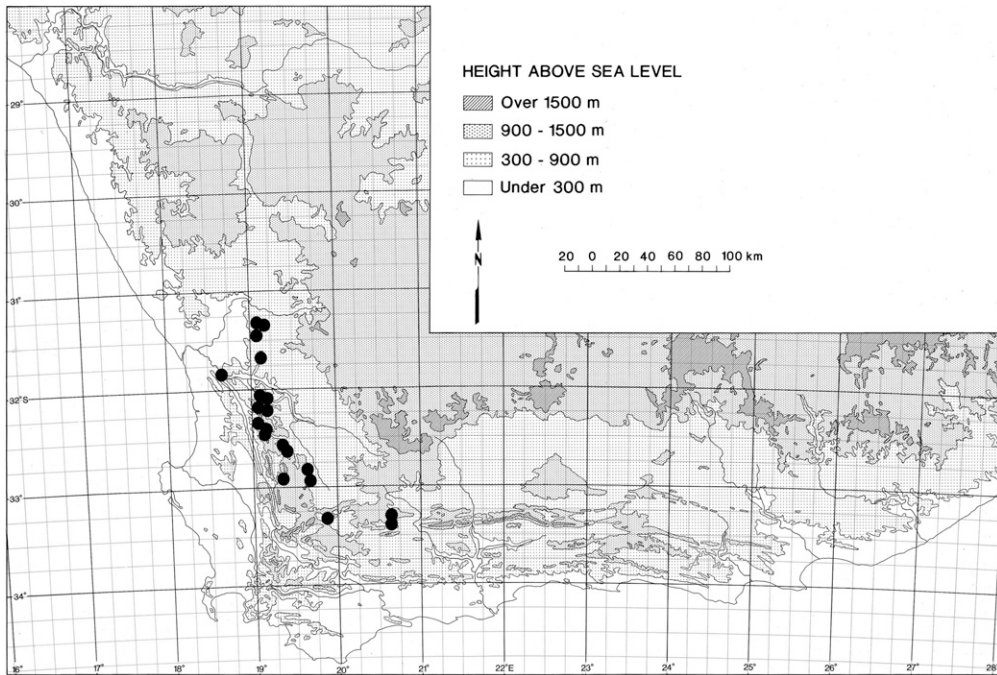


Figure 8. Distribution of *Othonna hederifolia* B. Nord.

(-AC), 30 Aug. 2015, *Deacon 4596* (NBG); 22 July 1955, *Hall 53* (NBG); 4 July 1970, *Hall 3642* (NBG, PRE); 3 mi. (4.8 km) from Nieuwoudtville on Van Rhy'n's Pass (-AC), 23 Aug. 1950, *Maguire 270* (NBG); Van Rhy'n's Pass (-AC), 29 July 1967, *Marsh, Pamphlet & French 302* (NBG, PRE); Oorlogskloof Nature Reserve, 15 km SSW of Nieuwoudtville (-AC), 19 June 1995, *Pretorius 250* (NBG); Van Rhy'n's Pass (-AC), 26 July 1946, *Smith 46* (NBG); Lokenburg (-CA), 28 June 1968, *Acocks 23991* (PRE). Western Cape. **3118 (Vanrhynsdorp)**: Gifberg (-DC), 14 July 1974, *Thompson 2083* (PRE). **3219 (Wuppertal)**: Cederberg, plots near Sneueberg (-AC), 4 Sep. 1975, *Durand 54* (NBG); Cederberg, path betw. Pakhuis & Heuningvlei (-AA), 19 Oct. 1945, *Esterhuysen 12051* (BOL); Pakhuis (-AA), 7 Sep. 1953, *Esterhuysen 21735* (BOL); Pakhuisberge, 17 km from Clanwilliam (-AA), 25 Aug. 1995, *Rodriguez, Oubina & Cruze 2086* (PRE); Boontjieskloof, N of Cederberg (-AA), 3 June 1973, *Taylor 8469* (NBG); Cederberg State Forest, Hoogvertoon (-AC), 24 July 1983, *Hockey 1* (PRE); Cederberg Mtns., NW of Wuppertal (-AC), 18 Aug. 2012, *Jardine 1812A* (NBG); Cederberg, Gonnafontein, eastern plateau, S of main track near fence (-CB), 8 July 2000, *Pond UP 95* (NBG); boundary gate Breekkransfontein, Kromrivier (-CB), 22 June 1984, *Taylor 10960* (NBG, PRE); Swartuggens, 60 km NE of Ceres, Knolfontein (-DC), 20 June 2006, *Jardine & Jardine 319* (NBG); 26 May 2009, *Jardine 1122* (NBG); 19 July 2011, *Jardine 1568* (NBG); 30 July 2012, *Jardine 1801* (NBG); 24 Aug. 2012, *Jardine 1812* (NBG); Swartuggens, Houtnekskloof Pass (-DC), 10 July 1991, *Van Zyl 4207* (NBG). **3319 (Worcester)**: Titus River at N of foot inner Sanddrif Peaks (-AB), 2 June 1974, *Oliver 4871* (NBG); De Doorns, N of National Rd. through Verkeerdevlei (-BD), 13 June 1975, *Durand 27* (NBG). **3320 (Montagu)**: ± 10 km SE of Matjiesfontein, plateau SW of Ezelfontein (-BC), 13 May 2011, *Helme 7004*

(NBG); Matjiesfontein, near radiomast, top of Witterberge (-BC), s.d., *Van Zyl 3566* (PRE).

5. *Othonna heterophylla* L. f., Suppl. Pl.: 387. 1782.

TYPE: South Africa. [Western Cape], s.d., *C. P. Thunberg s.n.* (lectotype, designated here, UPS-THUNB 20879 microfiche!; isolectotype, SBT-13711 image!).

Othonna brachypoda DC., Prodr. [A. P. de Candolle] 6: 480. 1838. TYPE: South Africa. [Western Cape], "Cap Bonae Spei," s.d., *C. F. Ecklon [4194]* (lectotype, designated here, G-DC image!).

Deciduous geophyte, 20–30 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem puberulous; rootstock turnip-shaped. Leaves crowded basally, spreading, conspicuously petiolate, petiole 1–4.5 cm, blade cuneate to oblanceolate, 2–11 × 1.5–7 cm, margin undulate-incised or crenate, leathery to subsucculent, puberulous on both surfaces, upper leaves sessile and sometimes clasping, 1.5–5 × 1–3 cm, uppermost leaves lanceolate to elliptic, 0.5–1 × 0.2–0.4 cm. Inflorescence of 1 capitulum, sometimes with lateral axes. Capitula radiate, rays yellow, sometimes basally darker, disc yellow. Involucre 10–25 mm diam., involucre bracts 13 or 14, lanceolate to elliptic, 10–12 × 1–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 13 or 14, corolla tube 2–4 mm, limb oblong, 10–14 × 2–4 mm; ovary

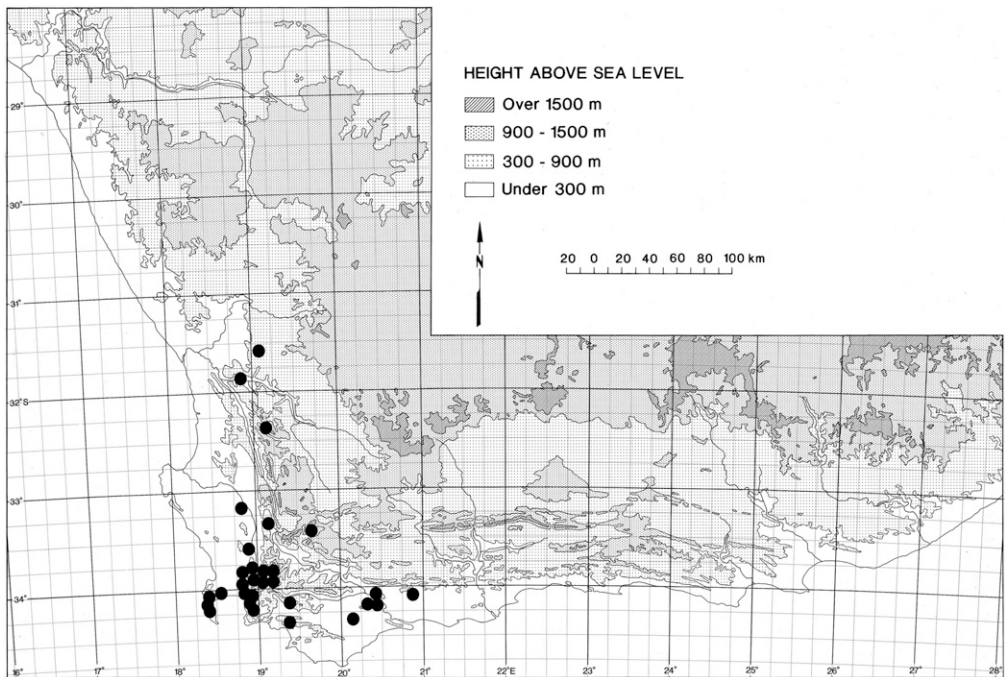


Figure 9. Distribution of *Othonna heterophylla* L. f.

ellipsoid to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae ellipsoid to obovoid, 3–4 × 1–2 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 4–6 mm, beige. Disc florets numerous, corolla tube 1–2 mm, lobes ovate, 0.5–1 mm; filaments 1–2 mm, ovary 4–6 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna heterophylla* is relatively common on the southwestern coastal mountain slopes of Western Cape, from Tulbagh to Hermanus, but with scattered collections north in the Bokkeveld Escarpment and east to Swellendam (Fig. 9); it is found on rocky sand and clay slopes at elevations below 1000 m. Flowering occurs from May to September.

Discussion. *Othonna heterophylla* is distinctive in its cuneate to oblanceolate leaves puberulous on both surfaces and with undulate-incised or crenate margins (Fig. 3G). The peduncles are also puberulous. *Othonna bulbosa*, with similar capitula, has mostly glabrous (rarely puberulous) leaves, sometimes lobed but always with entire margins, and glabrous peduncles.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3119 (Calvinia):** Lokenburg (–CA), 29 Aug. 1953, *Acocks 17061* (PRE). Western Cape. **3118 (Vanrhynsdorp):** Gifberg, Ordinsansiekop N side (–DD),

14 July 1974, *Oliver 4953* (NBG). **3219 (Wuppertal):** Cedarberg, Algeria Forest Station, De Rif (–AC), 27 May 1982, *Viviers 351* (NBG, PRE). **3318 (Cape Town):** Paarlberg (–BB), 4 July 1962, *Kruger 123* (NBG); Oudekraal 902, behind white hotel (–CD), 25 Aug. 2009, *Helme 6477* (NBG); Table Mtn. (–CD), 14 July 1918, *Pillans 3123* (PRE); Kenilworth (–CD), 23 June 1938, *Salter 8182* (NBG); Paardeberg, betw. Wellington & Malmesbury, Vlakfontein ± 400 m S of the Perdeberg Dam (–DB), 9 Aug. 2011, *Nicholson & Roets 258* (NBG); Jonkershoek State Forest (–DD), 5 July 1963, *Bos 146* (NBG, PRE); 28 June 1967, *Bos 103*; 11 July 1967, *Bos 225* (NBG); 24 May 1943, *Borchardt s.n.* (PRE); Stellenbosch, Jan Marais Park. (–DD), 14 June 1978, *Hugo 1222* (NBG); Jonkershoek State Forest, Swartboskloof (–DD), July 1967, *Kerfoot 5860* (PRE); 5 July 1976, *Kruger 184* (NBG, PRE); Jonkershoek State Forest, Swartboskloof (–DD), 23 Aug. 1984, *Richardson 113* (NBG); 5 Aug. 1964, *Taylor 5823* (PRE); 5 June 1965, *Taylor 4862* (NBG, PRE), 23 May 1943, *Wicht s.n.* (PRE). **3319 (Worcester):** Elandsberg Nature Reserve (–AC), 21 July 1996, *Parker 41* (NBG); 26 June 1999, *Parker s.n.* (NBG); 10 Aug. 2015, *Manning & Magoswana 3509* (NBG); Karooport (–BC), 18 Sep. 1938, *Acocks 1705* (PRE); Franschhoek (–CC), s.d., *Bolus s.n.* (PRE); Franschhoek Pass, Middagkransberg summit ridge (–CC), 11 Oct. 1973, *Boucher 2408* (NBG); Du Toit's Kloof (–CC), 31 May 1952, *Esterhuysen 20173* (NBG, PRE); 20 Aug. 1953, *Martin 1009* (NBG, PRE); 23 Aug. 1953, *Esterhuysen 21714* (PRE); Klein Drakenstein Mtns., upper Kasteelkloof catchment (–CC), 1 Oct. 1970, *Haynes H413*; Zachariashoek Experimental Catchment, Kasteelkloof catchment (–CC), 3 Sep. 1970, *Haynes H370* (NBG, PRE); 10 Aug. 1972, *Haynes 676* (NBG, PRE); Klein Drakenstein Mtns. (–CC), 1 Oct. 1970, *Haynes 413* (PRE); Franschhoek Pass (–CC), 13 June 1980, *Hugo 2359* (NBG, PRE); Franschhoek (–CC), 12 May 1978, *Lamb*

83 (PRE); Klein Drakenstein Mtns., upper Kasteelkloof catchment (–CC), 1 Oct. 1971, *Kruger 1476* (NBG). **3418 (Simonstown):** Wynberg Flats (–BA), Aug. 1924, *Alexander s.n.* (PRE); Steenberg (–AB), 13 Sep. 1942, *Compton 13638* (NBG); Kromriver (–AB), 10 Oct. 1945, *Compton 17484* (NBG); Houtbay (–AB), Aug. 1924, *Marloth 11924* (PRE); Cape of Good Hope Nature Reserve, track over plateau to Hesterdam (–AB), 17 June 1972, *Taylor 8129* (NBG); Kogelberg State Forest (–BB), 13 Sep. 1977, *Durand 236* (PRE); Jonkershoek, Heuningkloof (–BB), Sep. 1967, *Kerfoot K5950*; Harmony Reserve, Strand (–BB), 17 May 1975, *Oliver 5918* (NBG); Sir Lowry's Pass (–BB), July 1920, *Page & Guthrie s.n.* (PRE); Gordon's Bay (–BB), 12 Aug. 1948, *Parker 4339* (NBG); Somerset West, Helderberg Nature Reserve (–BB), 15 July 1994, *Runnalls 691* (NBG); 18 Aug. 1995, *Runnalls 815* (NBG); Harmony Reserve, Strand (–BB), 31 July 2000, *Runnalls 1017*; Van de Stel (–BB), Sep. 1926, *Smith 3224* (PRE); Jonkershoek (–BB), 14 June 1962, *Taylor 3394* (NBG). **3419 (Caledon):** Swartberg (–AB), July 1992, *Guthrie 578* (NBG); Hermanus Mtn. above golf course (–AD), 11 Aug. 1978, *Williams 2537* (NBG). **3420 (Bredasdorp):** Bontebok Park (–AB), 20 June 1962, *Acocks 22240* (PRE); 24 Aug. 1965, *Grobler 476* (NBG); near Swellendam (–AB), 10 Aug. 1949, *Steyn 259* (NBG); near Heidelberg (–BB), 12 Aug. 1949, *Steyn 345* (NBG); Bredasdorp (–CA), Sep. 1926, *Smith 2912* (PRE).

6. *Othonna intermedia* Compton, J. S. African Bot. 15: 108. 1949. TYPE: South Africa. Western Cape, Van Rhynsdorp (3118): “20 miles [32 km] north of Van Rhynsdorp,” (–DA), 18 July 1948, *R. H. Compton 20542* (holotype, NBG!; isotype, K image!).

Deciduous geophyte, 10–15 cm high, with short subtterranean stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock obovoid. Leaves crowded basally, spreading, 3–7.5 × 1–4 cm, base narrowed and petiole-like, blade obovate-spatulate to oblanceolate or cuneate, margins entire, leathery to succulent, glabrous, upper leaves sessile and sometimes clasping, 2–6 × 0.5–2 cm, uppermost leaves lanceolate to elliptic, 0.3–0.8 × 0.1–0.3 cm. Inflorescence of 1 to 2 capitula, often with lateral axes. Capitula radiate, rays and disc yellow. Involucre 8–12 mm diam., involucre bracts 8 to 10, lanceolate to elliptic, 8–10 × 2–4 mm, connate in basal 1/3 to 1/2. Ray florets 8 to 10, corolla tube 2–2.5 mm, limb oblong, 3–5 × 2–3 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to obovoid, 3–5 × 2–3 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 3–5 mm, beige. Disc florets numerous, corolla tube 1–1.5 mm, lobes ovate, 0.8–1 mm; filaments 1.6–2 mm; ovary 1–3 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally. Figure 10.

Distribution and ecology. *Othonna intermedia* is endemic to southern Namaqualand, where it is most common on the Knervlakte north of Vannrhynsdorp in

Western Cape (Fig. 11); it is restricted to white-quartz patches at elevations above 150 m. Flowering occurs from June to September.

Discussion. *Othonna intermedia* is distinguished by its diminutive size, up to 15 cm high (Fig. 2C), unique obovate-spatulate leaves, and peduncles twice the length of the leaves.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3118 (Vannrhynsdorp):** Aurora (–AB), 12 Sep. 1996, *Bruyns 6804* (BOL); on Douse the Glim rd., 24 km N of Vannrhynsdorp (–BB), 4 Aug. 1977, *Le Roux 2056* (NBG); Douse the Glim (–BB), 22 Sep. 2015, *Manning & Magoswana 3535* (NBG); Knervlakte (–BC), 6 Sep. 1950, *Barker 6605* (BOL, NBG, PRE); 26 Aug. 1959, *Barker 9061* (NBG); Knervlakte, Kwaggaskop (Quaggaskop) 215 along rd. to Douse the Glim betw. Sout Rivier [Salt River] & Ratelkop (–BC), 27 June 2002, *Burgoyne s.n.* (PRE); Beeswater (–BC), 14 Aug. 1988, *Bruyns 3320* (NBG); Knervlakte (–BC), 25 July 1941, *Compton 11125* (NBG); 24 July 1948, *Compton 20686* (NBG); 3 Sep. 1948, *Compton 20873* (NBG); Knervlakte, Kwaggaskop (Quaggaskop) 215 along rd. to Douse the Glim betw. Sout Rivier [Salt River] & Ratelkop (–BC), 25 July 1941, *Esterhuysen 5295* (BOL); 23 Aug. 1941, *Esterhuysen 5669* (BOL); Knervlakte, Farm Vinkelshoek (–BC), 3 Aug. 2012, *Koekemoer 4282* (PRE); Knervlakte, turnoff at Groot-Graafwater (–BC), 18 Aug. 2015, *Manning & Magoswana 3524* (NBG); Knervlakte, Kwaggaskop (Quaggaskop) 215 along rd. to Douse the Glim betw. Sout Rivier [Salt River] & Ratelkop (–BC), 1 Sep. 1997, *Paterson-Jones 809* (NBG); E of Knervlakte, along rd. from Grootdrif toward Gembokrivier on the farm Elands-footpath rivier (–BD), 19 July 2005, *Snijman 1987* (NBG); Koekenaap, 50 mi. (80 km) E of Nuwrust (–CB), 5 Aug. 1956, *Hall NBG 409/56* (NBG); Vannrhynsdorp (–DA), 22 July 1949, *Compton NBG 843/48* (NBG).

7. *Othonna lilacina* Magoswana & J. C. Manning, sp. nov. TYPE: South Africa. Northern Cape, Springbok (2917): 5 mi. (8 km) N of Grootmis, (–CA), 20 Aug. 1952, *H. Hall 575* (holotype, NBG!).

Diagnosis. *Othonna lilacina* Magoswana & J. C. Manning is distinguished among the species with pink rays by its characteristic foliage, the blade obovate to orbiculate-cuneate with entire or sparsely and obscurely undulate-denticulate margins.

Deciduous geophyte, 10–20 cm high, with short underground stem branching shortly above ground, branches erect to suberect; stem glabrous; rootstock conical or oblong. Leaves crowded basally, suberect to spreading, 2–7 × 2–5 cm, base narrowed and petiole-like, clasping, blade obovate to orbiculate-cuneate, margins entire or sparsely and obscurely undulate-denticulate, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 0.5–3 × 0.2–2 cm, uppermost oblanceolate to elliptic, 0.3–1 × 0.2–0.8 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays lilac or pink, disc lilac. Involucre 5–15 mm diam.; involucre bracts 9 or 10, lanceolate to elliptic, 7–10 × 2–4 mm, ± free to the base but adherent in basal 1/3 to

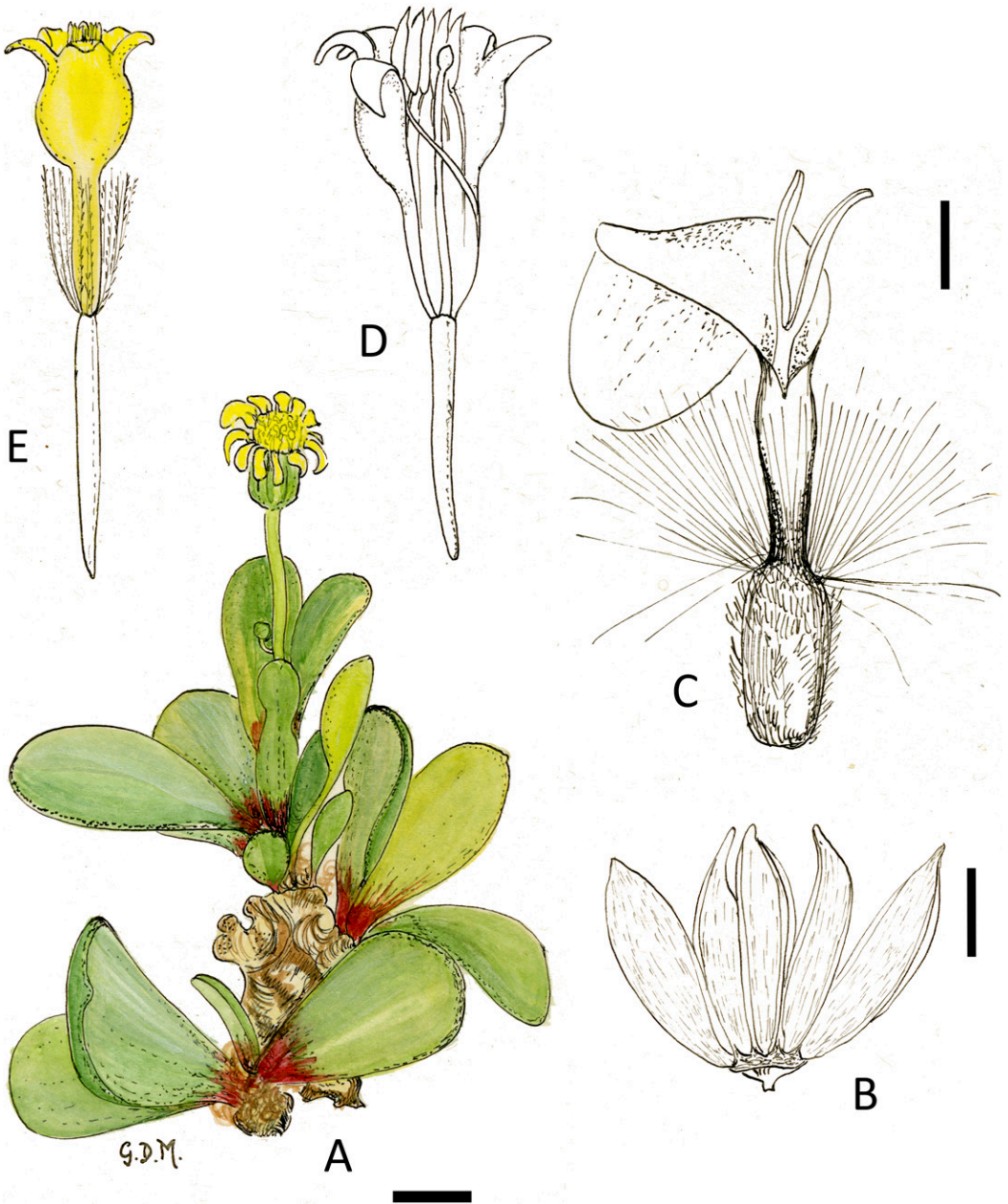


Figure 10. *Othonna intermedia* Compton. —A. Flowering plant. —B. Portion of involucre opened out. —C. Ray floret. —D. Disc floret opened out. —E. Disc floret. Scale bars: A = 10 mm; B = 3 mm; C–E = 1 mm. Drawings by G. D. Morris.

1/2. Ray florets 9 or 10, corolla tube 2–4 mm, limb elliptic to oblanceolate, 6–10 × 2–4 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to obovoid, 4–6 × 1–3 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 3–5 mm, beige. Disc florets numerous, corolla tube 1–1.5 mm, lobes 0.7–1 mm; filaments 1–2 mm;

ovary 5–7 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally. Figure 12.

Distribution and ecology. *Othonna lilacina* is known from a few localities near Springbok in Namaqualand, Northern Cape (Fig. 13), where it appears to occur in patches of quartz gravel at elevations below 1000 m. Flowering occurs from June to August.

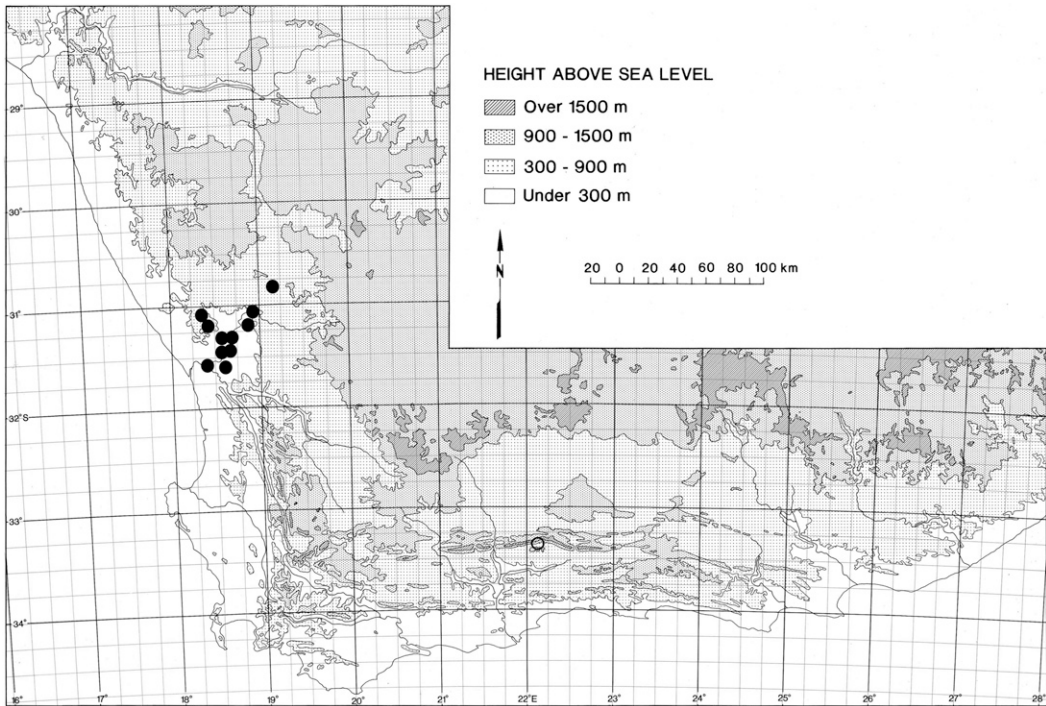


Figure 11. Distribution of *Othonna intermedia* Compton (closed circle) and *O. nigromontana* Magoswana & J. C. Manning (open circle).

Etymology. *Othonna lilacina* is named for the lilac or pink capitula.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3017 (Hondeklipbaai):** Klein Swartkop, ridge SE of beacon (Riethuis) (–AB), 25 Aug. 1982, *Oliver 7710* (NBG); betw. Soebatsfontein & Wallekraal, S of Farm Kwaggasfontein (–BC), 21 July 2005, *Snijman 2008* (NBG).

8. *Othonna lyrata* DC., Prodr. [A. P. de Candolle] 6: 481. 1838. TYPE: South Africa. Western Cape, Clanwilliam (3218): “Clanwilliam,” (–BB), s.d., *C. F. Ecklon 1349* (lectotype, designated here, G-DC microfiche!).

Deciduous geophyte, 15–60 cm high, with short underground stem branching shortly above ground level, branches erect to flexuous; stem glabrous; rootstock conical or oblong. Leaves crowded basally, spreading, conspicuously petiolate, petiole 3–9 cm, blade lyrate-pinnatisect, margins lyrate, 6–20 × 4–18 cm, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 35–80 × 10–40 mm, uppermost leaves lanceolate to elliptic, 4–20 × 2–4 mm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 6–15 mm diam., involucre bracts 8 or 9, lanceolate to elliptic, 8–10 × 2–3.5 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray

florets 8 or 9, corolla tube 2–3.5 mm, limb lanceolate to elliptic, 10–12 × 3 mm; ovary obovoid, appressed-puberulous with twin hairs; style branching below mouth of tube. Cypselae obovoid, 3.5–4.5 × 2.5 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 4–6 mm, beige. Disc florets numerous, corolla tube 1–2 mm, lobes elliptic to lanceolate, 0.6–1 mm; filaments 1–2 mm; ovary 3–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna lyrata* is evidently a narrow endemic known from a few collections in the western mountains of Western Cape, from the Nardouwsberg to Pakhuis Pass (Fig. 14); it is found on loamy slopes at elevations above 200 m. Flowering occurs from July to September.

Discussion. *Othonna lyrata* is recognized by its lyrate-pinnatisect, petiolate basal leaves (Fig. 3C) and capitula with eight or nine involucre bracts and rays. *Othonna petiolaris*, also with eight or nine involucre bracts and rays, has oblong to ovate, lacerate leaves (Fig. 3D).

Additional specimens examined. SOUTH AFRICA. Western Cape. **3118 (Vanrhynsdorp):** Nardouw Rd. (–DD), 2 Sep. 1945, *Compton 17145* (NBG). **3218 (Clanwilliam):** 13 mi. (21 km) from Clanwilliam (–BB), 22 Aug. 1950, *Barker*

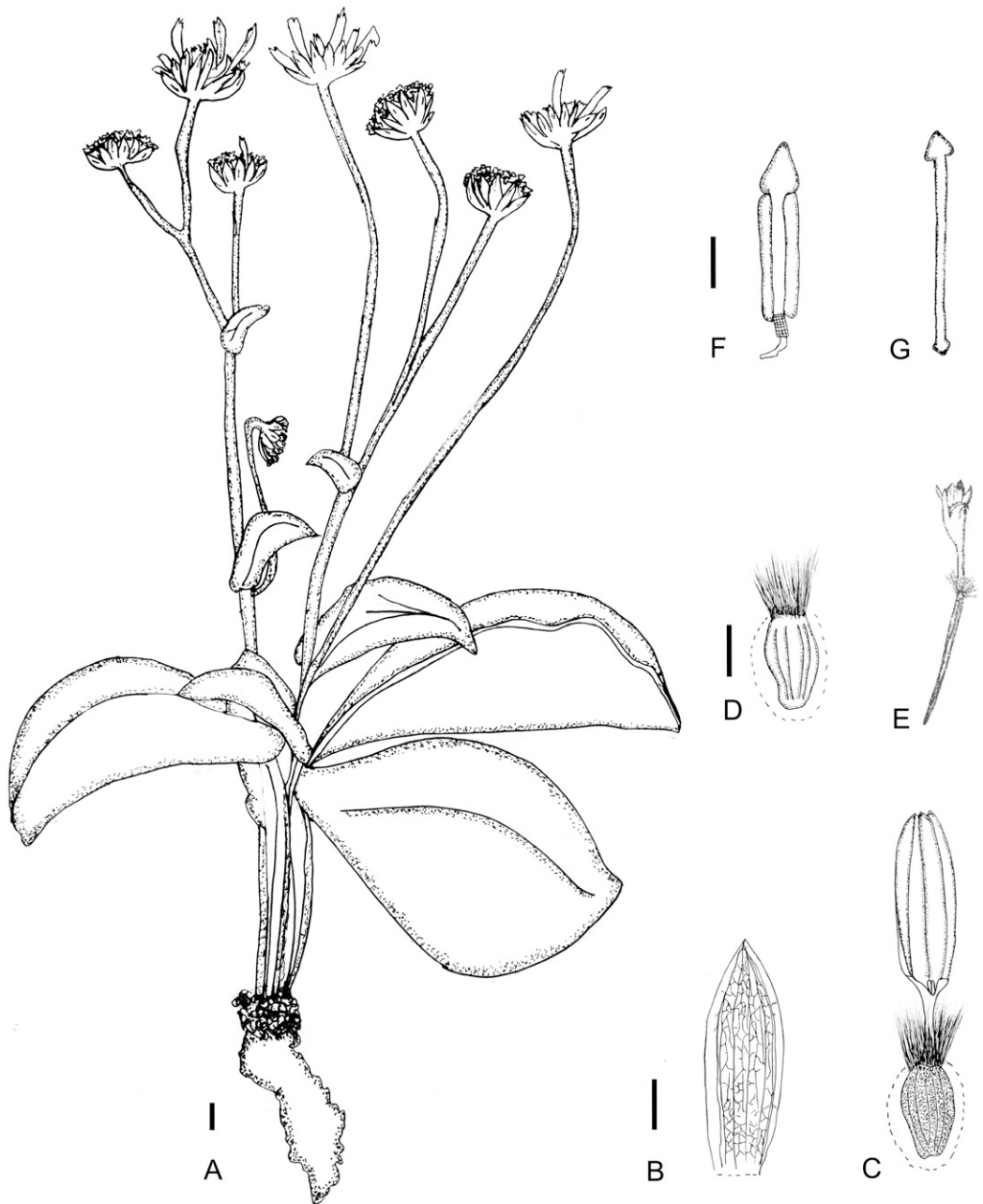


Figure 12. *Othonna lilacina* Magoswana & J. C. Manning. —A. Flowering plant. —B. Involucre bract. —C. Ray floret (broken line indicates mucilage layer after wetting). —D. Cypsela (ray floret). —E. Disc floret. —F. Anther. —G. Style (disc floret). From Hall 575 (NBG). Scale bars: A = 2 cm; B–E = 1 mm; F, G = 500 μ m. Drawings by L. Magoswana.

6424 (NBG). **3219 (Wuppertal)**: Alpha (–AA), 28 July 1963, Barker 9909 (NBG); Niewoudt Pass (–AC), 29 Aug. 2016, Jakoet & Magee 50 (NBG).

9. *Othonna macrophylla* DC., Prodr. [A. P. de Candolle] 6: 480. 1838. TYPE: South Africa. [Northern Cape], “in Africa ad Klein Namaqualand,”

s.d., C. F. Drège [2870 pp.] [2 sheets] (holotype, G-DC image!; possible isotypes, P-0004820 [3 sheets] image!, HAL image!, K [barcode] 000307000 image!).

Othonna ovalifolia Hutch., Ann. S. African Mus. 9: 409. 1917, syn. nov. TYPE: South Africa. Western Cape, Kamiesberg

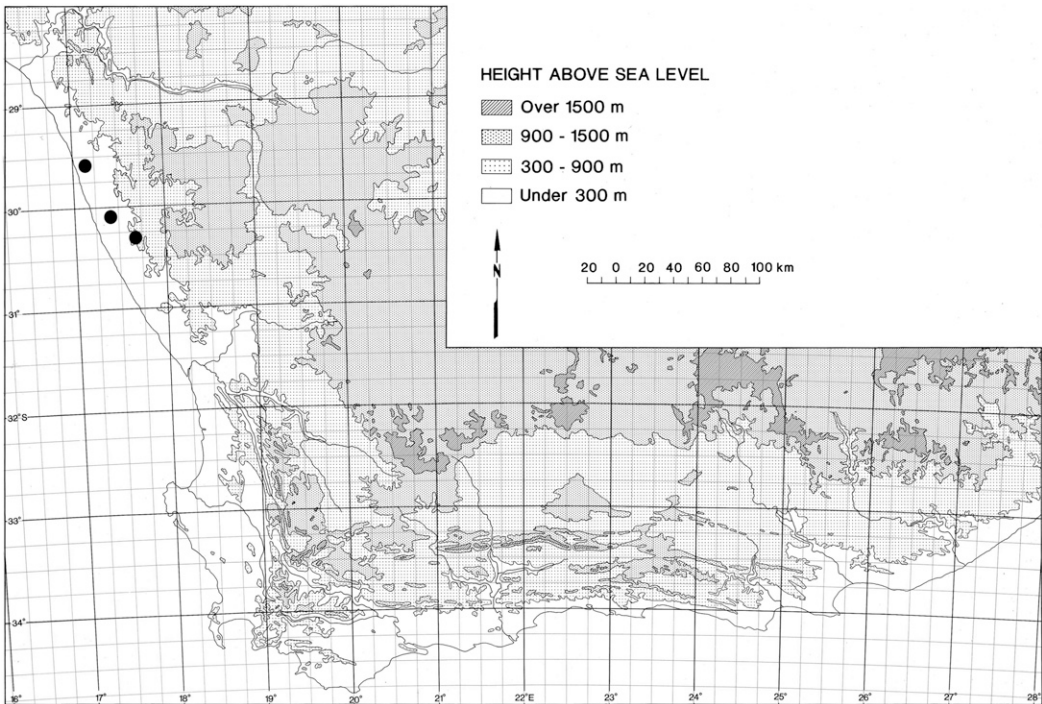


Figure 13. Distribution of *Othonna lilacina* Magoswana & J. C. Manning.

(3018): Kamiesberg, among rocks near summit of Beacon Hill 2, (–AC), 15 Sep. 1911, *H. H. W. Pearson 6670* (lectotype, designated here, K image!; isolecotype, SAM!). [Note: We select the collection at K as lectotype as most likely representing the original material seen by Hutchinson whose herbarium and types are at K (Stafleu & Cowan, 1981)].

Deciduous geophyte, 12–60 cm high, with short underground stem branching shortly above ground level, branches erect to suberect, glabrous in axils; stem glabrous; rootstock oblong or turnip-shaped. Leaves crowded basally, erect to suberect, sessile, 5–30 × 5–15 cm, blade ovate-elliptic, margins sparsely denticulate or coarsely runcinate; leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 5–15 × 2–6 cm, uppermost leaves lanceolate to elliptic, 0.5–3 × 0.2–1 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 10–20 mm diam., involucre bracts 12 or 13, elliptic, 8–10 × 1–2 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 3–5 mm, limb lanceolate to elliptic, 6–8 × 2–3 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to obovoid, 4–7 × 1–2 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 5–7 mm, beige. Disc florets numerous, corolla tube 1–2 mm, lobes lanceolate

to ovate, 0.6–1 mm; filaments 1.8–2 mm; ovary 4–6.5 mm; style simple and cone-tipped; pappus of ± 10 bristles united basally.

Distribution and ecology. *Othonna macrophylla* is restricted to the western escarpment of the Northern Cape, from the Richtersveld south to Nuwerus, at elevations above 500 m (Fig. 15); it is found on rocky granite slopes, usually on cooler slopes or sheltered among boulders. Flowering occurs from July to September.

Discussion. *Othonna macrophylla* is recognized by its large, sessile leaves, 50–300 mm long, with denticulate or coarsely runcinate margins (Fig. 3B) and capitula in lax corymbs, with 12 or 13 involucre bracts. *Othonna oleracea* from the Cederberg and adjacent mountains has large, petiolate leaves (Fig. 3F) and ray florets with a characteristically long corolla tube, 5–6 mm. *Othonna petiolaris*, from the Western Cape south of Nuwerus, has lacerate to lyrate, petiolate leaves with sinuate margins (Fig. 3D), and just eight or nine involucre bracts.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **2817 (Richtersveld):** Vioolsdrif (–AC), 28 Aug. 1925, *Marloth 12695* (PRE). **2917 (Springbok):** Karrasberg (–AD), 16 June 1995, *Bruyns 6345* (BOL); Klipfontein-kop (–BA), 27 Aug. 1935, *Compton 5429* (NBG); Steinkopf, 8 km W of Bulletrap (–BC), 13 July 2006, *Bruyns 10479* (NBG); 14 mi. (23 km) W of Springbok (–DA), s.d., *Acocks*

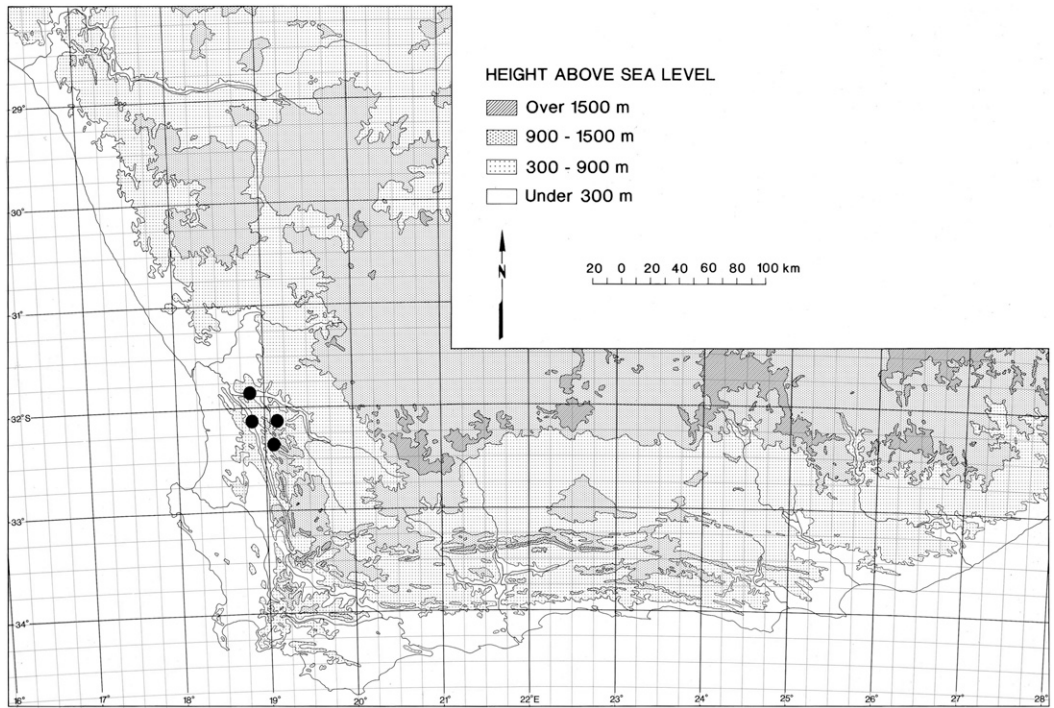


Figure 14. Distribution of *Othonna lyrata* DC.

19258 (PRE); 27 km W of Springbok (–DA), 4 July 1987, *Bruyns 2684* (NBG); Spektakel (–DA), 25 Aug. 1941, *Esterhuysen 5874* (BOL); W Springbok, Naries guest farm near viewpoint (–DA), 22 Aug. 2012, *Koekemoer 4333* (PRE); top of Spektakel Pass (–DA), 24 Sep. 2015, *Manning & Magoswana 3551* (NBG); Hester Malan Nature Reserve (–DB), 2 June 1985, *Struck 9* (NBG). **3017 (Hondeklipbaai)**: Skilpad Wildflower Reserve (–BB), 4 Aug 1996, *Cruz 152* (NBG); 1 Sep. 1956, *Barker 8630* (NBG); Kamieskroon, Skilpad Wildflower Reserve (–BB), 13 July 1993, *Funk & Koekemoer 12645* (PRE); Brakdam (–BD), 24 July 1941, *Compton 11094* (NBG); 4 Sep. 1945, *Compton 17912* (NBG); 24 July 1941, *Esterhuysen 5438* (BOL); 3 Sep. 1951, *Maguire 960* (NBG); ± 1 km N of Darter’s grave betw. Garies & Kamieskroon (–BD), 23 Sep. 2015, *Manning & Magoswana 3544* (NBG). **3018 (Kamiesberg)**: Eselsfontein (–AC), 5 Sep. 1950, *Compton 22059* (NBG); Kamiesberg near Rooiberg (–AC), 10 June 1980, *Esterhuysen 35452* (BOL); Kamiesberg, Sneeuwkop (AC), 14 Oct. 1928, *Hutchinson 886* (BOL); Garies, Keurbos (–CB), 15 July 2006, *Bruyns 10492* (NBG). **3117 (Lepelfontein)**: E of Katdoringvlei (–BB), 8 Sep. 1994, *Bruyns 6152* (BOL); Toringberg, 27 km W of Bitterfontein, Louisfontein 44 (–BB), 18 June 2009, *Helme 6340* (NBG). Western Cape. **3118 (Vanrhynsdorp)**: Kamkas (–AA), 11 Sep. 1911, *Pearson 6824* (BOL); 8 Sep. 1994, *Bruyns 6149* (BOL); betw. Bitterfontein & Garies (–AB), 23 July 1941, *Esterhuysen s.n.* (BOL); Garies (–AB), 24 July 1941, *Esterhuysen 5428* (BOL); Karee Berge (–AB), 21 July 1896, *Schlechter 8250* (BOL).

10. *Othonna nigromontana* Magoswana & J. C. Manning, sp. nov. TYPE: South Africa. Western Cape, Oudtshoorn (3322); Swartberg Pass, Prince

Albert, (–AC), 8 May 1938, *R. H. Compton 7137* (holotype, NBG!).

Diagnosis. *Othonna nigromontana* Magoswana & J. C. Manning is distinguished by its characteristic foliage, the blade obovate-spatulate, mostly with a single subulate lobe or tooth on each side in the lower half, and elongated peduncles with solitary terminal capitulum. The style of the disc florets is purple at the tip.

Deciduous geophyte, 30–40 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; root-stock not seen. Leaves crowded basally, erect to spreading, 3–7 × 0.8–4 cm, base narrowed and petiole-like, blade obovate-spatulate, with 1 or 2 small subulate lobes on lower 1/2 of blade, lobes 0.3–0.5 × 0.1–0.3 cm, acuminate, blade margins obscurely and sparsely denticulate, leathery to subsucculent, glabrous, stems otherwise leafless apart from a few reduced lanceolate to elliptic bracts 1–5 × 1–2 mm. Inflorescence of 1 capitulum, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 7–10 mm diam., involucre bracts 7 or 8, oblanceolate to elliptic, 6–10 × 1–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 7 or 8, corolla tube 2–4 mm, limb elliptic-ovate, 8–10 × 2–4 mm; ovary oblong to oblanceolate, appressed-puberulous with twin hairs; style branching shortly above mouth of tube. Cypselae not seen (pappus of flowers 3–5 mm,

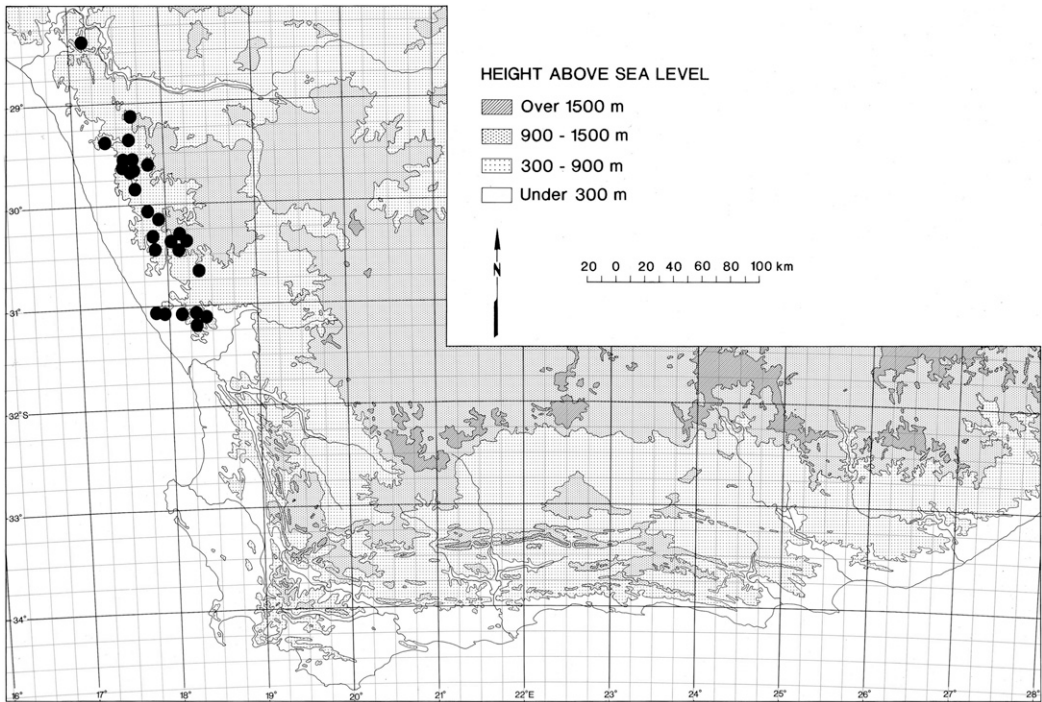


Figure 15. Distribution of *Othonna macrophylla* DC.

beige). Disc florets numerous, corolla tube 0.5–1 mm, lobes lanceolate to ovate, 0.4–1 mm; filaments 1–2 mm; ovary narrowly ellipsoid, 2–4 mm, glabrous; style evidently purple-tipped; pappus of ± 10 barbellate bristles united basally. Figure 16.

Distribution and ecology. *Othonna nigromontana* is known only from the type collection from elevations of 750 m in the Swartberg in Western Cape, evidently along the Swartberg Pass (Fig. 11). Flowering occurs in May, possibly after fire.

Discussion. *Othonna nigromontana* is recognized by the obovate-spatulate leaves, mostly with a single subulate lobe or tooth on each side in the lower half where it narrows to the subpetiolate base, and elongate peduncles with a solitary terminal capitulum with seven or eight involucre bracts that are more or less free to the base but adherent in the basal third to half (Fig. 16). The style of the disc florets is apparently purple at the tip, a condition unique in the group. *Othonna nigromontana* is named for the Swartberg Mountains, its only known locality.

11. *Othonna oleracea* Compton, J. S. African Bot. 8: 268. 1942. TYPE: South Africa. Western Cape, Worcester (3319): “Ceres, Karoo Poort,” (–BC), 25 Aug. 1935, R. H. Compton 6438 (holotype, NBG!; isotype, PRE image!).

Deciduous geophyte, 25–35 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock obconical. Leaves crowded basally, spreading, conspicuously petiolate, petiole 2–6 cm, blade obovate, 3–15 \times 2–9.5 cm, margins entire or sometimes dentate to lobed, leathery to succulent, glabrous, upper leaves sessile and sometimes clasping, 1.5–4 \times 0.5–2 cm, uppermost leaves lanceolate to elliptic, 0.5–1.5 \times 0.1–0.5 cm. Inflorescence of 1 capitulum, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 10–20 mm diam., involucre bracts 12 or 13, elliptic, 8–12 \times 2–4 mm, \pm free to the base but adherent in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 5–6 mm, limb lanceolate to elliptic, 14–16 \times 2–3 mm; ovary oblong to obovoid, appressed-puberulous with white hairs; style branching above mouth of tube. Cypselae oblong to obovoid, 4–7 \times 2–4 mm, densely appressed-puberulous on ribs with nonmyxogenic white, twin hairs; pappus 7–10 mm, beige. Disc florets numerous, corolla tube 2–2.5 mm, lobes lanceolate to ovate, 0.6–1.2 mm; filaments 1.8–2.5; ovary 2–4 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna oleracea* is restricted to the drier western mountains of Western Cape, from the Matsikamma through the eastern Cederberg to Karooport, at elevations above 500 m (Fig. 17); it is

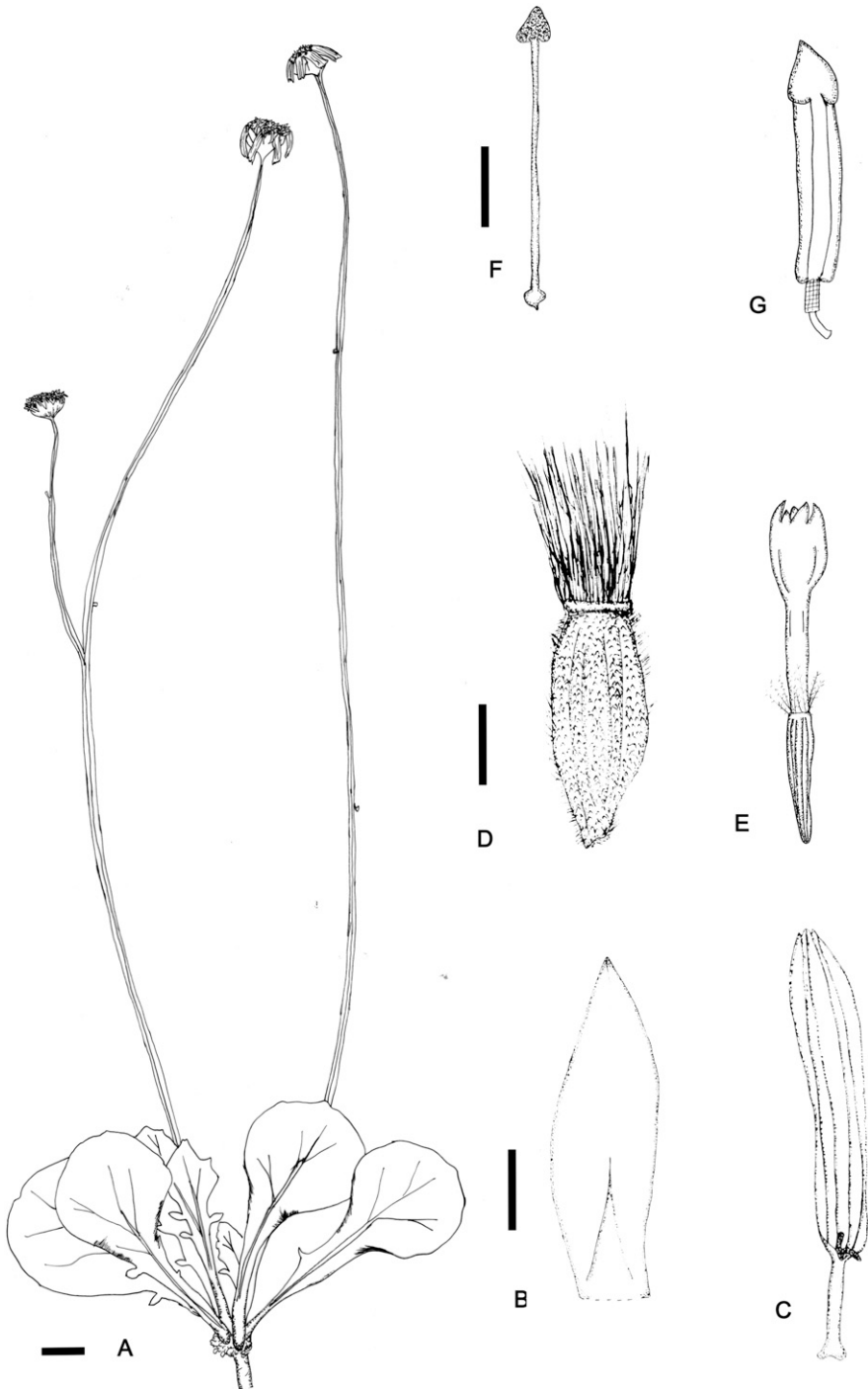


Figure 16. *Othonna nigromontana* Magoswana & J. C. Manning. —A. Flowering plant. —B. Involucre bract. —C. Ray floret. —D. Cypselum (ray floret). —E. Disc floret. —F. Style (disc floret). —G. Anther. From *Compton 7137* (NBC). Scale bars: A = 20 mm; B–E = 2 mm; F, G = 500 μ m. Drawings by L. Magoswana.

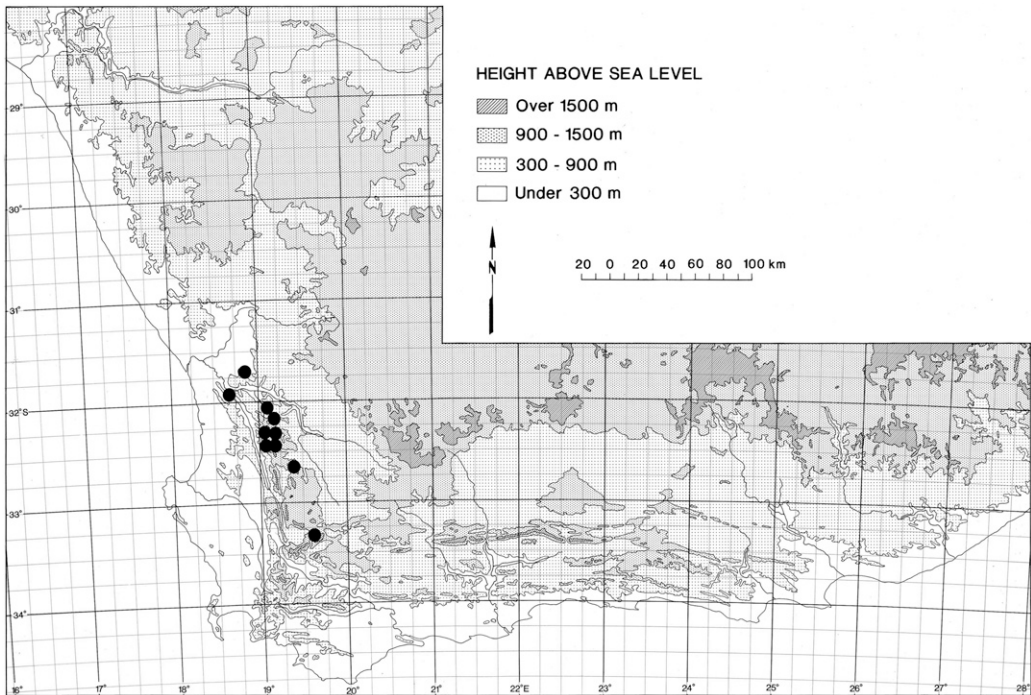


Figure 17. Distribution of *Othonna oleracea* Compton.

found on sheltered, stony slopes. Flowering occurs from July to September.

Discussion. *Othonna oleracea* is recognized by its large, petiolate leaves with obovate blades up to 15.5×9.5 cm (Fig. 3F) and capitula with 12 or 13 involucre bracts and ray florets, the latter with a characteristically long corolla tube, 5–6 mm. The cauline leaves are glabrous in the axils. *Othonna petiolaris*, also with large, petiolate leaves, has capitula with just eight or nine involucre bracts and rays, and *O. macrophylla* has sessile leaves. *Othonna oleracea* can also sometimes be confused with *O. bulbosa*, but that species has smaller leaves up to 14×5.5 cm, thinly cobwebbed in the axils.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3118 (Vanrhynsdorp):** betw. Klawer & Vanrhynsdorp, on roadside (–DC), 18 Aug. 2015, Manning & Magoswana 3522 (NBG). **3219 (Wuppertal):** Klipfonteinrand (–AA), 13 Sep. 1947, Barker 4723 (NBG); Citadel Kop (–AA), 8 Sep. 1953, Compton 24292 (NBG); near Wuppertal to Clanwilliam (–AC), Oct. 1900, Bolus 9034 (BOL); rd. going from Wuppertal to Eselbank (–AC), 29 Sep. 2007, Ebrahim CR2625 (NBG); along rd. to Wuppertal, \pm 5 km N of Eselbank (–AC), 23 June 2016, Koopman 1275 (NBG); 6.2 mi. (10 km) from turnoff from Clanwilliam/Calvinia rd. (–AC), 24 Aug. 1967, Thomson 341 (NBG); Matjiesrivier Nature Reserve, Klein Kromrivier (–CB), 28 Aug. 1999, Low 4660 (NBG). **3319 (Worcester):** Karooport (–BC), 25 Aug. 1935, Compton 6438 (NBG); 27 July 1941, Compton 11163 (NBG); 30 June 1940, Compton 8602 (NBG).

12. *Othonna petiolaris* DC., Prodr. [A. P. de Candelolle] 6: 480. 1838. TYPE: South Africa. [Northern Cape], “in Klein Namaqualand” [Bei Mierenkasteel, s.d., C. F. Drège [2870 pp.] (holotype, G-DC microfiche!; isotypes, HAL image!, K [barcode] 000306999 image!, SAM!).

Deciduous geophyte, 20–50 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock conical or oblong. Leaves crowded basally, spreading, conspicuously petiolate, petiole 2–10 cm, blade oblong to ovate, $5\text{--}34 \times 3\text{--}26$ cm, margins lacerate, leathery to subsucculent, glabrous, upper leaves sessile or sometimes petiolate, $4\text{--}11 \times 1.5\text{--}3.5$ cm, uppermost leaves lanceolate to elliptic, $0.5\text{--}2.8 \times 0.2\text{--}0.5$ cm. Inflorescence of 1 to 4 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 8–15 mm diam., involucre bracts 8 or 9, lanceolate to elliptic, $6\text{--}10 \times 1\text{--}2$ mm, \pm free to the base but adherent in basal 1/3 to 1/2. Ray florets 8 or 9, corolla tube 2–4 mm, limb elliptic-ovate, $8\text{--}10 \times 2\text{--}4$ mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to obovoid, $3\text{--}5 \times 1\text{--}2$ mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 4–6 mm, beige. Disc florets numerous,

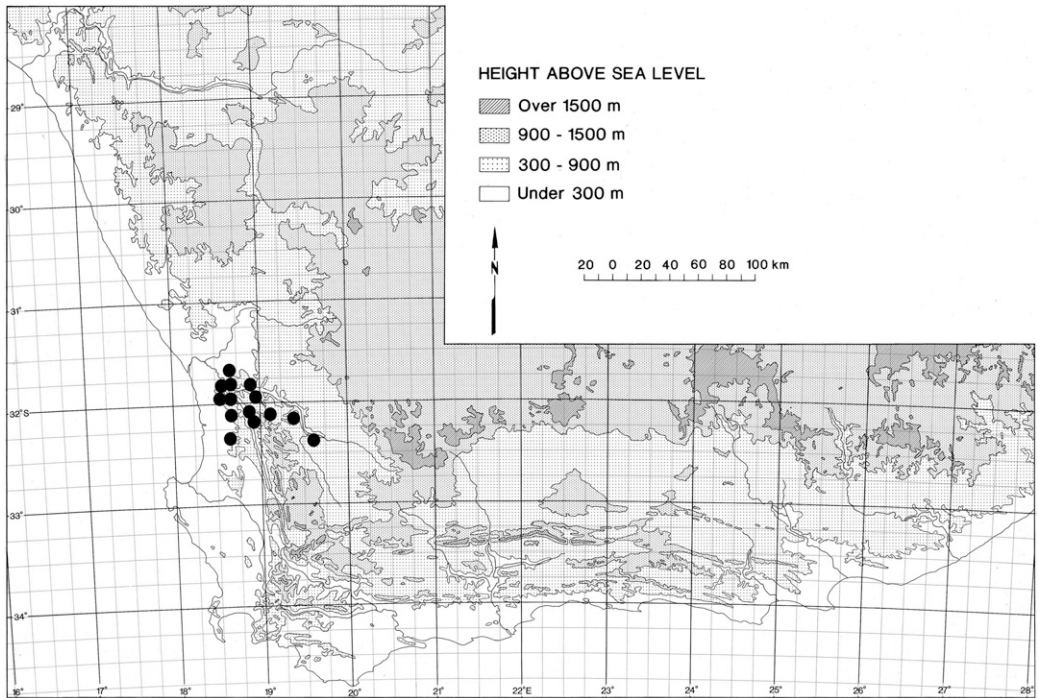


Figure 18. Distribution of *Othonna petiolaris* DC.

corolla tube 1–2 mm, lobes lanceolate to ovate, 0.6–1 mm; filaments 1.5–2.5 mm; ovary 3–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna petiolaris* is restricted to the near interior of the west coast of Western Cape, from the Knersvlakte north of Vanrhynsdorp and the coastal mountains, from the Gifberg to the northern Cederberg (Fig. 18); it is found on sandy flats and slopes above 200 m. Flowering occurs from June to August.

Discussion. *Othonna petiolaris* is recognized by its large, distinctly petiolate basal leaves, more than 30 cm long, with petioles 2–10 cm long and lacerate blades (Fig. 3D), and the capitula in lax corymbs, with just eight or nine involucre bracts. Another large-leaved species, *O. macrophylla* from Namaqualand, has sessile leaves with denticulate margins, and capitula with 12 or 13 involucre bracts.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3118 (Vanrhynsdorp):** 5 km NNE of Douse the Glim rd., 24 km N of Vanrhynsdorp (–DA), 4 Aug. 1977, *Le Roux 2053* (NBG); Heerenlogement (–DC), 21 July 1941, *Compton 10983* (NBG); 21 July 1941, *Esterhuysen 5584* (BOL); Klawer (–DC), 21 June 1953, *Hall 725* (NBG); Gifberg (–DC), 6 Sep. 1994, *Van Zyl 4404* (NBG, PRE); Nardouws plateau, Brakkenfontein (–DD), 3 Sep. 2006, *Helme 4248* (NBG); Farm Nardouw, first farm on top of pass from Clanwilliam, 1 km N of farmhouse (–DD), 1 June 2016, *Koopman 1271* (NBG). **3218 (Clanwilliam):** Clanwilliam (–BA), 20 June 1941, *Compton 10974* (NBG); Olifants River

Barrage (–BC), 23 Aug. 1941, *Compton 11330* (NBG). **3219 (Wuppertal):** Pakhuis Pass, ca. 6 mi. (10 km) from Clanwilliam (–AA), 3 Sep. 1970, *Wisura 1740* (NBG); Middelpas, banks of Bidouw River, 3 mi. (6 km) from Farm Bidouw, on way to Wuppertal (–AB), 8 July 1941, *Leipoldt 3643* (BOL); Brakfontein (–BC), 1 July 1896, *Schlechter 7980* (BOL).

13. *Othonna pinnata* L. f., Suppl. Pl. 387. 1782.
TYPE: South Africa. Western Cape, “Cap. Bonae Spei,” s.d., *C. P. Thunberg s.n.* [UPS-THUNB 20890] (holotype, UPS-THUNB microfiche!; isotype, SBT [2 sheets] image!).

Othonna reticulata DC., Prodr. [A. P. de Candolle] 6: 481. 1838, syn. nov. TYPE: South Africa. Western Cape, Clanwilliam (3218): “in Africâ Capensis ad Clam Williams propè flum. Elephantum,” (–DB), s.d., *C. F. Ecklon* [1427/1567] (holotype, G-DC microfiche!).

Deciduous geophyte, 20–40 cm high, with short underground stem branching shortly above ground level, branches decumbent to suberect; stem glabrous; rootstock turnip-shaped. Leaves crowded basally, erect to spreading, petiolate, petiole 3–11 cm, blade lanceolate to ovate, 1.5–11 × 1–8 cm, pinnatisect or rarely simple or trifid, sometimes varying within a single individual, lobes elliptic to ovate, margins conspicuously hyaline, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 2–4.5 × 0.5–2 cm, uppermost leaves lanceolate to elliptic, 0.5–3 × 0.2–1 cm. Inflorescence of

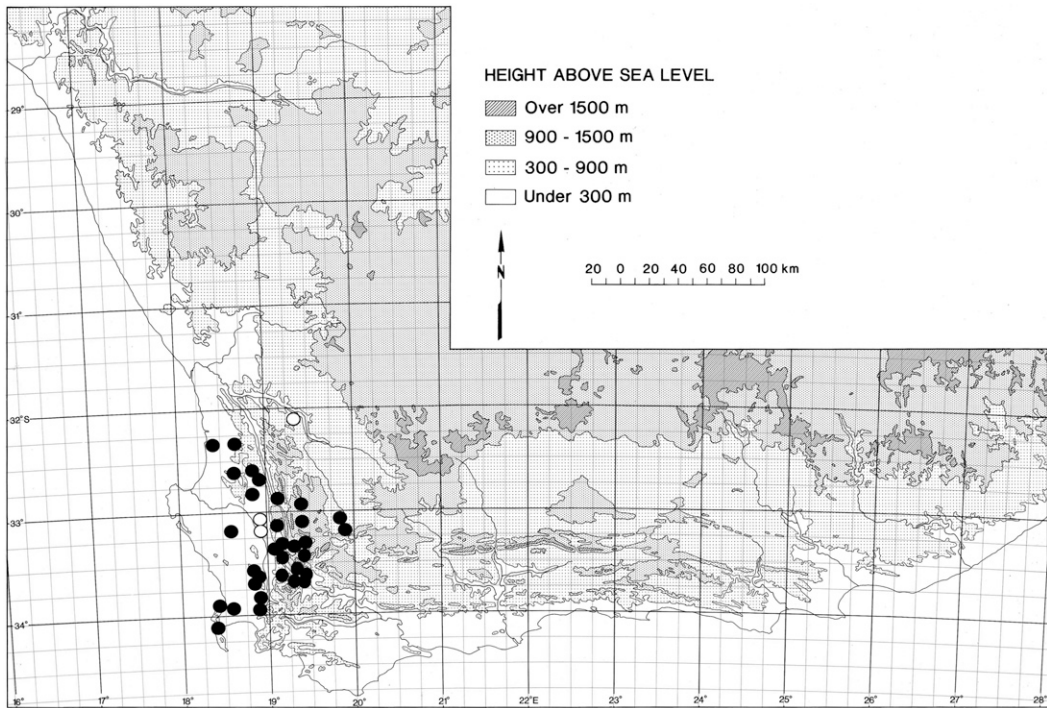


Figure 19. Distribution of *Othonna pinnata* L. F. (closed circle) and *O. tephrosioides* Sond. (open circle).

1 or 2 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 8–15 mm diam., involucre bracts 8 to 13, oblanceolate to elliptic, 8–10 × 2–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 8 to 13, corolla tube 2–4 mm, limb elliptic-ovate, 6–8 × 2–4 mm; ovary oblanceolate, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae obovoid, 3–5 × 1.5–2 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 5–6.5 mm, beige. Disc florets numerous, corolla tube 1–1.5 mm, lobes ovate, 0.5–1 mm; filaments 1.5–2 × 0.2 mm; ovary 3–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna pinnata* is distributed along the west coast and near interior of Western Cape, from the Cederberg to the Cape Peninsula and Worcester (Fig. 19); it is found on sandy flats and gentle slopes, often in seasonally wet areas. Flowering occurs from June to September.

Discussion. *Othonna pinnata* is distinguished by the pinnatisect or rarely simple or trifid, lanceolate to ovate leaves (sometimes varying within a single individual) (Fig. 3J1–J2) with conspicuously hyaline margins, and an inflorescence of one or two heads with eight to 13 involucre bracts each. In its habit and foliage the species resembles *O. tephrosioides*, a species with similar pinnatisect or rarely simple or trifid, lanceolate to ovate leaves,

and an inflorescence with up to three heads but with only seven to 10 involucre bracts. The leaves in *O. tephrosioides* may also be longer, 40–160 mm versus only three collections and its taxonomic status is uncertain (see further discussion under that species).

Additional specimens examined. SOUTH AFRICA. Western Cape. **3218 (Clanwilliam):** Slang Kop (–AD), June 1940, *Compton 8210* (NBG); Piketberg (–BC), 19 July 1941, *Compton 10902* (NBG, PRE); SE end of Piketberg Mtns. (–DA), 28 May 1952, *Esterhuysen 20147* (BOL); Citrusdal, warm baths (–DB), July 1915, *Bolus s.n.* (NBG, PRE); western slopes of Zebra Kop (–DB), 23 May 1948, *Esterhuysen 14497* (BOL, PRE); Versveld Pass (–DD), 17 July 1941, *Esterhuysen 5509* (BOL). **3219 (Wuppertal):** Vredelus (–CC), 2 Sep. 1962, *Esterhuysen 29686* (BOL); Waboomsrivier, Koue-Bokkeveld (–CD), 6 Sep. 1966, *Hanekom 629* (PRE). **3318 (Cape Town):** Klein Swartfontein, Moorreesburg (–BA), 25 Aug. 1970, *Acocks 24317* (PRE); Green Point (–CD), July 1846, *Alexander & Prior s.n.* (PRE); Milnerton (–CD), 29 June 1942, *Barker 1449* (NBG, PRE); Camps Bay (–CD), 14 June 1946, *Barker 4028* (NBG, PRE); Sea Point (–CD), Aug. 1899, *Bolus s.n.* (BOL); 14 June 1946, *Esterhuysen 12850* (PRE); July 1918, *Flanagan s.n.* (PRE); Aug. 1906, *Marloth 6357* (PRE); 24 June 1949, *Morris 124* (NBG, PRE); upper western slopes of Lion's Head (–CD), 27 June 1915, *Pillans s.n.* (BOL, PRE); Camps Bay (–CD), 14 July 1918, *Pillans s.n.* (PRE); Dassenberg (–CD), Sep. 1933, *Pillans 6862* (BOL); Green Point (–CD), July 1846, *Prior s.n.* (PRE); Sea Point (–CD), 31 July 1926, *Smith 2897* (PRE); Dassenberg (–CD), 6 July 1946, *Strey 926* (PRE); Lion's Rump (–CD), July 1897, *Thode 5876* (NBG, PRE); Cape

Town (–CD), Sep. 1881, *Tyson 2332* (NBG, PRE); betw. Salt River & Kalabaskraal, 11 mi. (18 km) from Cape Town (–DA), 4 Sep. 1928, *Hutchinson 157* (BOL, PRE); rd. going up Paardeberg on Farm Modderkloof (–DB), 17 June 1981, *Hugo 2618* (NBG, PRE); Paardeberg, betw. Wellington & Malmesbury, Vlakfontein ± 400 m S of the Perdeberg Dam (–DB), s.d., *Nicholson & Roets 167* (NBG); Vissershoeck (–DC), 21 July 1946, *Leighton 1794* (BOL); Stellenbosch, SW cape former golf course (–DD), 24 Apr. 1963, *Bos 97* (PRE). **3319 (Worcester):** Skilpadrug (–AC), 17 June 1990, *Bruyns 4337* (BOL); S of Tulbagh Rd. Station (–AC), 11 Aug. 1974, *Goldblatt 2312* (PRE); Elandsberg Nature Reserve (–AC), 10 Aug. 2015, *Manning & Magoswana 3510* (NBG), *3511* (NBG); 17 June 2000, *Parker 461* (NBG); Karroo Poort (–AD), Aug. 1930, *Bolus s.n.* (BOL); Ceres, Wolfenhuis 371 Schoonvlei Industrial Area, 4 km outside Ceres (–AD), 20 Aug. 1987, *Cloete & Cillie 62* (NBG); Ezelfontein (–AD), 1 Sep. 1952, *Esterhuysen 20339* (BOL, PRE); flats NW of Prince Alfred's Hamlet (–AD), 27 July 1974, *Oliver 4974* (NBG, PRE); Tafelberg (–BB), 14 Aug. 1955, *Esterhuysen 24399* (BOL); Elands Kloof (–BB), 9 Sep. 1945, *Leighton 1279* (BOL); Bainskloof near Sabastians Kloof (–CA), 25 May 1940, *Esterhuysen 1986* (PRE); Karoo Garden Veld (–CB), 25 July 1977, *Bayer 888* (NBG); Brandvlei Kop (–CB), 2 June 1940, *Compton 8847* (NBG, PRE); Worcester (–CB), 11 May 1947, *Compton 19500* (NBG, PRE); 2 June 1986, *Esterhuysen 1931* (BOL, PRE). **3418 (Simonstown):** Llandudno (–AB), 26 June 1940, *Compton 8891* (NBG).

14. *Othonna rosea* Harv. in Harv. & Sond., Fl. Cap. 3: 341. 1865. TYPE: South Africa. [Northern Cape, Springbok], Modderfontein, s.d., *F. H. Whitehead s.n.* (holotype, TCD image!; isotype, S image!).

Othonna cakilefolia var. *latifolia* DC., Prodr. [A. P. de Candolle] 6: 482. 1838. *Othonna incisa* Harv. in Harv. & Sond., Fl. Cap. 3: 341. 1865. TYPE: South Africa. [Western Cape, Nuwerus], betw. Uitkomst & Geelbeksraal, Aug. 1830, *Drège s.n.* (holotype, G-DC microfiche!; isotype, P image!).

Deciduous geophyte, 14–50 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; root-stock conical or oblong. Leaves crowded basally, suberect to spreading, 4–38 × 1.5–15 cm, base narrowed and petiole-like, blade elliptic to oblanceolate, margins sparsely denticulate to dentate or sharply pinnatifid, lobes deltoid, acute or obtuse, leathery to subsucculent, upper leaves sessile, 3–15 × 1.5–7 cm, uppermost leaves elliptic to linear, 0.4–4 × 0.2–2 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays pink to mauve, disc pink to mauve or rarely yellow. Involucre 7–20 mm diam., involucre bracts 12 or 13, oblanceolate to elliptic, 9–12 × 2–4 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 4–6 mm, limb elliptic to oblanceolate, 10–17 × 2–7 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube.

Cypselae oblong to obovoid, 3–8 × 1–4 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 5–12 mm, beige. Disc florets numerous, corolla tube 1–3 mm, lobes ovate, 0.5–2 mm; filaments 2–4 mm; ovary 4–13 mm; style simple and conepipped; pappus of ± 10 barbellate bristles, united basally.

Distribution and ecology. *Othonna rosea* is endemic to the mountains of Namaqualand in Northern Cape, from the Richtersveld along the western escarpment and Kamiesberg south to Nuwerus in Western Cape (Fig. 20); it is found on stony slopes and rock crevices at elevations below 1000 m. Flowering occurs from May to August.

Discussion. *Othonna rosea* is recognized by the sparsely denticulate to dentate or sharply pinnatifid leaves 4–38 × 1.5–15.5 cm, capitula with eight to 13 involucre bracts, pink to mauve florets, and pappus bristles 5–12 mm long. It is one of just three species in the genus with pink to magenta rays. Forms of *O. rosea* with large, dentate leaves resemble another Namaqualand species, *O. macrophylla*, but that species has yellow florets and consistently 12 or 13 involucre bracts.

Othonna rosea as circumscribed here is a vegetatively variable species. Based on the limited collections available to him at the time, Harvey (1865) distinguished plants with coarsely toothed leaves as *O. incisa* and those with more or less entire leaves as *O. rosea*. The two species were subsequently united by Manning and Goldblatt (2010). Reviewing the situation, we are able to distinguish two sets of populations. One, matching the type of *O. incisa*, has capitula with eight or nine involucre bracts and variable foliage, the northern populations around Steinkopf with obscurely toothed leaves and those from further south with variously toothed to pinnatifid leaves. The three populations with mature fruit that we were able to examine had nonmyxogenic cypselae. The second group of populations, matching the type of *O. rosea*, has 12 or 13 involucre bracts, and the four collections we have been able to examine had myxogenic cypselae. However, among these populations, two collections (from near Springbok) with 10 or 11 involucre bracts (*Hall 26970*, NBG, PRE; *Pillans 6819*, NBG) and evidently nonmyxogenic cypselae were observed. In addition, a collection (*Bolus 9596*, BOL) with usually eight or nine involucre bracts was seen to occasionally have a head on a plant with 12 bracts and nonmyxogenic cypselae.

Until the situation is fully investigated we continue to treat them as a single variable species.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **2817 (Vioolsdrif):** Vioolsdrif (–CB), 24 Sep. 1987, *Van Zyl & Jurgens 22915* (PRE); Perdewater (–CC),

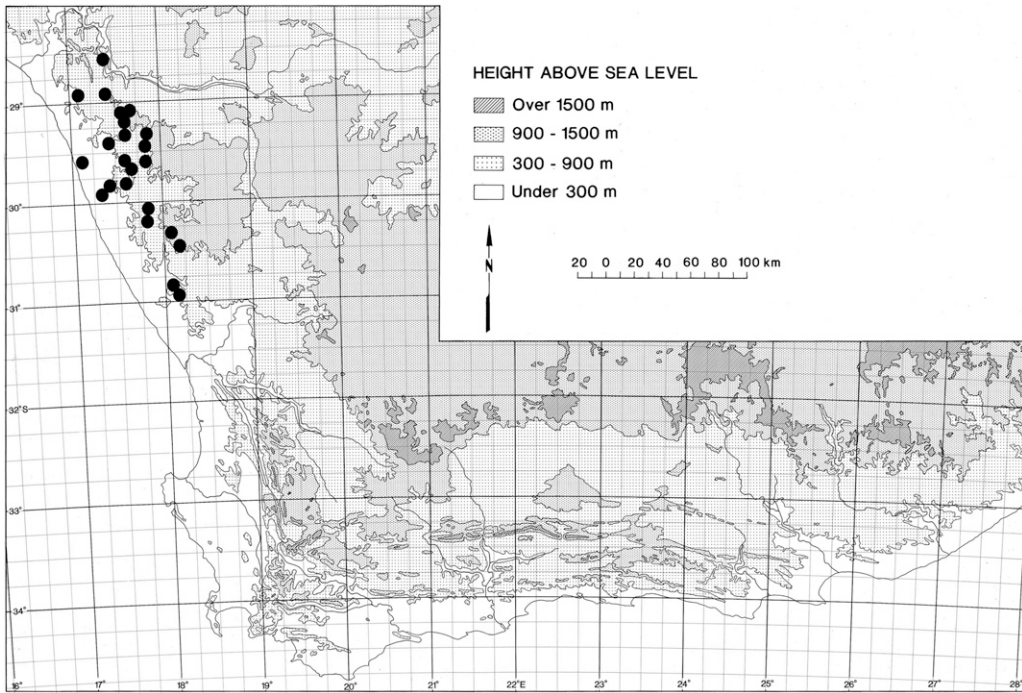


Figure 20. Distribution of *Othonna rosea* Harv.

11 July 1997, *Bruyns* 7268 (NBG); ca. 6 mi. (10 km) W of Stinkfontein (–CD), 19 July 1970, *Wisura* 1647 (NBG). **2917 (Springbok)**: Karasberg (–AD), 16 July 1995, *Bruyns* 6344 (BOL); Klipfontein (–BA), 29 Aug. 1955, *Compton* 5563 (NBG); Steinkopf, Anenus Pass (–BA), 30 May 1954, *Hall* 910 (NBG), 11 June 1954, *Hall* 903 (NBG), 14 June 1956, *Hall* s.n. (BOL), 26 June 1967, *Hall* 2435 (NBG); near Klipfontein (–BA), Aug. 1929, *Pillans* 6819 (BOL); 30 mi. (48 km) SW of Springbok (–BA), 23 July 1948, *Reynolds* 5444 (PRE); Steinkopf (–BA), 23 Aug. 1983, *Van Wyk* 6198 (PRE); Steinkopf (–BC), Aug. 1925, *Marloth* 6762 (BOL, NBG); Steinkopf, 8 km W of Bulletrap (–BD), 13 July 2006, *Bruyns* 10478 (NBG); on N7 to Bulletrap rd., W of Bulletrap, on rd. to Waalheuwel (–BD), 13 May 2005, *Harrower* 1500 (NBG); Groot Mist (–CA), 9 June 1956, *Hall* 605/52 (BOL); 19 mi. (30 km) S of Port Nolloth near Groot Mist (–CA), 16 June 1956, *Hall* 26970 (BOL, PRE); Kourkamma Mtns. (–CD), 11 July 1989, *Bruyns* 3876 (BOL); hills N of Komaggas (–CD), 5 July 1991, *Bruyns* 4614 (BOL); 50 km N of Springbok, 10 km W of foot of Spektakel Pass (–DA), 4 July 1987, *Bruyns* 2705 (NBG); 10 km S of Nigramoep, Grace's Puts 201 (–DA), 6 July 2013, *Helme* 8007 (NBG); Spektakel Pass, W of Springbok (–DB), 15 May 2003, *Manning* 2923 (NBG); Messelspad Pass (–DC), 23 July 1948, *Compton* 20672 (NBG); Wildepaardehoek, Messelspad Pass (–DC), 13 Aug. 2009, *Koekemoer* 3765 (PRE). **3017 (Hondeklipbaai)**: 7 mi. (11 km) S of Kamieskroon (–BB), 1 July 1935, *Salter* 5568 (BOL); Kamieskroon, Skilpad Wildflower Reserve (–BB), 13 July 1993, *Van Rooyen* 2553 (PRE). **3018 (Kamiesberg)**: Kamiesberg, N end of Rooiberg (–AC), 10 June 1980, *Esterhuysen* 3553 (BOL); Rusbospoort on the Farm Domsland (–AC), 3 June 1980, *Hall* 4932 (NBG); Stofkraal (–CC), 24 Aug. 1991, *Bruyns* 4755 (BOL); Bruinberg (–CC), 10 Sep. 1992, *Bruyns*

5322 (BOL); Stinkfontein, Garies (–CC), Aug. 1925, *Marloth* 6720 (PRE).

15. *Othonna rotundiloba* DC., Prodr. [A. P. de Candolle] 6: 481. 1838. TYPE: South Africa. Western Cape: “in Africae Capensis Klein Namaqualand [between Heerenlogementsberg and Knakkiesberg],” s.d., *C. F. Drège* [2871] (holotype, G-DC microfiche!).

Othonna sonchifolia DC., Prodr. [A. P. de Candolle] 6: 482. 1838, nom. illeg., non *Othonna sonchifolia* L., Sp. Pl. 2: 924. 1753. TYPE: South Africa. Western Cape, Cape Town (3318): “Africae Capensis distri. Stellenbosch,” (–DD), s.d., *C. F. Ecklon* [418] (holotype, G-DC microfiche!; isotype, SAM!).

Othonna papaveroides Hutch., Ann. S. African Mus. 9: 414. 1917, syn. nov. TYPE: South Africa. Western Cape, Vanrhynsdorp (3118): “Giftberg,” (–DC), Sep. 1911, *E. P. Phillips* 7397 (lectotype, designated here, K image!; isolectotype, SAM!).

Deciduous geophyte, 20–40 cm high, with short subterranean stem branching shortly above ground level, branches suberect to flexuous; stem glabrous; rootstock conical or oblong. Leaves crowded basally, spreading, conspicuously petiolate, petiole 2–6 cm, blade lanceolate, 6–21 × 1.5–7.5 cm, pinnatisect, lobes quadrate to rounded, leathery to subsucculent, sometimes with 1 or 2 upper leaves or these lacking, uppermost leaves lanceolate, 0.2–0.5 × 0.1–0.2 cm.

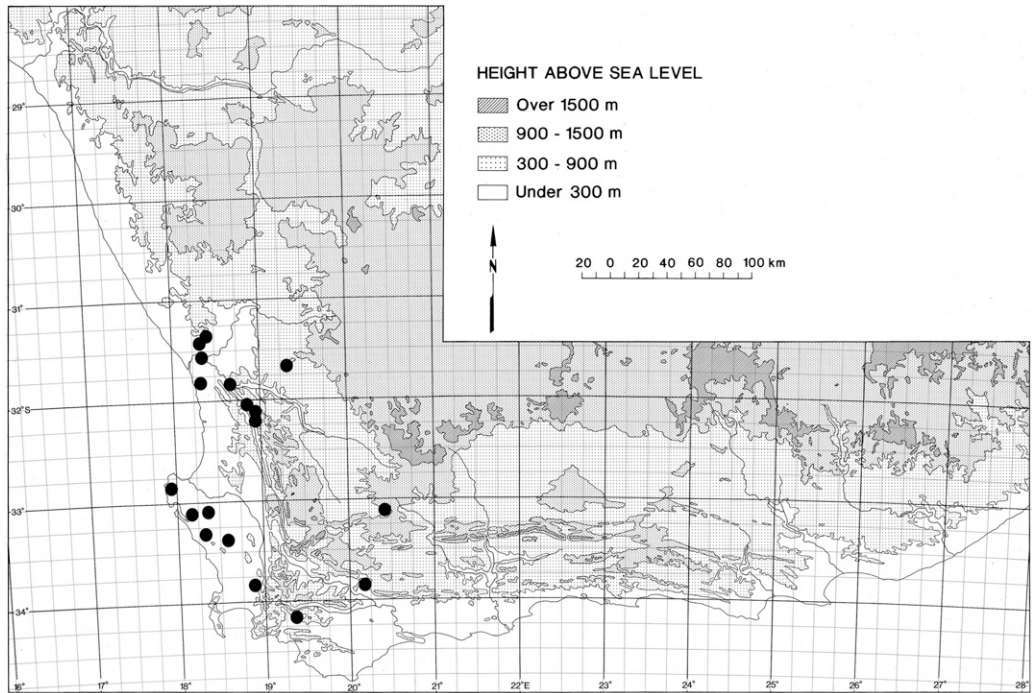


Figure 21. Distribution of *Othonna rotundiloba* DC.

Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 10–20 mm diam., involucre bracts 7 to 9, oblong to lanceolate, 5–10 × 2–4 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 7 or 8(9), corolla tube 2–4 mm, limb elliptic-ovate, 5–8 × 3–5 mm; ovary oblong, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong, 6–8 × 2–4 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 8–12 mm, beige. Disc florets numerous, corolla tube 1.5–2 mm, lobes lanceolate to elliptic, 0.8–1.5 mm; filaments 2–2.5 mm; ovary 5–7 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna rotundiloba* is distributed along the west coast and near interior of South Africa, mostly from Vredendal south to Darling eastward to Caledon Swartberg and Montagu in Western Cape, with an isolated record on the Bokkeveld Plateau at Kliprug southwest of Calvinia in the Northern Cape (Fig. 21); it is found on sandy soils or granite outcrops from near sea level to above 600 m. Flowering occurs from July to September.

Discussion. *Othonna rotundiloba* is characterized by its deeply pinnatisect leaves with quadrate lobes equally spaced along the axis (Fig. 3E), and solitary or

few capitula with eight or nine involucre bracts and ray florets. *Othonna petiolaris* has pinnatifid leaves with the lobes not clearly separated and capitula in lax corymbs.

This species has been known until now under the illegitimate homonym *Othonna sonchifolia* DC. (Magoswana et al., 2017). *Othonna papaveroides* Hutch. (1917), from the Gifberg, matches *O. rotundiloba* in its pinnatisect leaves with quadrate lobes and seven or eight involucre bracts and is relegated to synonymy.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3119 (Calvinia):** Kliprug (–CB), 4 July 1994, Bruyns 6058 (BOL). Western Cape. **3118 (Vanrhynsdorp):** Farm “Kliphoek” ca. 15 mi. (24 km) SW of Vredendal (–AD), 12 Aug. 1970, Hall 3747 (NBG); Vredendal, 10 km SE of Doringbaai, Kliphoek 397 (–AD), 23 July 2006, Helme 4449 (NBG); Gifberg (–CB), 6 Sep. 1994, Van Zyl 4403 (NBG); 13 km SW of Doringbaai toward Lamberts Bay (–CC), 10 Sep. 1980, Van Jaarsveld 5698 (NBG); Nardouw (–DC), 6 Sep. 1933, Salter 3654 (BOL). **3217 (Vredenburg):** Vredenburg (–DD), 6 July 1962, Barker 9682a (NBG). **3218 (Clanwilliam):** Langekloof (–BB), 5 July 1896, Schlechter 8032 (BOL, PRE); Boschklouf (–BB), 6 Aug. 1896, Schlechter 8430 (BOL); Pakhuis Pass, on byroad past Soldaatkop (–BB), 7 July 1984, Taylor 10976 (NBG, PRE). **3318 (Cape Town):** Ackers Farm, Langebaan (–AA), 25 July 1970, Axelson 255 (NBG); Hopefield (–AB), Sep. 1912, Kensit s.n. (BOL); betw. Hopefield & Darling (–AB), 3 Sep. 1944, Leighton 630 (BOL); Darling Flora Reserve (–AD), 28 June 1956, Rycroft 1929 (NBG); betw. Mamre & Darling (–BC), 5 Aug. 1940, Bolus s.n. (BOL); Koperfontein (–DD), 3 Sep. 1944, Compton 15963

(NBG). **3320 (Montagu)**: hill ca. 5 mi. (8 km) E of Montagu (-CC), July 1918, *Mitchell 16164* (BOL). **3419 (Caledon)**: Swartberg (-AB), July 1892, *Guthrie 2492* (BOL).

16. *Othonna sinuata* Magoswana & J. C. Manning, sp. nov. TYPE: South Africa. Western Cape, Clanwilliam (3218): hills above Aurora, (-CB), 8 Aug. 1962, *W. F. Barker 9726* (holotype, NBG!).

Diagnosis. *Othonna sinuata* Magoswana & J. C. Manning is recognized by oblanceolate leaves narrowed to a petiole-like base, with sinuate margins and sometimes pubescent on the midvein, and the 7 or 8 involucre bracts. It has been treated in *O. bulbosa* L. in the past, but that species has mostly larger capitula with 12 or 13 involucre bracts.

Deciduous geophyte, 39–50 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock obovoid or turnip-shaped. Leaves crowded basally, erect to spreading, 6–14 × 1.5–4 cm, base narrowed and petiole-like, blade oblanceolate to elliptic, margins sinuate or sometimes incised, leathery to subsucculent, glabrous or sometimes pubescent on midvein, upper leaves sessile and sometimes clasping, 3–11 × 0.5–2.5 cm, uppermost leaves lanceolate to elliptic, 0.3–1 × 0.1–0.6 cm. Inflorescence of 1 capitulum, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 8–15 mm diam., involucre bracts 7 or 8, oblanceolate to elliptic, 6–9 × 1–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 7 or 8, corolla tube 2–4 mm, limb elliptic-ovate, 8–10 × 2–4 mm; ovary oblong to oblanceolate, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae ellipsoid to obovoid, 4–6 × 1–3 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 4–6 mm, beige. Disc florets numerous, corolla tube 0.5–1.5 mm, lobes lanceolate to ovate, 0.4–1 mm; filaments 1–2 mm; ovary narrowly ellipsoid, 3–6 mm, glabrous; pappus of ± 10 barbellate bristles united basally. Figure 22.

Distribution and ecology. *Othonna sinuata* is known only from two collections from the Piketberg and the adjacent Olifants River Mountains along the west coast of Western Cape (Fig. 23); it is found on sandy flats at elevations below 500 m. Flowering occurs from May to September.

Etymology. *Othonna sinuata* is named for the sinuate leaf margins.

Additional specimen examined. SOUTH AFRICA. Western Cape. **3218 (Clanwilliam)**: Citrusdal, warm baths (-DB), July 1915, *Bolus s.n.* (NBG).

17. *Othonna stenophylla* Levyns, J. S. African Bot. 7: 143. 1941, as nom. nov. pro. *Othonna linifolia* L. f., Suppl. Pl.: 388. 1782, nom. illeg., non *O.*

linifolia Burm. f., Fl. Ind. (N. L. Burman): 29. 1768. TYPE: South Africa. Western Cape: “Cape Bonae Spei,” s.d., *C. P. Thunberg s.n.* [33] (lectotype, designated here, LINN-HLI038-18 image!; isolectotype, SBT image!). [Note: We select the collection at LINN as the lectotype as most likely representing the original material seen by Linnaeus f., whose herbarium is partly at LINN (Stafleu & Cowan, 1981)].

[*Othonna linifolia* var. *laminata* Schltr, nom. inval. ms: *Schlechter 7848* (HBG image!, K image!, PH image!), *Harvey s.n.* (TCD image!).]

Deciduous geophyte, 19–40 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock turnip-shaped. Leaves crowded basally, erect to spreading, conspicuously petiolate, petiole wiry, 3–7 cm, blade ovate to linear, 2–11 × 0.2–1 cm, margins entire, leathery to subsucculent, glabrous, upper leaves sessile or sometimes petiolate, 1.5–9 × 0.2–0.4 cm, uppermost leaves narrowly elliptic to linear, 0.3–2 × 0.1–0.3 cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 5–10 mm diam., involucre bracts 8 or 9, lanceolate to elliptic, 5–7 × 2–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 8 or 9, corolla tube 2–3 mm, limb elliptic-ovate, 8.5–9.5 × 1.5–2 mm; ovary oblanceolate to obovoid, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae obovoid, 3–5 × 1–2 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 3–4 mm, beige. Disc florets numerous, corolla tube 0.9–1.5 mm, lobes ovate, 0.5–1 mm; filaments 1–1.5 mm, ovary 2–4 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna stenophylla* is common along the coastal plain of the Western Cape from Porterville to the Cape Peninsula and Cape Flats, extending into the upper Breede River Valley to Worcester and along the southern coast near Bredasdorp and south of Riversdale (Fig. 24); it is found on damp, sandy flats and shallow seasonal marshes. Flowering occurs from May to September.

Discussion. *Othonna stenophylla* is readily recognized by linear to ovate leaves with long, wiry petioles; and small, radiate heads, the involucre 5–10 mm diam., with eight or nine involucre bracts. It is restricted to seasonally marshy or inundated flats. *Othonna linearifolia* is from sandy coastal flats and also has linear or linear-lanceolate leaves but has disciform capitula.



Figure 22. *Othonna sinuata* Magoswana & J. C. Manning. —A. Flowering plant. —B. Leaf. —C. Involucral bract. —D. Ray floret. —E. Disc floret. —F. Cypsela (ray floret). —G. Style (disc floret). —H. Anther. From *Barker 9726* (NBG). Scale bars: A, B = 1 cm; C–F = 1 mm; G, H = 500 μ m. Drawings by L. Magoswana.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3318 (Cape Town)**: 4 km N of Hopefield at Otterhoek along Souttrivier [Salt River] (–AB), 27 July 2002,

Helme 2482 (NBG); Yzerfontein (–AC), 12 Sep. 1945, *Compton 17380* (NBG); Rondeberg farm (–AD), July 2000, *Manning s.n.* (NBG); Darling Flora Reserve (–AD), 24 May 1956, *Winkler 95*

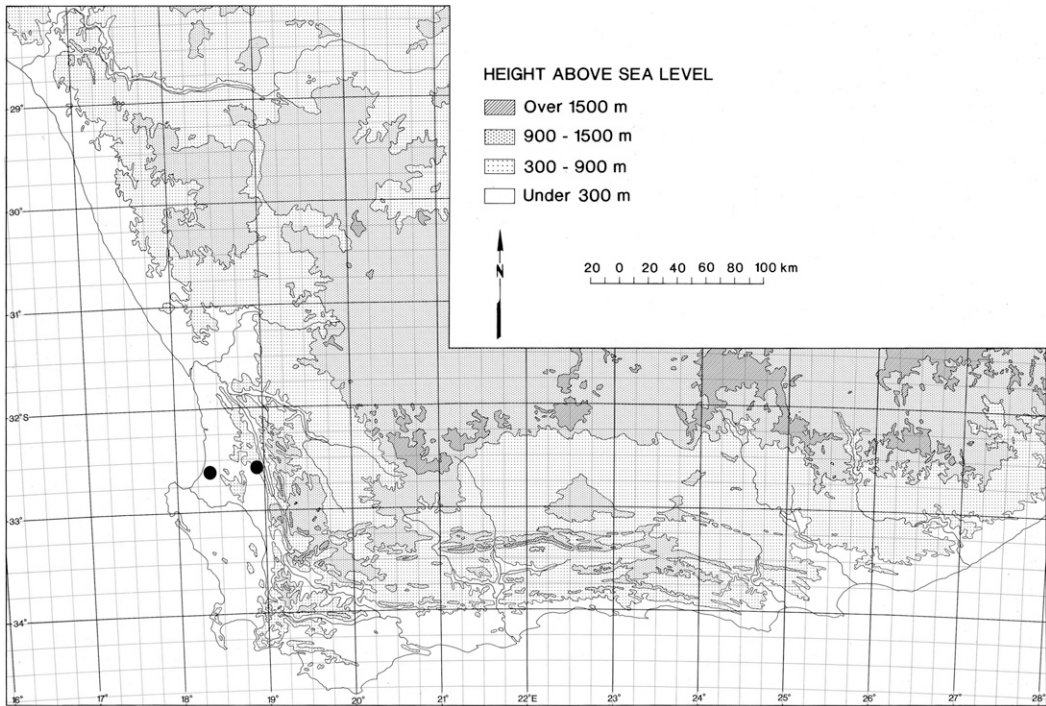


Figure 23. Distribution of *Othonna sinuata* Magoswana & J. C. Manning.

(NBC); 25 June 1956, *Winkler 102* (NBC); Riverlands (–BC), 8 Sep. 1990, *Bruyns 4358* (BOL); Mamre Hills (–BC), 22 Sep. 1942, *Compton 13760* (NBC); Riverlands (–BC), 9 Sep. 1983, *Esterhuysen 36057* (BOL); 2 km E of Mamre Rd. Station (–BC), 14 July 1976, *Goldblatt 3569* (PRE); Mamre Rd. (–BC), 31 Aug. 1944, *Leighton 569* (BOL, PRE); Cape Town (–CD), June 1882, *Bolus 114* (BOL); Kenilworth near Cape Town (–CD), Aug. 1894, *Bolus 3256* (BOL, PRE), Aug. 1896, *Bolus 7950* (BOL); betw. Kraaifontein & Durbanville (–CD), 1 June 1942, *Bolus s.n.* (BOL); Kenilworth Racecourse (–CD), 1 July 1941, *Bond 1233* (NBC); Cape Flats near Raapenberg (–CD), 6 June 1890, *Guthrie 536* (BOL); 25 mi. (40 km) from Cape Town along the Malmesbury Rd. (–CD), Aug. 1932, *Lavis s.n.* (BOL); Kenilworth Racecourse (–CD), 5 July 1903, *Phillips 188* (NBC); western edge of Dassenberg (–DA), 28 June 1979, *Boucher 4384* (PRE); betw. Kraaifontein & Durbanville (–DC), 14 June 1942, *Bolus s.n.* (NBC); flats near Rondebosch (–DC), 7 Aug. 1895, *Flanagan 212* (PRE); Klipfontein, Malmesbury (–DC), 16 Sep. 1982, *Van Zyl 3244* (NBC, PRE); near Groenfontein, Klapmuts (–DC), 15 Sep. 1983, *Van Zyl 3491* (NBC, PRE); Doornhoogte (–DC), s.d., *Zeyher 3042* (PRE). **3319 (Worcester)**: 3 km NW of Tulbagh (–AC), 19 Aug. 1998, *Bruyns 4340* (BOL); Elandsberg Nature Reserve, middle rd. (–AC), 10 Aug. 2015, *Manning & Magoswana 3512* (NBC); Piketberg Rd. (–AC), 21 June 1896, *Schlechter 7848* (PRE); Worcester Commonage (–CB), 30 Aug. 1985, *Bayer 4856* (NBC); near Worcester (–CB), 4 Aug. 1949, *Steyn 201* (NBC). **3418 (Simonstown)**: Muizenberg (–AB), 6 July 1924, *Levyns s.n.* (BOL); Fishhoek (–AB), June 1920, *Page 16523* (BOL); Steenberg (–AB), 30 June 1918, *Pillans 3119* (BOL, PRE); Cape Flats (–BA), s.d., *Marloth 8659* (PRE); Wynberg Flats (–BA), 14 Jan. 1847, *Prior s.n.* (PRE); Fish Hoek rd. at Kommetjie turning (–BB), 10 June 1947, *Barker 4581* (NBC); strand to Gordon's Bay (–BB), 31 July 1948,

Parker 4330 (NBC). **3420 (Bredarsdorp)**: Rietfontein (–CA), 11 Aug. 1983, *Esterhuysen 36016* (PRE). **3421 (Riversdale)**: Brandfontein (–DD), 10 Aug. 1983, *Esterhuysen 35978* (BOL, PRE).

18. *Othonna tephrosioides* Sond. in Harv. & Sond., Fl. Cap. 3: 344. 1865. TYPE: South Africa. Western Cape, Wuppertal (3219): “Matjiesfontein,” (–AB), s.d., *C. L. P. Zeyher 999* (lectotype, designated here, SAM!; isolectotype, BM image!, BOL!, K image!). [Note: We select as lectotype the collection at SAM as the most complete, including vegetative and reproductive material].

Deciduous geophyte, 20–40 cm high, with short underground stem branching shortly above ground level, branches decumbent to suberect; stem glabrous; root-stock turmp-shaped. Leaves crowded basally, erect to spreading, petiolate, petiole 2–6 cm, blade lanceolate to ovate, 4–16 × 1–6 cm, pinnatisect or rarely simple or trifid, lobes lanceolate to oblanceolate or linear, margins conspicuously hyaline, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 2–6 × 1–3 cm, uppermost leaves lanceolate to linear, 0.4–2 × 0.1–0.4 cm. Inflorescence of 1 to 3 capitula, sometimes with lateral axes; terminal internode 10–60 mm, glabrous. Capitula radiate, rays and disc yellow. Involucre 8–15 mm diam., involucre bracts 7 to 10, oblanceolate to elliptic, 6–8 × 1–3 mm, ± free

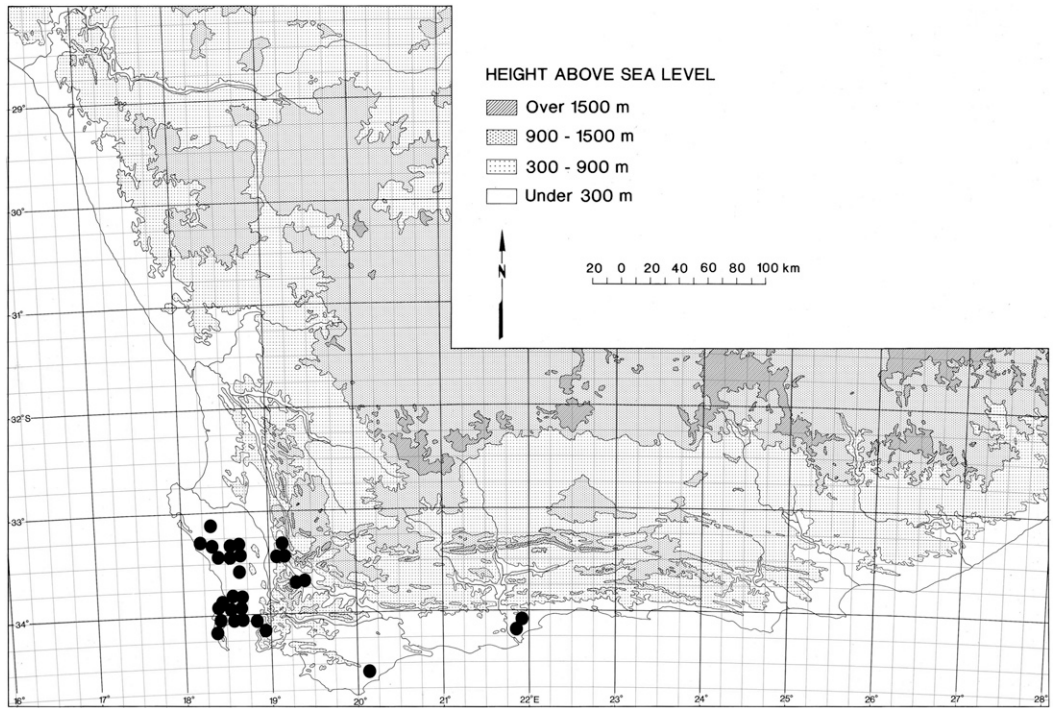


Figure 24. Distribution of *Othonna stenophylla* Levyns.

to the base but adherent in basal 1/3 to 1/2. Ray florets 7 or 8, corolla tube 2–3 mm, limb elliptic-ovate, 5–9 × 2–3 mm; ovary oblong to oblanceolate, appressed-puberulous with twin hairs; style branching shortly below mouth of tube. Cypselae oblong to oblanceolate, 4–6 × 1–2 mm, densely appressed-puberulous on ribs with myxogenic, white, twin hairs; pappus 2–5 mm, beige. Disc florets numerous, corolla tube 0.9–1.5 mm, lobes lanceolate to ovate, 0.4–0.8 mm; filaments 1–1.6 mm; ovary 1.5–2 mm, glabrous; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna tephrosioides* is a poorly collected species known with certainty only from between Piketberg and Porterville, and from the eastern Cederberg in Western Cape. The type locality Matjiesfontein refers to the farm of that name in the eastern Cederberg (Fig. 19); *O. tephrosioides* is found on seasonally wet, gravelly flats. Flowering occurs from July to September.

Discussion. *Othonna tephrosioides* is distinguished by its pinnatisect or rarely simple or trifid, lanceolate to ovate leaves with conspicuously hyaline margins, and an inflorescence of up to three capitula with seven to 10 involucre bracts each. *Othonna tephrosioides* can be confused with *O. pinnata*, with which it shares pinnatisect or rarely simple or trifid, lanceolate to

ovate leaves but can be distinguished by the fewer involucre bracts, seven to 10, and inflorescence of up to three capitula versus an inflorescence of one or two capitula and involucre bracts eight to 13 in *O. pinnata*.

This species is vegetatively indistinguishable from *Othonna pinnata*, and it is possible that they are not distinct as we are unable to see any differences between them except the more branched inflorescence with up to three heads in *O. tephrosioides* and a tendency for slightly more numerous involucre bracts. Until the situation is fully investigated we continue to treat them as distinct.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3318 (Cape Town):** near Piketberg (–BB), 30 July 1937, *Marloth 1227/37* (BOL, NBG); Porterville (–BB), 20 Aug. 1894, *Schlechter 4896* (BOL, PRE).

II. *Othonna* ser. *Perfoliatae* Magoswana & J. C. Manning, ser. nov. TYPE: *Othonna perfoliata* (L. f.) Jacq.

Diagnosis. This series can be distinguished from the other series of the *Othonna bulbosa* group by the following combination of characters: well-developed aerial stem sparsely branched in upper 1/2, scandent or sometimes erect; leaves all cauline and sessile, clasping; capitula radiate with yellow florets; and pappus bristles 4–20 mm long.

19. *Othonna perfoliata* (L. f.) Jacq., Pl. Rar. Hort. Schoenbr. 2: 61, t. 240. 1797. *Cineraria perfoliata*

L. f., Suppl. Pl.: 375. 1782. *Doria perfoliata* (L. f.) Thunb., Nov. Gen. Pl. 12: 164. 1800. *Othonna perfoliata* (L. f.) Sch. Bip. in Flora 27(2): 769. 1844, comb. superfl. TYPE: South Africa. s. loc., s.d., *C. P. Thunberg s.n.* (lectotype, designated by Manning & Goldblatt [2010: 39], LINN1000.32!).

Othonna filicaulis Jacq., Pl. Rar. Hort. Schoenbr. 2: 62, t. 241. 1797. TYPE: illustration in Jacq., Pl. Rar. Hort. Schoenbr. 2: 62, t. 241. 1797 (lectotype, designated by Manning & Goldblatt [2010: 39]). EPITYPE: designated here, South Africa, Western Cape, Michell's Pass, below Rooi Kraans Peak, 2 Aug. 1967, *J. P. Rourke 792* (epitype, NBG!).

Othonna amplexifolia DC., Prodr. [A. P. de Candolle] 6: 480. 1838. TYPE: South Africa. [Western Cape], Paarl, [31 Aug. 1827], *C. F. Drège [6063]* (holotype, G-DC microfiche!; isotypes, HAL image!, K image!, P image!).

Deciduous geophyte, 14–70 cm high, with well-developed aerial stem sparsely branched in upper 1/2, straggling or sprawling among vegetation; stem usually glabrous but sometimes puberulous in basal 1/2; rootstock obovoid or turnip-shaped. Leaves cauline, evenly scattered along upper part of stem, 1–12 × 0.4–8 cm, base of stem leafless, sessile, spreading, clasping, blade lanceolate to ovate, margins entire, sometimes undulate, leathery to subsucculent, glabrous, upper leaves 1–5.5 × 0.5–4 cm, uppermost lanceolate to linear, 0.5–4 × 0.2–3 cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula radiate, rays and disc yellow. Involucre 10–30 mm diam., involucre bracts 8 or 9, lanceolate to elliptic, 7–9 × 2–4 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 8 or 9, corolla tube 2–4 mm, limb elliptic-ovate, 7–9 × 2–3 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly above mouth of tube. Cypselae oblong to obovoid, 2–5 × 0.5–2 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 4–8 mm, beige. Disc florets numerous, corolla tube 2–4 mm, lobes ovate, 0.5–1 mm; filaments 1–2 mm; ovary, 2–4 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna perfoliata* is relatively widely distributed through the extreme southwestern part of Western Cape, from southern Namaqualand and the Bokkeveld Escarpment along the west coast inland to near Matjiesfontein (Fig. 25); it is found on sandstone flats and slopes at elevations below 1000 m. Flowering occurs from May to September.

Discussion. *Othonna perfoliata* is vegetatively similar to *O. undulosa*, sharing with it the characteristic scandent habit and sessile, amplexicaul leaves but is

readily distinguished by the radiate capitula with fewer involucre bracts, eight or nine versus 10 or 12, and cypselae with a shorter pappus, 4–8 mm. *Othonna rufibarbis* has erect to suberect branches, radiate capitula with 12 or 13 involucre bracts, and cypselae with a dark red pappus 5–10 mm long.

Confusion as to application of the name *Othonna perfoliata* began with Linnaeus f. (1781), who, in the protologue of *Cineraria perfoliata*, cited two specimens housed in the LINN herbarium with different capitula, one radiate and the other disciform, but made no mention of the capitulum condition in his description. Jacquin (1797) subsequently applied the name to a flowering plant with conspicuously radiate capitula and described a second and similar taxon under the name *O. filicaulis*, describing the capitula of this species as radiate but illustrating a plant with apparently disciform capitula, accompanied by a detailed drawing of a detached and clearly radiate peripheral floret. Later authors, misled by the illustration of the whole plant, applied the name *O. filicaulis* to disciform plants despite the clear reference to the radiate condition in the protologue and in the detail of a detached ray floret. Manning and Goldblatt (2010) restored the application of the name to the radiate taxon and we designate an epitype here to fix this application. The disciform taxon is correctly known as *O. undulosa*.

Additional specimens examined. SOUTH AFRICA. Northern Cape. **3017 (Hondeklipbaai):** 4 km NW of Sandkraal farmhouse, 15 km SE of Koopskop, Farm Zandkraal 434, on Bitterivier (–DC), 26 July 2007, *Helme & Koopman 4742* (NBG). **3119 (Calvinia):** Cloudskraal (–AB), 6 June 1929, *Mostert 2162/27* (BOL); Oorlogskloof Nature Reserve, 15 km SSW of Nieuwoudtville, Grid E13 (–AC), 6 June 1995, *Pretorius 245* (NBG); Skerpioensberg (–BB), 29 June 1956, *Taylor 1649* (NBG). Western Cape. **3118 (Vanrhynsdorp):** Knersvlakte, Rooiberg (–AB), 18 Aug. 1999, *Desmet 23* (NBG); Matsikammaberg W of Sewefontein (–DB), 12 July 1974, *Thompson 2054* (NBG). **3218 (Clanwilliam):** Bulshoek Barrage, Olifants River (–BB), 22 Aug. 1950, *Middlemost 1590* (NBG); Olifants River valley near Bulshoek (–CB), 2 Aug. 1999, *Goldblatt & Manning 11082* (NBG); Olifants River (–DA), 16 Apr. 1949, *Esterhuysen 17561* (BOL); top of Piketberg (–DA), 25 Sep. 1949, *Martin 242* (NBG); 12 Sep. 1951, *Martin 864* (NBG); Piketberg plateau (–DA), 27 July 1963, *Thompson 763* (NBG); [Citrusdal], warm baths (–DB), 8 July 1935, *Compton 5374* (NBG); Kaptein's Kloof (–DC), 5 Sep. 1955, *Van Niekerk s.n.* (BOL). **3219 (Wuppertal):** Pakhuis (–AA), 23 Aug. 1941, *Esterhuysen 5917* (BOL); N of Cederberg, rock edge E of Kliphuis Peak (–AA), 28 Sep. 1983, *Taylor 10710* (NBG); upper slopes of Suurvlak-se-kop next to Venterberg (–AA), 23 June 1984, *Taylor 10970* (NBG); Nieuwoudt Pass (–AC), 13 Aug. 1969, *Barker 9896* (NBG); Cederberg Mtns. (–AC), 25 June 1942, *Esterhuysen 7911* (BOL); Wuppertal, NW of village (–AC), 6 June 1973, *Taylor 8498* (NBG); Dwarsrivierberg (–CA), 2 June 1984, *Taylor 10932* (NBG); Gonnafontein (–CB), 23 May 2000, *Pond UP77* (NBG). **3318 (Cape Town):** Camps Bay (–CD), Aug. 1897, *Thode*

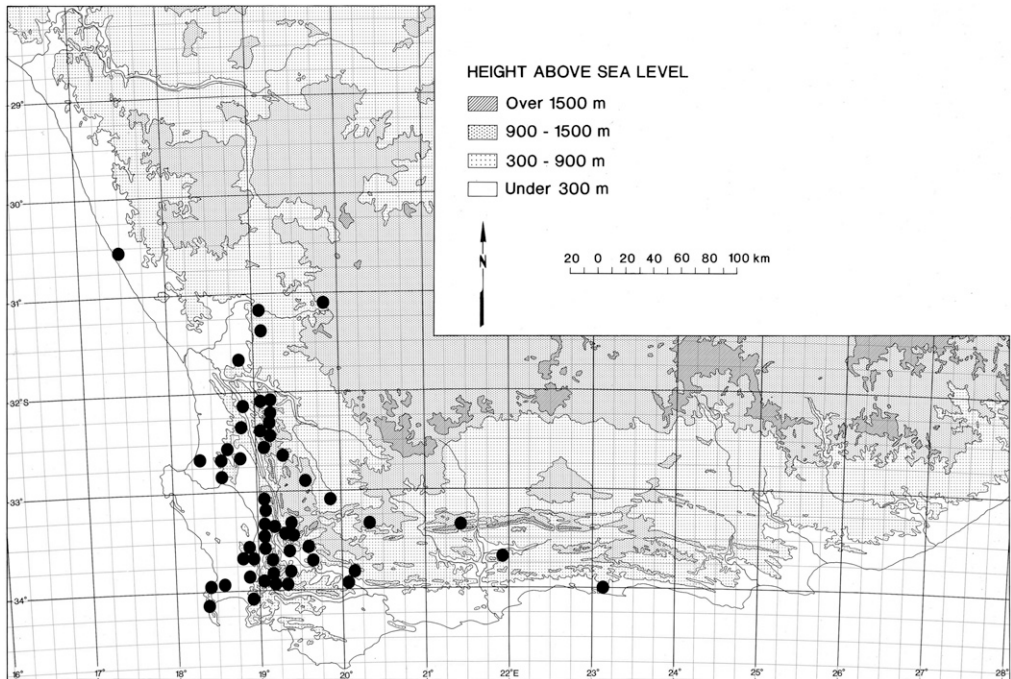


Figure 25. Distribution of *Othonna perfoliata* (L. f.) Jacq.

5875 (NBG); Paardeberg, Theronkloof, \pm 700 m N of base of kloof (–DB), 27 June 2011, *Nicolson & Roets* 127 (NBG); Paardeberg (–DB), 5 Aug. 1935, *Pillans* 7647 (BOL); Jonkershoek, Stellenbosch (–DD), 26 June 1965, *Kerfoot* K5200 (NBG); Kanonkop summit (–DD), 16 Oct. 1977, *Taylor* 9711 (NBG). **3319 (Worcester)**: Inkruij, Witzenberg (–AA), 1 Oct. 1954, *Esterhuysen* 23482 (BOL); Saron (–AA), 23 June 1896, *Schlechter* 7883 (BOL); Elandskloof (–AC), 3 Oct. 1940, *Compton* 9683 (BOL, NBG); Tulbagh Rd. (–AC), May 1893, *Guthrie* 3039 (BOL); Tulbagh Waterfall (–AC), 16 Sep. 1928, *Hutchinson* 390 (BOL); Ezelsfontein (–AD), 1 Sep. 1952, *Esterhuysen* 20360 (BOL); Ceres Nature Reserve (–AD), 13 Sep. 2000, *Koekemoer & Funk s.n.* (PRE); Ceres (–AD), Aug. 1925, *Marloth* 12198 (PRE); on side of national rd. (N1) (–BB), 18 Aug 2015, *Manning & Magoswana* 3529 (NBG); Bainskloof (–CA), 12 July 1948, *Compton* 18004 (NBG); Witte River Valley (–CA), 2 June 1946, *Esterhuysen* 12819 (BOL); Bainskloof (–CA), 29 May 1946, *Fairall* NBG 474/39 (NBG); 14 Sep. 1928, *Gillett* 137 (NBG); July 1940, *Keis* 48 (NBG); 29 May 1946, *Leighton* 1697 (BOL, NBG); 6 Sep. 1967, *Marsh* 4 (NBG); Wolwenkloofbos Reserve (–CA), 8 June 1969, *Stehle* TS262 (NBG); Rawsonville, “Gevonden” farm stall, (–CA), 28 July 1962, *Walters* 659 (NBG); 25 May 1940, *Esterhuysen* 1985 (BOL); Audensberg (–CB), 9 May 1954, *Esterhuysen* 22905 (BOL); Du Toit’s Kloof (–CC), 20 Aug. 1953, *Compton* 24121 (NBG); Bergriver (–CC), June 1915, *Du Plessis* 229/14 (BOL); Haalhoek, Sneeuwkop (–CC), 24 May 1953, *Esterhuysen* 21400 (BOL); Stettynsberg (–CD), 31 July 1949, *Esterhuysen* 15591 (BOL); Karoo National Botanical Gardens (–CD), 30 June 1958, *Willemse* 8 (NBG); Hex River (–DA), 21 June 1953, *Esterhuysen* 21587 (BOL); Doringkloof farm, southern foothills of Voetpadsberg (–DA), 8 June 1985, *Van Wyk* 2373 (NBG). **3320 (Montagu)**: Tweeside 151, S of railway line (–AD), 10 Aug. 1988, *Le*

Roux 3707 (NBG); Cogman’s Kloof (–CC), 4 July 1938, *Levyns* 6450 (BOL); Montagu (–CC), July 1942, *Levyns* 8925 (BOL); Cogman’s Kloof (–CC), 5 May 1949, *Morris* 176 (BOL, NBG). **3321 (Ladismith)**: Ladismith (–AD), 2 May 1965, *Bayliss* 2816 (NBG); Noukloof Nature Reserve (–DB), 8 July 1982, *Laidler* 89 (NBG). **3418 (Simons-ton)**: Witsand (–AB), 5 Oct. 1992, *Daines* 1398 (NBG); Panaroma (–BB), 4 July 1976, *Neethling s.n.* (NBG).

20. *Othonna rufibarbis* Harv. in Harv. & Sond., Fl. Cap. 3: 341. 1865. TYPE: South Africa. Eastern Cape, Port Elizabeth (3325), “Hills at Addo, Uitenhage,” (–BD), s.d., *C. L. P. Zeyher* 3041 (lectotype, designated here, K-K000307005 image!; isolectotypes, P image!, S image!, SAM!). [Note: We select the collection at K as lectotype as it is the one most likely to have been seen by Harvey with the original collection details in his hand. The collection matches the description by Harvey, which describes the basal leaves on long petioles and pubescent cypselae with a deep red pappus].

Deciduous geophyte, 16–40 cm high, with above-ground stem sparsely branched in upper 1/2, branches erect to suberect; stem glabrous; rootstock obovoid to turnip-shaped. Leaves cauline, sparse above, spreading, sessile, clasping, 3–7 \times 1–3 cm, blade elliptic to oblanceolate or ovate, margins entire or undulate, leathery to subsucculent, glabrous, upper leaves

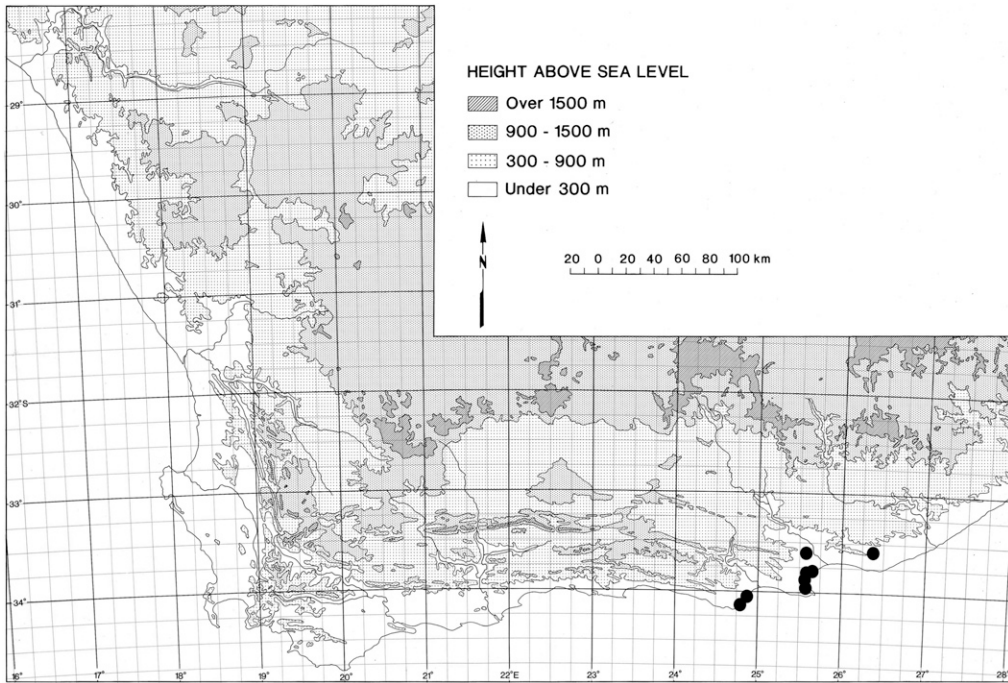


Figure 26. Distribution of *Othonna rufibarbis* Harv.

1.5–5 × 1–3 cm, uppermost leaves oblanceolate to elliptic, 0.5–1.5 × 0.2–1 cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula radiate, rays yellow sometimes flushed red beneath, disc yellow. Involucre 8–25 mm diam., involucre bracts 12 or 13, lanceolate to elliptic, 10–13 × 1–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Ray florets 12 or 13, corolla tube 3–5 mm, limb oblanceolate to oblong, 9–12 × 2–3 mm; ovary oblong to obovoid, appressed-puberulous with twin hairs; style branching shortly above mouth of tube. Cypselae oblong to obovoid, 5–7 × 1–2 mm, densely appressed-puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 5–10 mm, dark red. Disc florets numerous, corolla tube 1–3 mm, lobes ovate, 0.5–1 mm; filaments 2–3 mm; ovary 4–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna rufibarbis* is a poorly collected species endemic to the south coast from Jeffreys Bay to Port Elizabeth and Grahamstown in Eastern Cape (Fig. 26); it is found on sandy coastal flats at elevations below 100 m. Flowering occurs from April to July.

Discussion. *Othonna rufibarbis* is characterized by its strictly cauline, sessile foliage and radiate capitula with 12 or 13 involucre bracts. The pappus is characteristically dark red. It is most easily confused

with *O. perfoliata* from further west, but that species has straggling stems and capitula with just eight or nine involucre bracts.

Additional specimens examined. SOUTH AFRICA. Eastern Cape. **3424 (Humansdorp):** Jeffreys Bay (–BB), July 1927, *Fourcade 3277* (BOL, NBC, PRE); Irma Booysen Floral Reserve, Cape St. Francis near Humansdorp (–BB), 3 June 2016, *Logie FBG 874* (NBG). **3325 (Port Elizabeth):** Addo (–DA), s.d., *Zeyher 3041* (SAM); Port Elizabeth (–DC), June 1891, *Bolus 3970* (BOL); Markman Industries (–DC), 16 May 1973, *Dahlstrand 3038* (PRE); New Brighton, near Port Elizabeth (–DC), 19 May 1902, *Galpin s.n.* (PRE); Walmer near Port Elizabeth (–DC), Apr. 1910, *Paterson 102* (BOL); Port Elizabeth (–DC), Apr. 1915, *Paterson 642* (BOL, PRE). **3326 (Grahamstown):** Alexandria (–CB), 5 May 1913, *Galpin s.n.* (BOL).

III. *Othonna* ser. *Undulosae* Magoswana & J. C. Manning, ser. nov. TYPE: *Othonna undulosa* (DC.) J. C. Manning & Goldblatt.

Diagnosis. This series can be distinguished from the other series of the *Othonna bulbosa* group by the following combination of characters: well-developed aerial stem sparsely branched in upper 1/2, straggling or sprawling among vegetation; leaves cauline, sessile, clasping; capitula disciform with filiform, female-fertile marginal florets; pappus enlarging to twice the length of cypselae, pappus bristles 10–20 mm.

21. *Othonna undulosa* (DC.) J. C. Manning & Goldblatt, *Bothalia* 40(1): 39. 2010. *Doria undulosa* DC., *Prodr. [A. P. de Candolle]* 6: 472. 1838. TYPE: South Africa. Western Cape, Worcester

(3319), “Hexriviersberg” [Hex River Mtns.], (–AD), 3 June 1820, *C. F. Drège* [289] (holotype, G-DC microfiche!).

Doria diversifolia DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. “Carro” [Karoo], s.d., *C. F. Drège* [427] (holotype, G-DC microfiche!; isotype, P image!).

Doria chromochaeta DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. “Klein Namaqualand,” s.d., *C. F. Drège* [2875] (holotype, G-DC microfiche!; isotype, P image!).

Othonna filicaulis sensu Adamson and Salter (1950) and later authors, non *Othonna filicaulis* Jacq. [= *Othonna perfoliata* (L. f.) Jacq.]

Deciduous geophyte, 12–70 cm high, with short aerial stem sparsely branched in upper 1/2, straggling or sprawling among vegetation; stem glabrous; rootstock obovoid or turnip-shaped. Leaves cauline, evenly inserted along aboveground portion of stem, base of stem leafless, sessile, spreading, clasping, 1–9 × 0.5–6 cm, blade lanceolate to ovate, margins entire or sometimes undulate, leathery to subsucculent, glabrous, upper leaves 1.5–4 × 0.5–2 cm, uppermost leaves lanceolate to linear, 0.5–1 × 0.2–0.4 mm; leaves of nonflowering plants cordate and markedly petiolate with long, wiry petioles, clasping, blade lanceolate to elliptic. Inflorescence of 1 to 3 capitula, sometimes with lateral axes. Capitula disciform, disc yellow or rarely white. Involucre 10–30 mm diam., involucre bracts 10 or 12, lanceolate to elliptic, 11–13 × 2–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Marginal florets filiform, 10 or 12, corolla tube 4–6 mm; ovary ellipsoid-ovoid, apressed-puberulous with twin hairs; style branching shortly above mouth of tube. Cypselae obovoid, 4–6 × 1–2 mm, thinly appressed puberulous on ribs with nonmyxogenic, white, twin hairs; pappus accrescent, 10–20 mm, beige or sometimes deep red. Disc florets numerous, corolla tube 1–3 mm, lobes ovate, 0.5–1.5 mm; filaments 1–3 mm; ovary 5–7 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna undulosa* is widespread and common through the coastal and near-inland parts of the GCFR, from the mountains of southern Namibia and the Richtersveld in Northern Cape through Namaqualand to the Cape Peninsula in Western Cape, inland to the Klein Roggeveld, and eastward along the south coast to Uniondale in Eastern Cape but evidently absent from the Little Karoo (Fig. 27); it is found on sandy, often coastal flats. Flowering occurs from May to August.

Discussion. *Othonna undulosa* is one of three species with a similar erect or scandent habit and sessile, amplexicaul leaves, among which it is immediately

distinguished by its disciform capitula and accrescent pappus, elongating up to 20 mm long.

Doria diversifolia is distinguished by the amplexicaul leaves and 10 involucre bracts. De Candolle noted that this might be a variety of *D. perfoliata* [= *Othonna perfoliata*], applying that name to the disciform taxon. *Doria chromochaeta* was distinguished by large, straw-colored ray floret pappus, amplexicaul leaves, and 10 to 12 involucre bracts but is indistinguishable from *O. undulosa*.

The application of the name *Othonna filicaulis* to the disciform taxon treated here as *O. undulosa* dates to *Flora of the Cape Peninsula* (Adamson & Salter, 1950). Although there is a conflict in the protologue of *O. filicaulis* between the description and the accompanying illustration, the description and detail of the peripheral floret make it clear that the name is applied to a radiate plant. The confused application of the name was clarified by Manning and Goldblatt (2010), who concluded that *O. filicaulis* was conspecific with *O. perfoliata* and provided the combination *O. undulosa* (DC.) J. C. Manning and Goldblatt for the disciform taxon.

Additional specimens examined. NAMIBIA. **2715 (Bogenfels):** Diamond Area No. 1 Inselberg of Klinghardt Mtn. Range (–AC), 6 Aug. 2001, *Germishuizen 10127* (PRE); 13 Aug. 2001, *Germishuizen 10315* (PRE); Klinghardt Mtns. (–AC), 6 Aug. 2001, *Mannheimer CM1469* (PRE); 27 July 1977, *Muller 717* (PRE). **2716 (Witputz):** Aurus Mtns. (–CB), 13 July 1988, *Bruyns 3203* (NBG). SOUTH AFRICA. Northern Cape. **2816 (Oranjemund):** Kodaspiek (–BB), 2 Sep. 1977, *Tolken & Venter 465* (PRE); Hottentotsparadysberg, head of Helskloof (–CD), 28 Aug. 1977, *Thompson & Le Roux 111* (NBG); 2 km from Port Nolloth on rd. to Alexander Bay at southern boundary of grid (–DD), 7 Sep. 1987, *Germishuizen 4810* (PRE); Holgat (–DD), 12 Sep. 1987, *Jurgens 22732* (PRE). **2817 (Violsdrif):** Paradykskloof, Richtersveld National Park (–AC), Sep. 1995, *Williamson 5743* (NBG). **2917 (Springbok):** Springbok (–DB), 25 Aug. 1941, *Barker 1266* (NBG); Hester Malan Wild Flower Reserve (–DB), 1 July 1975, *Rosch & Le Roux 1176* (PRE); Namaqua National Park, Kameelboomvlei farm (–CD), s.d., *Steyn 1399* (PRE). **3017 (Hondeklipbaai):** De Beers Mining Area, NW of Koingnaas on rd. to Kleinsee (–AA), 10 Aug. 2007, *Steyn 1247* (PRE); farm 497 N of Spoegrivier (–AD), 30 July 2008, *Desmet 3661* (NBG); Namakwa National Park, Avontuur farm S of Hondeklipbaai rd. (–AD), 11 Aug. 2006, *Koekemoer 3294, 3301* (PRE); Kookfontein, NNE of Soebatsfontein, S-facing slope of Deelkraalseberg (–BA), 21 Aug. 1996, *Desmet 409* (NBG); Grootvlei (–BB), 7 Sep. 1945, *Leighton 1233* (PRE); Namakwa National Park, along rd. to Soebatsfontein (–BB), 15 Aug. 2005, *Koekemoer 2964* (PRE); Kamieskroon, Skilpad Wild Flower Reserve (–BB), 13 July 1993, *Rooyen 2398* (PRE); ± 1 km N of Darter’s grave betw. Garies & Kamieskroon (–BD), 23 Sep. 2015, *Manning & Magoswana 3537* (NBG); Koingnaas–Kleinsee rd., on Komaggas turnoff, E of Houthoot turnoff (–CC), 11 Aug. 2007, *Steyn 1279* (PRE); Strandveld, Groenrivier (–DC), 10 Sep. 1997, *Desmet 1054* (NBG). **3018 (Kamiesberg):** Studer’s Pass, N of Garies (Helpmekaar) (–AC), 30 Aug. 1975, *Oliver 5952* (NBG). **3119 (Calvinia):**

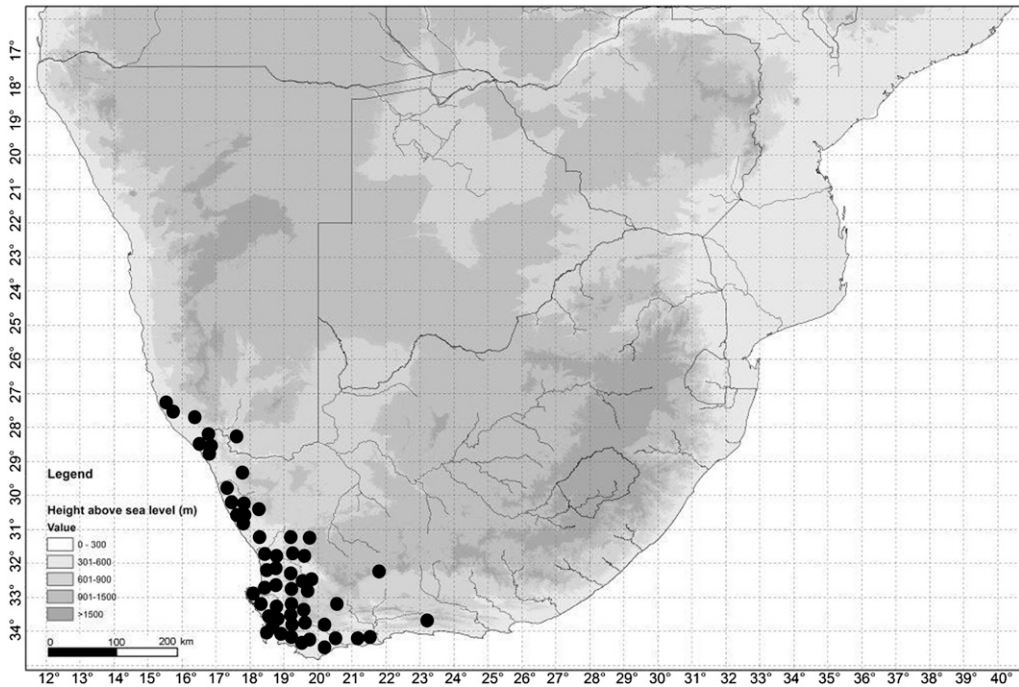


Figure 27. Distribution of *Othonna undulosa* (DC.) J. C. Manning & Goldblatt.

summit of Van Rhy'n's Pass (–AC), 13 May 1831, *Galpin 12932* (PRE); Nieuwoudtville Reserve (–AC), 7 Sep. 1983, *Snijman 2300* (NBG); Lokenburg WSW of Calvinia (–CA), 1 Aug. 1953, *Acocks 16850* (PRE); Kliprug (–CB), s.d., *Bruyns 6057* (PRE); Calvinia (–BD), s.d., *Schmidt 585* (PRE). **3220 (Sutherland)**: rd. betw. Laingsburg & Sutherland near Komsberg Pass (–BD), 3 July 1983, *Vlok 610* (NBG, PRE). Western Cape. **3118 (Vanrhynsdorp)**: Karee Bergen (–AB), 21 July 1896, *Schlechter 8263* (PRE); farm “Liebendal” 7 mi. (11.3 km) N of Vredendal (–CB), 3 July 1970, *Hall 3634* (NBG); Matsikammaberg, SE end betw. Waterval & Vaalsyfer (–DD), 15 July 1974, *Oliver 4958* (PRE). **3217 (Vredenburg)**: Swartriet farm, Jacobsbaai (–DD), 12 July 1993, *Boucher 5791* (NBG). **3218 (Clanwilliam)**: near Lamberts Bay (–AB), 1 Aug. 1974, *Van Breda 4225* (PRE); 3 Aug. 1975, *Van Breda 4351* (PRE); 10 mi. (16.1 km) N of Clanwilliam (–BB), 1 Sep. 1945, *Compton 17117* (NBG); S of Bullshoek on Clanwilliam–Klawer old rd. (–BB), 29 Aug. 1974, *Goldblatt 2466* (NBG, PRE); Rocherpan Nature Reserve (–CB), 25 July 1981, *Le Roux & van Rooyen 6* (NBG); Citrusdal, warm baths (–DB), 6 July 1935, *Compton 5400* (NBG); Piekienierskloof above Citrusdal (–DB), 22 Aug. 1966, *Rourke 548* (NBG). **3219 (Wuppertal)**: Ezelbank (–AC), 9 Sep. 1996, *Schlechter 8822* (PRE); Donkergat rd., Policemans Kop (–BA), 15 Aug. 1966, *Pamphlet 81* (NBG); Citrusdal, Vuurgat, ± 200 m SE of house (–CA), 25 July 1998, *Hanekom 3048* (NBG); Gideonskop (–CB), 22 Apr. 1957, *Stokoe s.n.* (NBG); Kagga Kamma Nature Reserve, near Bobbejaanskop (–DA), 12 Aug. 2012, *Koekemoer 4309* (PRE); Swartuggens, Knolfontein, 60 km NE of Ceres (–DC), 24 Aug. 2012, *Jardine & Jardine 313* (NBG); Swartuggens, Groenfontein, on rd. to Kagamma (–DC), 10 July 1991, *Van Zyl 4204* (NBG, PRE). **3318 (Cape Town)**: along R27 N of Yzerfontein on rd. to Velddrif (–AA), 13 Sep. 2000, *Koekemoer & Funk 1927*

(PRE); Langebaan, Oosterwal (–AA), s.d., *O’Callaghan 27/8/3* (NBG); Modderrivier SW of Darling along new National Rd. (–AD), July 1980, *Hugo 2437* (NBG); Darling, Tienie Versveld Nature Reserve (–AD), 13 Aug. 2010, *Cowell 4312* (NBG); Darling Flora Reserve (–AD), 28 June 1956, *Winkler 96* (NBG); Malmesbury (–BC), 26 June 1948, *Acocks 14510* (PRE); Mamre Rd. (–BC), 23 Aug. 1947, *Compton 19862* (NBG); S of Mamre (–BC), 4 Aug. 1974, *Goldblatt 2239* (NBG); Dassenberg, Burger’s Post (–BC), 7 Aug. 1966, *Rourke 493* (NBG); Melkbosch turning (–CB), 31 Aug. 1944, *Compton 15868* (NBG); Melkbosch turning (–CB), 21 July 1946, *Compton 18110* (NBG); Melkbosch turning (–CB), 29 Aug. 1954, *Hall 943* (NBG); Groot Springfontein (–CB), 2 Aug. 1943, *Wasserfall 240* (NBG); Cape Peninsula, Clifton (–CD), 9 July 1942, *Barker 1531* (NBG); Cape Peninsula, Hout Bay (–CD), 13 July 1941, *Compton 10896* (NBG); 24 July 1942, *Compton 13335* (NBG); Blaauwberg strand (–CD), 2 Aug. 1943, *Compton 14632* (NBG, PRE); Camps Bay (–CD), 14 June 1925, *Marloth s.n.* (PRE); Camps Bay (–CD), Sep. 1846, *Prior s.n.* (PRE); Sea Point (–CD), 31 July 1926, *Smith 2872* (PRE); Wellington (–DB), 6 Aug. 1926, *Grant 2314* (PRE); Stikland, Cape Flats (–DC), 30 Aug. 1979, *Boucher 4503* (NBG); Bellville (–DC), July 1912, *Marloth 5198* (NBG); Aug. 1912, *Marloth 3298* (PRE); SW of Kuilsriver (–DC), 16 Aug. 1972, *Raitt s.n.* (NBG); Kuils River, Cape Flats (–DC), Aug. 1914, *STEU 836* (NBG); Durbanville, Peaslake (–DC), 20 July 1963, *Taylor 4927* (NBG). **3319 (Worcester)**: rocky foothills of Skurfteberg, Wateryk farm, 44 mi. (71 km) N of Ceres on the rd. to Citrusdal (–AB), 8 July 1963, *Taylor 4919* (NBG); Karooport (–BC), 30 June 1940, *Compton 8910* (NBG); 27 July 1941, *Compton 11162* (NBG); Karoo Gardens veld (–CB), 25 May 1977, *Perry 165* (NBG); Franschoek (–CC), 21 June 1962, *Van der Merwe s.n.* (PRE). **3320 (Montagu)**: Klein Roggeveld (–BA), 8 July 1938, *Compton 7870* (NBG); N of

Montagu (–CC), 11 July 1954, *Barker 8272* (NBG). **3323 (Willowmore):** Uniondale, Vette Vlei (–CA), 5 July 1935, *Markötter s.n.* (NBG). **3418 (Simonstown):** Kalk Bay (–AB), Aug. 1884, *Bolus s.n.* (PRE); Cape Peninsula, Clavelly (–AB), 16 Aug. 1942, *Compton 13353* (NBG); Red Hill (–AB), 18 July 1903, *Phillips 368* (NBG); Cape Point (–AD), July 1903, *Marloth 3245* (PRE); Strandfontein (–BA), 17 July 1942, *Bond 1515* (NBG); Zwartklip [Swartklip] (–BA), 5 Aug. 1946, *Compton 18130* (NBG); Pringle Bay, Buffelsrivier Mouth (–BD), 28 Aug. 1971, *German Chemists 16a* (NBG); Betty's Bay (–BD), 28 June 1959, *Hall 1737* (NBG); Zwartklip [Swartklip] (–BA), 17 Aug. 1961, *Jordaan J1255* (NBG); Faure (–BB), 14 Sep. 1946, *Nortjè 662* (NBG). **3419 (Caledon):** Kleinmond (–AC), 20 Aug. 2001, *Meyer 3851* (PRE); Kleinmond, hiking trail from Malherbe S to Palmiet Strand (–AC), 10 Sep. 1996, *Mostert 123* (NBG). **3420 (Bredasdorp):** De Hoop, Potberg Nature Reserve (–AD), 26 July 1979, *Burgers 2023* (NBG); 15 Aug. 1980, *Burgers 2420* (NBG); 2 km S on rd. to Bredasdorp (–CA), 20 July 2012, *Koekemoer 4265* (PRE); 300 m along the Zoetendals valley turnoff, from the Bredasdorp/L'Agulhas rd. (–CA), 6 July 1995, *Patterson-Jones 433* (NBG); Arniston, Waenhuiskrans (–CA), 24 Aug. 1962, *Taylor 3793* (NBG, PRE). **3421 (Riversdale):** Stillbay (–AD), 12 Sep. 1978, *Bohnen 4151* (NBG); Botterkloof Farm (–AD), 30 July 1981, *Bohnen 7959* (NBG); Stillbay (–AD), 17 Aug. 1929, *Nel s.n.* (NBG); Stillbay (–AD), s.d., *Muir 8396* (PRE); Albertinia, Ystervarkpunt (Gouriqua) (–BC), 7 July 1987, *Willemse 558* (NBG). **3422 (Mossel Bay):** Goukamma (–BB), s.d., *Heinen 101* (PRE).

IV. *Othonna* ser. *Disciformes* Magoswana & J. C. Manning, ser. nov. TYPE: *Othonna gymnodiscus* (DC.) Sch. Bip.

Diagnosis. This series can be distinguished from the other series of the *Othonna bulbosa* group by the following combination of characters: short underground stem branching shortly above ground level; foliage congested basally, sessile or conspicuously petiolate, entire or revolute or lobed to pinnatifid; capitula disciform, with filiform, female-fertile marginal florets; pappus enlarging to twice the length of the cypselae, pappus bristles 3–15 mm, beige, sometimes with red bands.

22. *Othonna digitata* L. f., Suppl. Pl.: 386. 1782. *Doria digitata* (L. f.) Less., *Linnaea* 6: 95. 1831. TYPE: South Africa. [Western Cape], “Cap Bonae Spei,” s.d., *C. P. Thunberg s.n.* [UPS-THUNB 20873] (holotype, UPS-THUNB microfiche!; isotype, SBT image!).

Doria digitata var. *incisa* DC., Prodr. [A. P. de Candolle] 6: 471. 1838, syn. nov. TYPE: South Africa. [Western Cape], “ad Stellenbosch ad flum. Palmiet,” s.d., *C. F. Ecklon s.n.* (holotype, G-DC microfiche!, HAL-113576 image!, possible isotype).

Doria campanulata DC., Prodr. [A. P. de Candolle] 6: 473. 1837, syn. nov. TYPE: South Africa. “Cape Bonae Spei,” s.d., *C. F. Ecklon 1687* (holotype, G-DC microfiche!).

Doria digitata var. *lanceolata* Harv. in Harv. & Sond., Fl. Cap. 3: 325. 1865, syn. nov. TYPES: South Africa. Western Cape, Clanwilliam (3218), “Piquetberg,” (–BC), s.d., *C. L. P. Zeyher s.n.* (syntype, S? [not located]); South Africa. Western Cape, Cape Town, “Table Mountain,” (–CD), s.d., *C. F. Ecklon s.n.* (syntype, S? [not located]).

Deciduous geophyte, 25–50 cm high, with short underground stem branching shortly above ground level, branches erect to suberect; stem glabrous; rootstock oblong or turnip-shaped. Leaves crowded basally, erect to spreading, conspicuously petiolate, petiole 3–9 cm, blade oblanceolate to elliptic or cuneate, 6–15 × 2–4 cm, margins entire or lobed to pinnatifid, leathery to subsucculent, glabrous, sometimes sparsely hairy, upper leaves sessile and sometimes clasping, 2–9 × 0.5–2 cm, uppermost leaves lanceolate to elliptic, 0.5–1 × 0.2–0.4 cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula disciform, disc mauve to purple. Involucre 8–20 mm diam., involucre bracts 8 or 9, lanceolate to elliptic, 10–14 × 3–5 mm, connate in basal 1/3 to 1/2. Marginal florets filiform, 8 or 9, corolla tube 3–5 mm; ovary ellipsoid-ovoid, glabrous; style branching above mouth of tube. Cypselae oblong to obovoid, 5–8 × 1–3 mm, glabrous; pappus, 7–10 mm, beige, sometimes with red bands. Disc florets numerous, corolla tube 2–3 mm, lobes ovate, 0.5–1 mm; filaments 1–3 mm; ovary 2–5 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna digitata* is most commonly collected on the Cape Peninsula inland to Worcester but with scattered records north on the Piketberg and the Olifants River Mountains, and eastward along the southern coast and the Langeberg to Stillbaai (Fig. 28); it is found on sandy flats and slopes, usually after fire. Flowering occurs from June to October.

Discussion. *Othonna digitata* is distinctive among the disciform species in its digitate or pinnatifid leaves and its mauve to purple florets with glabrous ovaries and cypselae. The pappus is accrescent, the bristles reaching 7–10 mm long at maturity. It shares capitula with eight or nine involucre bracts and the unusual glabrous cypselae with *O. linearifolia*, a slender, erect species with narrow, linear to linear-lanceolate leaves, 0.4–0.8 cm wide, yellow capitula, and cypselae with a short pappus 3–5 mm. Simple-leaved forms of *O. digitata* can be confused with *O. gymnodiscus*, but that species has 12 to 14 involucre bracts and yellow florets with puberulous cypselae.

Othonna digitata is a vegetatively variable species, with simple or digitate or pinnatifid leaves. The mauve to purple disciform capitula have eight or nine involucre bracts. The variation in lobing of the leaves led de Candolle (1837) to recognize *O. digitata* var. *incisa*, based on a collection from Palmiet near Stellenbosch, distinguished by dentate leaves with obtuse lobes. Harvey (1865) in his treatment of *Doria* recognized an additional variety of *O. digitata* as *Doria*

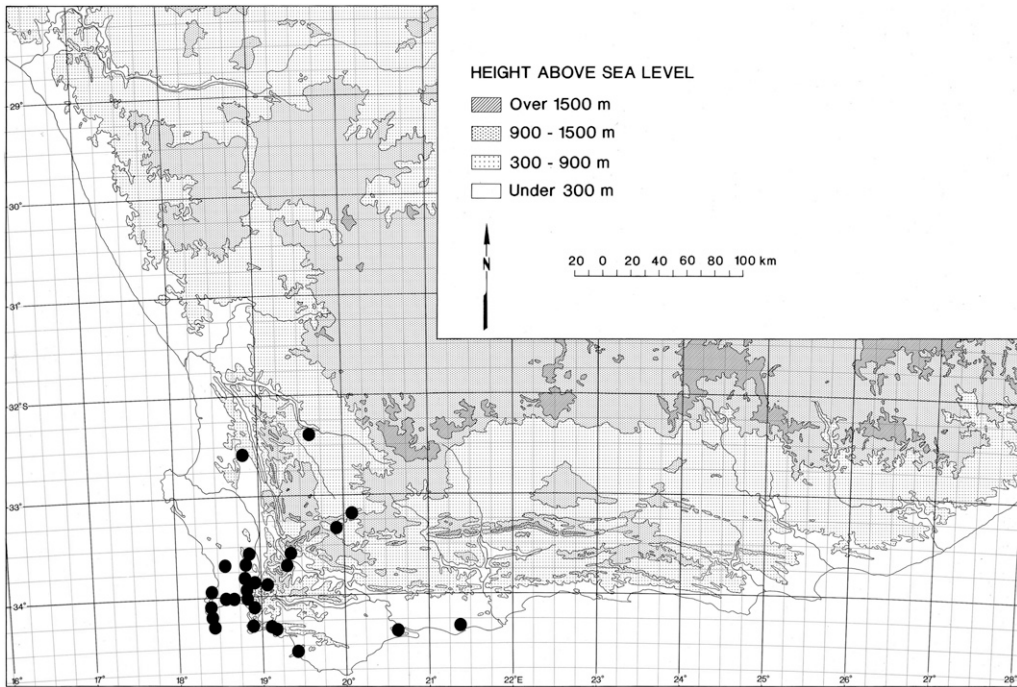


Figure 28. Distribution of *Othonna digitata* L. f.

digitata var. *lanceolata* Harv., based on collections from Piketberg and Table Mountain, distinguished by entire or dentate leaves. We follow him in regarding variety *lanceolata* as representing the same taxon as *D. campanulata*.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3218 (Clanwilliam):** slopes of Zebra Kop (–DC), 23 May 1948, *Esterhuysen 14488* (BOL, NBG, PRE). **3219 (Wuppertal):** Sandleege btw. Levant & Sandleege (–BC), 3 Aug. 1974, *Linder 363* (BOL). **3220 (Montagu):** Farm Seukop near top of Gannaga Pass, Gannakuilsvier crossing (–AA), 3 Aug. 2015, *Manning & Magoswana 3507* (NBG). **3318 (Cape Town):** Camps Bay Drive (–CD), 5 July 1943, *Barker 2421* (NBG); Kenilworth near Cape Town (–CD), Aug. 1892, *Bolus 3721* (BOL, PRE); Table Mtn. (–CD), Oct. 1906, *Dümmer 624* (NBG); Kenilworth Race Course (–CD), 28 July 1968, *Esterhuysen 31975a* (BOL); Table Mtn. (–CD), 23 Aug. 1925, *Gonng 26577* (PRE); Raapenburg, Mowbray (–CD), July 1990, *Guthrie 579* (BOL); northern slopes of Table Mtn. (–CD), Aug. 1917, *Marloth 7733* (PRE); Kenilworth Race Course (–CD), 5 July 1903, *Phillips 198* (NBG); Camps Bay Drive (–CD), 29 June 1949, *Steyn 194* (NBG); 6 July 1996, *Strey 912* (PRE); Heuwelvlak, SE of Katzenberg (–DA), 25 June 1976, *Andray & Boucher 7* (NBG, PRE), *Andray & Boucher 8a* (NBG, PRE); Paarl Diamant farm (–DB), 7 June 1970, *Acocks 24272* (PRE); Paardeberg (–DB), 5 May 2011, *Nicholson 24* (NBG); Botlaryberg, on Keepmanskloof farm (–DD), 13 Sep. 1988, *Beyers 61* (NBG); Vissers Hoek (–DD), 28 July 1946, *Leighton 1792* (BOL); Jonkershoek, Stellenbosch (–DD), 28 July 1950, *Parker 4481* (NBG). **3319 (Worcester):** Verkeerdevlei (–BD), 12 July 1934, *Barker 8292* (NBG); Worcester Commonage (–CB), 19 Aug. 1990, *Bruyns 4342* (BOL); hills along rd. just

W of Nekkie on edge of Brandvlei Dam (–CB), 21 July 2009, *Le Roux s.n.* (NBG); Franschoek, Zachariashoek catchment (–CC), 3 Sep. 1970, *Haynes H376* (PRE). **3320 (Montagu):** Lemoenshoek (–DD), 21 Oct. 1962, *Esterhuysen 29483* (BOL). **3418 (Simonstown):** Constantiaberg (–AB), 19 Aug. 1974, *Esterhuysen 33592* (BOL); Hout Bay (–AB), 21 June 1959, *Hall 1735* (NBG); Fishoek (–AB), June 1920, *Page 16522* (BOL); Red Hill (–AB), 31 May 1915, *Pillans 3003* (BOL); 3 June 1918, *Pillans 3118* (BOL); flats NE of Steenberg (–AB), 3 June 1918, *Pillans 3117* (BOL); Red Hill (–AB), 13 July 1960, *Taylor 2526* (NBG); Red Hill (–AB), 5 Aug. 1963, *Taylor 4968a* (NBG, PRE); Brightwater, Cape Point (–AD), 23 June 1944, *Compton 15716* (NBG); Rooihogte (–AD), 29 Sep. 1942, *Compton 13776* (NBG); Buffels Bay (–AD), 22 June 1943, *Compton 13349* (NBG); Cape Peninsula W of Vasco Da Gama Peak (–AD), 19 July 1934, *Salter 4647* (BOL); Cape Flats (–BA), s.d., *Flanagan s.n.* (PRE); Aug. 1902, *Marloth 2592a* (PRE); Wynberg sand dunes (–BA), 7 Aug. 1846, *Prior s.n.* (PRE); Somerset West, Helderberg Nature Reserve (–BB), 15 July 1994, *Runnalls 690* (NBG); Strand, Harmony Reserve, (–BB), 31 July 2000, *Runnalls 1018* (NBG). **3419 (Caledon):** Hermanus (–AC), 5 June 1980, *Bean 363* (BOL); Fisherhaven, Hermanus (–AC), 16 July 1996, *Palmer 42* (NBG); btw. Stanford & Pearly Beach (–CB), 10 June 1950, *Martin 366* (NBG). **3420 (Bredasdorp):** De Hoop, Potheberg Nature Reserve (–BC), 2 Aug. 1979, *Burgers 2136* (NBG, PRE). **3421 (Riversdale):** Stillbay (–AD), 23 Mar. 1979, *Bohnen 5253* (NBG, PRE); 22 May 1979, *Bohnen 5743* (NBG).

23. *Othonna gymnodiscus* (DC.) Sch. Bip., Flora 27(2): 769. 1844. *Doria gymnodiscus* DC., Prodr. [A. P. de Candolle] 6: 473. 1838. TYPE: South Africa. Eastern Cape, Port Elizabeth (3325), “in

Africae Capensis collibus prope Port Elizabeth distr. Uitenhagen,” (–DC), s.d., *Ecklon s.n.* (holotype, G-DC microfiche!; isotype, S image!).

Doria semicalva DC., Prodr. [A. P. de Candolle] 6: 473. 1838. *Othonna semicalva* (DC.) Sch. Bip., Flora 27(2): 769. 1844. TYPE: South Africa. Western Cape, Clanwilliam (3218), “in Africâ Capensi ad Langevaley et Olifantsrivier” [Rhinosterfontein], (–BC), 15 July 1830, C. F. Drège [2878] (holotype, G-DC microfiche!; isotype, P image!).

Doria ramosa DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. Western Cape, “Hexrivierberg,” s.d., C. F. Drège [6065] (holotype, G-DC microfiche!; isotype, P image!).

Doria chromochaeta var. *pappodes* DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. s. loc., s.d., C. F. Drège s.n. (holotype, G-DC microfiche!).

Doria laureola DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. s. loc., s.d., C. F. Drège [6070] (holotype, G-DC microfiche!; isotype, P image!).

Doria tortuosa DC., Prodr. [A. P. de Candolle] 6: 472. 1838, syn. nov. TYPE: South Africa. s. loc., s.d., C. F. Drège [6062] (holotype, G-DC microfiche!; isotype, P image!).

Othonna lingua sensu, Goldblatt & Manning (2000), non *Othonna lingua* L. f. [= *Othonna bulbosa* L.].

Deciduous geophyte, 15–40 cm high, with short underground stem branching shortly above ground level, branches erect to sprawling; stem glabrous; rootstock conical or oblong. Leaves crowded basally, suberect to spreading, sessile, auriculate or weakly clasping, 2–11 × 1–6 cm, blade oblanceolate to elliptic, margins entire, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, 4–8 × 0.5–4 cm, uppermost leaves lanceolate to elliptic, 0.5–1.5 × 0.2–1 cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula disciform, disc yellow. Involucre 8–20 mm diam., involucre bracts 12 to 14, elliptic, 9–12 × 2–3 mm, ± free to the base but adherent in basal 1/3 to 1/2. Marginal florets filiform, 12 to 14, corolla tube 4–6 mm; ovary ellipsoid-ovoid, appressed-puberulous with twin hairs; style branching above mouth of tube. Cypselae ellipsoid-ovoid, 4–6 × 1–2 mm, thinly appressed puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 4–15 mm, beige or sometimes deep red. Disc florets numerous, corolla tube 2–4 mm, lobes ovate, 0.5–1 mm; filaments 2–2.5 mm; ovary 6–7 mm; style simple and cone-tipped, rarely with short branches in some individuals but then without lateral stigmatic zones; pappus usually lacking or sometimes of 1 or 2 bristles, rarely of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna gymnodiscus* is a well-collected species best known from the southwestern parts of Western Cape, from Clanwilliam to Paarl in the south but also extending along the south

coast and near interior to Riversdale and Port Elizabeth in the east, and north onto the Bokkeveld Escarpment in Northern Cape, with isolated collections near Garies in southern Namaqualand (Fig. 29); on sandy slopes and flats below 1000 m. Flowering occurs from March to August.

Discussion. *Othonna gymnodiscus* is recognized by the sessile, oblanceolate to elliptic leaves 2–11 × 1–6 cm, and disciform capitula with 12 to 14 involucre bracts, usually lacking a pappus on the disc florets or sometimes with one or two bristles but rarely with about 10 bristles. Most other disciform species in the genus have disc florets with a well-developed pappus. *Othonna digitata* has similar shaped but basally narrowed or petiolate leaves, capitula with eight or nine involucre bracts and mauve to purple florets, and glabrous cypselae. *Othonna linearifolia*, also with simple leaves and yellow disciform capitula, has slender, erect stems with narrower, linear to linear-lanceolate leaves 0.4–0.8 cm wide, capitula with eight or nine involucre bracts, and glabrous cypselae.

Othonna gymnodiscus is a vegetatively variable species, with glabrous, oblanceolate to elliptic leaves with auriculate or weakly clasping leaf bases. The disciform capitula have 12 to 14 involucre bracts. As a result of this, de Candolle recognized a number of these forms as species separate from *O. gymnodiscus*. *Doria laureola*, from an unlocalized collection, was distinguished by lanceolate leaves, 12 involucre bracts, and glabrous cypselae; *D. ramosa*, based on a collection from the Hexriver Mountains, by its lanceolate leaves, 12 involucre bracts, and pubescent cypselae; *D. chromochaeta* var. *pappodes*, by its petiolate leaves and pubescent cypselae; and *D. tortuosa*, by its linear-lanceolate leaves, 12 involucre bracts, and pubescent cypselae. Although the cypselae in *D. laureola* were described as glabrous, this was largely based on immature fruits, and the hairs are not readily seen at this point. Additional and recent collections of *O. gymnodiscus* (e.g., *Hanekom 1542*, *Olivier 39*, and *Midgley & Bosenberg 50*) show immature fruit lacking cypselae hairs. Examination of type material of all names led to the conclusion that they represent forms of a single species and the variation in leaf shape is taxonomically insignificant. The pappus in the disc florets is lacking in most collections of *O. gymnodiscus*, but we have seen a few collections with ca. 10 bristles, undoubtedly matching *O. gymnodiscus*.

Additional specimens examined (* indicates specimens with more or less 10 barbellate bristles). SOUTH AFRICA. Northern Cape. **3017 (Hondeklipbaai):** Doornfontein, border with Aronegas & Skilpad (–BA), 28 Aug. 1996, *Desmet 556* (NBC)*. **3018 (Kamiesberg):** Garies (–CA), 24 July 1941, *Esterhuysen 5424* (BOL)*; Stofkraal (–CC), 24 Aug.

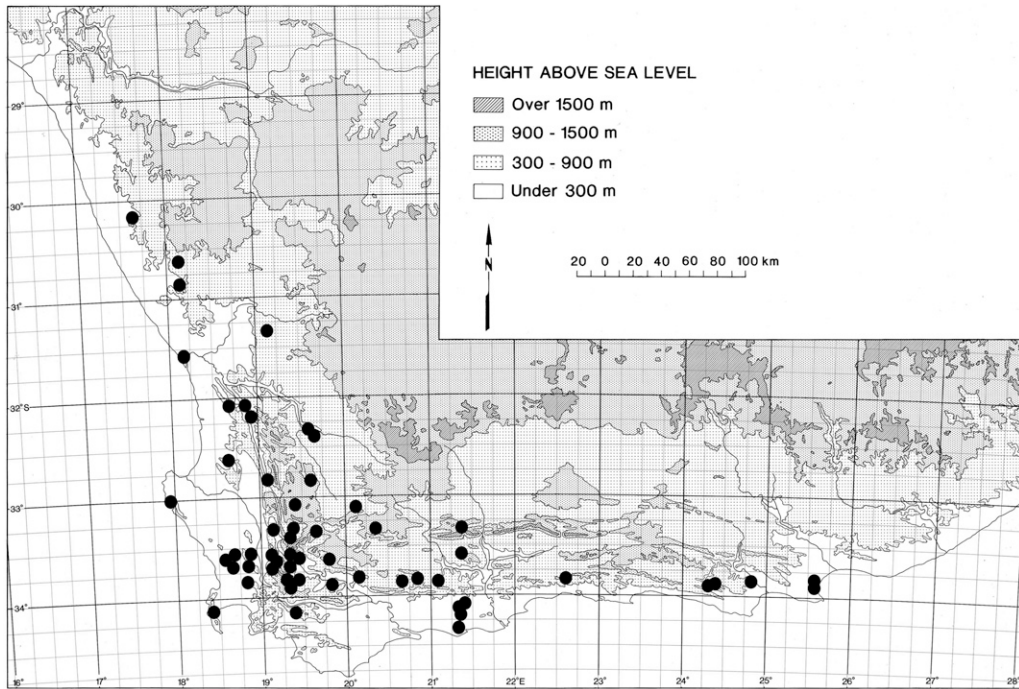


Figure 29. Distribution of *Othonna gymnodiscus* (DC.) Sch. Bip.

1991, *Bruyns 4749* (BOL). Western Cape. **3218 (Clanwilliam)**: Langberg, ridge S of beacon (–BA), 16 Aug. 1976, *Linder 650* (BOL); Cederberg, Pakhuis Pass (–BB), 7 July 1984, *Taylor 10985* (NBG); Boschklouf (–BB), 9 Sep. 1995, *Schlechter 8443* (BOL); Piketberg, Kapteins Kloof (–DA), 25 Sep. 1941, *Stokoe 8137* (BOL). **3219 (Wuppertal)**: Sandleepte (–BC), 19 July 1974, *Linder 337* (BOL); Skoongesig, Koue-Bokkeveld (–CC), 28 Aug. 1971, *Hanekom 1542* (NBG, PRE); Knoffontein, Swartruggens, 60 km NE of Ceres (–DC), 7 Aug. 2007, *Jardine & Jardine 699* (NBG). **3317 (Saldanha)**: betw. Saldanha & Vredenburg (–BB), 15 July 1946, *Leighton 1751* (BOL). **3318 (Cape Town)**: Heuwelvlak, SE of Katzenberg (–DA), 25 June 1976, *Andray & Boucher 5* (NBG, PRE); Burger's Post Farm, Pella (–DA), 4 July 1979, *Boucher & Shepherd 4405* (NBG); flats E of Klipheувel (–DA), 2 July 1934, *Salter 4631* (BOL); Paardeberg, betw. Wellington & Malmesbury, Vlakfontein ± 2.5 km from Blijdschap Farm buildings (–DB), 23 Aug. 2012, *Nicholson & Roets 918* (NBG)*; 4 July 2011, *Nicholson & Roets 144* (NBG); summit of the Paardeberg (–DB), July 1931, *Pillans 6673* (BOL); Vrolikheid farm (–DD), s.d., *Jooste 88* (NBG). **3319 (Worcester)**: rocky foothills of Skurfteberg Mtns. from the Waterryk farm, 44 mi. (70.81 km) N of Ceres on the rd. to Citrusdal (–AB), 8 July 1963, *Taylor 4914* (NBG, PRE); Elandsberg Nature Reserve, middle rd. (–AC), 10 Aug. 2015, *Manning & Magoswana 3513* (NBG); Ezelsfontein slopes at foot of Milner Peak (–AD), 1 Sep. 1952, *Esterhuysen 20352* (BOL); Mitchell's Pass, below Rooikrans Peak (–AD), 2 Aug. 1967, *Rourke 793* (NBG); Du Toit's Kloof (–CA), 24 July 1953, *Compton 24101* (NBG); Stillbay (–AD), 31 July 1955, *Esterhuysen 24352* (BOL); Bain's Kloof, Gevonden farm (–CA), 28 Aug. 1962, *Walters 652* (NBG); Karoo Gardens (–CB), 18 Aug. 1976, *Bayer 184* (NBG); 12 July 1948, *Compton 20525* (NBG); 20 Aug. 1953, *Compton 24123*

(NBG); Hex River Valley (–CB), 21 June 1953, *Esterhuysen 21588* (BOL); Brandvlei (–CB), 26 Aug. 1928, *Hutchinson 136* (BOL); Karoo Gardens (–CB), 13 Aug. 1986, *Midgley & Bosenberg 50* (NBG); 30 June 1958, *Willems 47* (NBG); 3 km N of Lemoenpoort (–CD), 18 Aug. 1990, *Bruyns 4344* (BOL); Stettynsberg (–CD), 31 July 1949, *Esterhuysen 15576* (BOL); Kwadous Mtns. near orchard (–DA), 26 July 1944, *Esterhuysen 10275* (BOL); Robertson (–DD), July 1941, *Schmidt 39* (PRE). **3320 (Montagu)**: Doringkloof farm, southern foothills of Voetspadsberg (–AA), 8 June 1985, *Van Wyk 2372* (NBG); Whitehill (–AD), s.d., *Archer 882* (NBG); Montagu (–CC), July 1942, *Levyns 8939* (BOL); Barrydale (–DC), 15 Sep. 1985, *Breda 4581* (PRE); Warmwatersberg (–DD), 16 July 1937, *Levyns 6198* (BOL). **3321 (Ladismith)**: Elandsberg (–AD), 11 July 1953, *Wurts 1046* (NBG)*; Gamka Mtn. Nature Reserve (–CB), 20 May 1983, *Cattell & Cattell 257* (NBG); Garcias Pass (–CC), s.d., *Muir 2950* (PRE). **3322 (Oudtshoorn)**: Langeberg (–DC), Aug. 1925, *Muir 18401* (BOL). **3418 (Simons-town)**: Theefontein Farm ca. 8 km SW of farmhouse (–AB), 20 July 1978, *Boucher 3873* (NBG). **3419 (Caledon)**: betw. Villersdorp & Caledon (–AB), 18 Aug. 2001, *Meyer s.n.* (PRE). **3421 (Riversdale)**: hills near Riversdale (–AB), Aug. 1923, *Muir 2753* (PRE); Aug. 1923, *Muir 2577* (BOL); Ladismith (–AD), July 1927, *Levyns 2084* (BOL); 2 July 1941, *Levyns 7400* (BOL); 4 July 1941, *Levyns 7413* (BOL); Buffels Poort Bay (–BC), July 1927, *Levyns 2084* (BOL); 5 July 1941, *Levyns 7433* (BOL); Botteliersfontein (–BA), Aug. 1914, *Muir 1586* (BOL)*. Eastern Cape. **3424 (Humansdorp)**: Zuurbron (–DD), Oct. 1927, *Fourcade 3331a* (BOL). **3324 (Steytlerville)**: Zuurans, on rd. to Kouga (–CD), Oct. 1927, *Fourcade 3349* (BOL); Gamtoos River, near Hankey (–DD), May 1923, *Fourcade 2584* (BOL). **3325 (Port Elizabeth)**: Redhouse

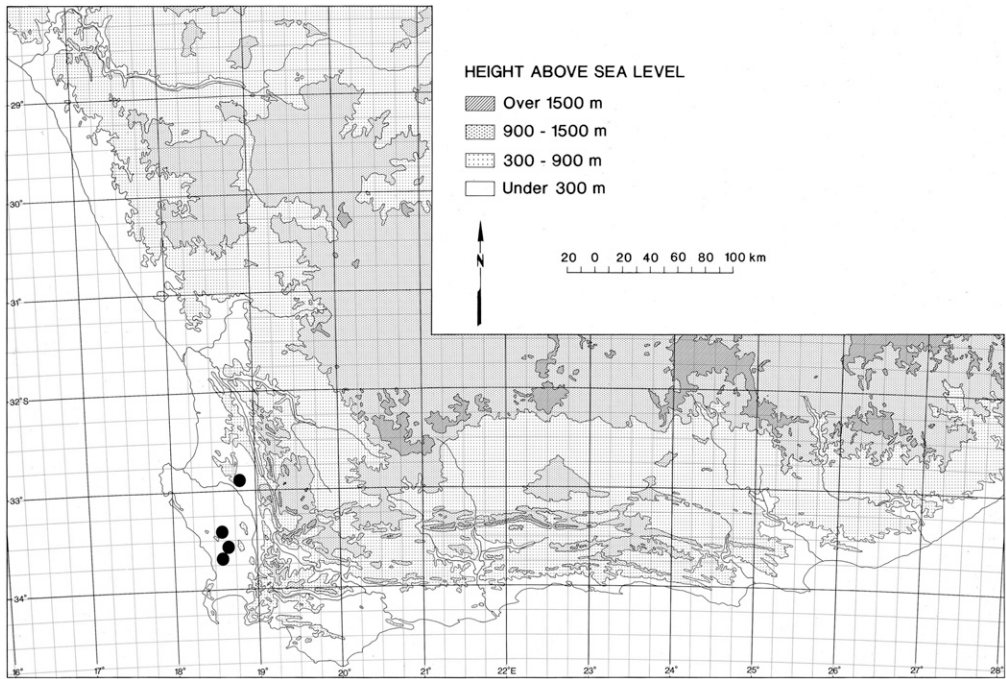


Figure 30. Distribution of *Othonna linearifolia* (DC.) Sch. Bip.

(–DC), Mar. 1910, *Paterson 648* (BOL); Port Elizabeth (–DC), Aug. 1915, *Paterson 1027* (BOL); June 1891, *Bolus 2248* (BOL).

24. *Othonna linearifolia* (DC.) Sch. Bip., *Flora* 27(2): 769. 1844. *Doria linearifolia* DC., *Prodr.* [A. P. de Candolle] 6: 471. 1838. TYPE: South Africa. [Western Cape], “ad Cap. Bonae-Spei,” s.d., herb. *L’Héritier* (holotype, G-DC microfiche!).

Deciduous geophyte, 15–60 cm high, with short underground stem branching in upper 1/2, branches erect; stem glabrous; rootstock turnip-shaped. Leaves few, erect to suberect, sessile, base cuneate to weakly clasping, 2–13 × 0.4–0.8 cm, blade linear or linear-lanceolate, margins entire, leathery to subsucculent, glabrous, upper leaves sessile, 0.5–2 × 0.2–0.4 cm, uppermost leaves narrowly elliptic to linear, 0.5–1 × 0.1–0.2 cm. Inflorescence of 1 to few capitula. Capitula disciform, disc yellow. Involucre 5–15 mm diam., involucre bracts 8 or 9, oblanceolate, 7.5–8.5 × 2–3 mm, ± free to base but adherent in basal 1/3 to 1/2. Marginal florets filiform, 8 or 9, corolla tube 2–5 mm; ovary ellipsoid-ovoid, glabrous; style branching above mouth of tube. Cypselae ellipsoid-ovoid, 1–2 × 0.5–1 mm, glabrous; pappus 3–5 mm, beige. Disc florets numerous, corolla tube 1.5–2.5 mm, lobes ovate, 0.5–1.5 mm; filaments 2–3 mm; ovary 2–3 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally.

Distribution and ecology. *Othonna linearifolia* is a rarely collected species known only from the Piketberg and west coast near Mamre, mostly below 500 m (Fig. 30); it is found on sandy flats among restios. Flowering occurs from April to July.

Discussion. *Othonna linearifolia* is a slender species distinguished by its erect stems with narrow, linear to linear-lanceolate leaves 0.4–0.8 cm wide, and relatively small disciform capitula with eight or nine involucre bracts and relatively short pappus bristles, 3–5 mm. *Othonna gymnodiscus* is mostly a more sprawling plant with broader basal leaves 10–40 mm wide and capitula with 12 to 14 involucre bracts. *Othonna digitata*, another disciform geophytic species with glabrous cypselae, has petiolate basal leaves with a simple to lobed blade, and mauve to purple florets.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3218 (Clanwilliam):** Piketberg, De Hoek (–DD), 28 Apr. 1947, *Barker 4501* (NBG). **3318 (Cape Town):** Mamre Commonage (–BC), 31 July 2011, *Stummer CR15261* (NBG); 15 July 2011, *Stummer FOT1103/CR15174* (NBG); Burger’s Post Farm, Pella (–DA), 7 June 1979, *Boucher & Shepherd 4365* (NBG); ERF 946, Chatsworth (–DA), 3 June 2016, *Koopman 1274* (NBG).

25. *Othonna revoluta* Magoswana & J. C. Manning, sp. nov. TYPE: South Africa. Northern Cape, Vanrhynsdorp (3118); Doringbaai, (–CC), 10 June 1971, *H. Hall 3518* (holotype, NBG!).

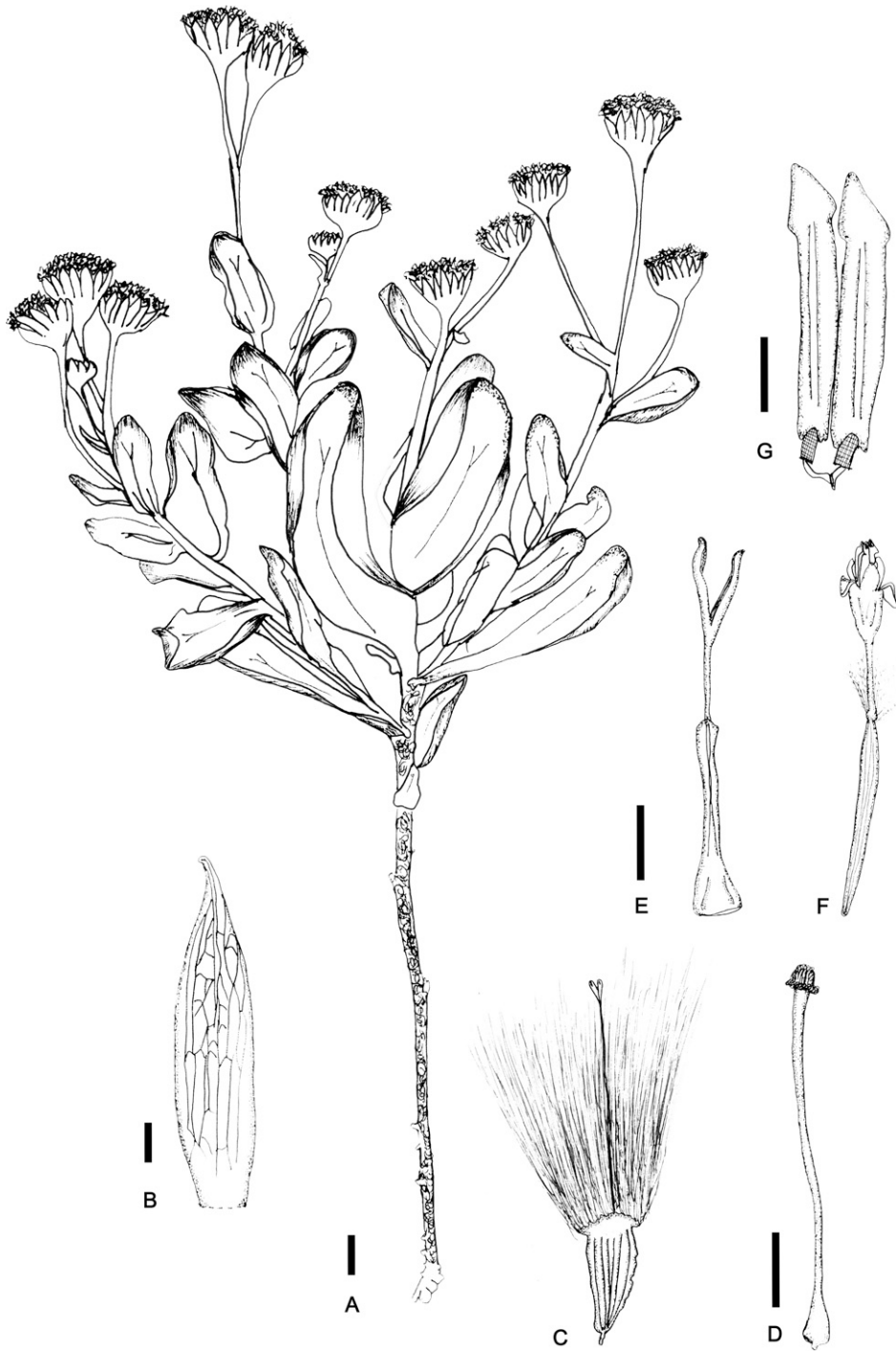


Figure 31. *Othonna revoluta* Magoswana & J. C. Manning. —A. Flowering plant. —B. Involucral bract. —C. Cypsel. —D. Style (disc floret). —E. Marginal floret. —F. Disc floret. —G. Anther. From *Hall 2854* (NBC). Scale bars: A = 2 cm; B, C = 2 mm; D = 1 mm; E, F = 2 mm; G = 500 μ m. Drawings by L. Magoswana.

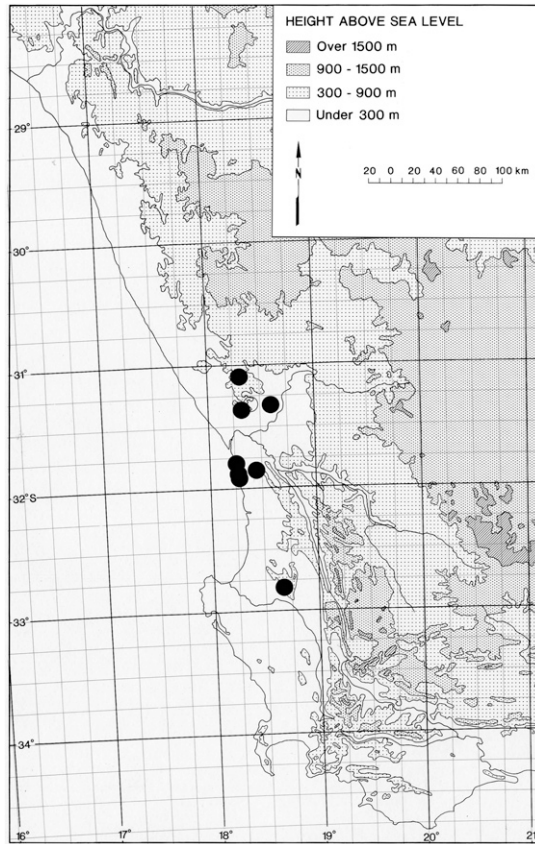


Figure 32. Distribution of *Othonna revoluta* Magoswana & J. C. Manning.

Diagnosis. *Othonna revoluta* Magoswana & J. C. Manning is recognized by branches covered with long, soft, shaggy hairs near the base; narrowed and petiole-like or weakly clasping, oblanceolate to elliptic leaves $1.5\text{--}8 \times 0.5\text{--}4$ cm with strongly revolute margins; and disciform capitula with 12 or 13 involucre bracts. It can sometimes be confused with *O. gymnodiscus*, but that species has glabrous branches and plane leaf margins, and usually lacks a pappus in the disc florets or sometimes with one or two bristles but occasionally with more or less 10 bristles. *Othonna revoluta* is named for its strongly revolute leaf margins.

Deciduous geophyte, 11–40 cm high, with short underground stem branching shortly above ground level, branches erect to spreading, villous near base; stem glabrous; rootstock oblong or turnip-shaped. Leaves crowded basally, suberect to spreading, base narrowed and petiole-like, auriculate or weakly clasping, $1.5\text{--}8 \times 0.5\text{--}4$ cm, blade oblanceolate to elliptic, margins revolute, leathery to subsucculent, glabrous, upper leaves sessile and sometimes clasping, $1.5\text{--}4 \times 0.5\text{--}1.5$ cm, uppermost leaves lanceolate to elliptic, $0.5\text{--}1.5 \times 0.2\text{--}1$ cm. Inflorescence of 1 or 2 capitula, sometimes with lateral axes. Capitula disciform, disc yellow. Involucre 10–20 mm diam., involucre bracts 12 or 13, oblanceolate to elliptic, $10\text{--}14 \times 1\text{--}3$ mm, connate in basal

$1/3$ to $1/2$. Marginal florets filiform, 12 or 13, corolla tube 4–6 mm, rarely with threadlike staminodes, representing stamen filaments, in some florets; ovary ellipsoid-ovoid, appressed-puberulous with twin hairs; style branching above mouth of tube. Cypselae ellipsoid-ovoid, $3\text{--}7 \times 1\text{--}2$ mm, thinly appressed puberulous on ribs with nonmyxogenic, white, twin hairs; pappus 5–15 mm, beige or sometimes deep red. Disc florets numerous, corolla tube 1–3 mm, lobes ovate, $0.5\text{--}1.2$ mm; filaments 2–4 mm; ovary 5–9 mm; style simple and cone-tipped; pappus of ± 10 barbellate bristles united basally. Figure 31.

Distribution and ecology. *Othonna revoluta* is a relatively local endemic of the southwestern parts of Western Cape, distributed from Doringbaai to Nuwerus and extending to Bitterfontein in central Namaqualand with a sight record from Elandsbaai (Fig. 32); it is found on sandy slopes and flats below 1000 m. Flowering occurs from June to September.

Additional specimens examined. SOUTH AFRICA. Western Cape. **3118 (Vanrhynsdorp):** Bitterfontein (–AB), 12 July 2006, *Bruyns 10468* (NBG); 5 km N of Holrivier railway station, Lutzville (–AD), 10 Aug. 1977, *Le Roux 2185* (NBG); 8 km W of Nuwerus, Kwaggaskop (Quaggaskop) Farm (–BC),

11 Aug. 1977, *Le Roux 2247* (NBG); 1.1 mi. (1.8 km) N of Doringbaai (–CC), 26 June 1988, *Boucher 118* (NBG); Strandfontein (–CC), 12 July 1964, *Hall 2854* (NBG); Doringbaai (–CC), 12 June 1970, *Hall 3518* (NBG); Bojaansklop Nature Reserve, 10 km S of Doringbaai (–CD), July 1994, *Van Zyl 4402* (NBG). **3218 (Clanwilliam):** Nuwerus (–DC), 7 Sep. 1945, *Compton 17308* (NBG).

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