




Othonna sonchifolia L. is an earlier name for *Senecio cymbalarifolius* L. (Asteraceae: Senecioneae)



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Background: Ongoing systematic studies in the African flora necessitate periodic nomenclatural adjustments and corrections.

Objectives: To effect requisite nomenclatural changes.

Method: Relevant literature was surveyed and type material located and examined.

Results: A nomenclatural correction is necessary in *Othonna* L. and *Senecio* L. (Asteraceae).

Conclusions: *Othonna sonchifolia* L. is recognised as the earliest name for *Senecio cymbalarifolius* (L.) Less. and the new combination *Senecio sonchifolius* (L.) J.C. Manning & Magoswana is provided for the species. *Othonna cymbalarifolia* is lectotypified and *Senecio hastifolius* (L.) Less. is reinstated from synonymy as a species distinct from *S. sonchifolius*.

Introduction

A recent revision of *Cineraria* L. by Cron, Balkwill & Knox (2006) included several taxa that were excluded from the genus as taxonomically uncertain. We have reviewed the types of some of these names as part of a revision of the geophytic species of *Othonna* L., and our examination of the type illustration of *Othonna sonchifolia* L. leads us to conclude that it is conspecific with *Senecio cymbalarifolius* L. making it the earliest available name for this taxon.

Othonna sonchifolia L. (Linnaeus 1753) is based on an engraving in Breyne's (1739) *Prodromi fasciculi rariorum plantarum primus et secundus, 'Jacobaea, sonchi folio, flore purpureo amplo, africana'* (Figure 1). This illustration depicts a tuberous-rooted herb with lyrate basal leaves, ovate cauline leaves and two pedunculate, radiate capitula with uniseriate, oblong involucre bracts. Johann Breyne (1680–1764) was a German botanist, palaeontologist, zoologist and entomologist. His illustration of *O. sonchifolia* is derived from a living plant sent to Europe from the Cape of Good Hope by Heinrich Oldenland (1663–1697), a German physician, botanist and land surveyor (Glen & Germishuizen 2010).

Othonna sonchifolia was subsequently transferred to the genus *Cineraria* L. as *Cineraria sonchifolia* (L.) L. (Linnaeus 1763) and later to the genus *Doria* Thunb. as *Doria sonchifolia* (L.) Thunb. (Thunberg 1800). This latter transfer is inexplicable as Thunberg (1800) distinguished *Doria* from allied genera by its discoid heads, whereas those of *O. sonchifolia* are clearly radiate. This confusion was evident to Candolle (1838:309), who treated *C. sonchifolia* as an uncertain species in *Cineraria*. The species was entirely ignored by Harvey (1865) in his account of the family in southern Africa, and the name passed into obscurity until it was highlighted by Cron et al. (2006). Candolle (1838) evidently overlooked the fact that Linnaeus (1763) had originally published the name *O. sonchifolia* L. (1753), thereby rendering his (Candolle's) later new species *O. sonchifolia* DC. (1838) an illegitimate homonym (McNeil et al. 2012: Art. 53). This name was based on a collection made by Carl Zeyher (1799–1858) around Stellenbosch, South Africa, and is currently in use for a radiate, yellow-flowered species of *Othonna* from the Western Cape (Goldblatt & Manning 2000; Harvey 1865; Manning & Goldblatt 2012).

Two other names are relevant here. *Othonna cymbalarifolia* L. (1760), like *O. sonchifolia*, was based on plants collected by Oldenland (Figure 2). This taxon was later transferred to *Senecio* by Lessing (1832) and then by Candolle (1838) to the new genus *Brachyrhynchos* DC., a small genus of rather disparate elements that were distinguished from *Senecio* by their shortly beaked cypselas. *Brachyrhynchos* was not recognised by later authors, including Harvey (1865), who followed Lessing (1832) in treating the species in *Senecio*. *Cineraria hastifolia* L. (Linnaeus 1782), based on an unlocalised collection of Anders Sparrmann's (1748–1820) from the Cape of Good Hope (Figure 3),

was also transferred to *Senecio* by Lessing (1832), where it has since remained, initially as a distinct species (Candolle 1838) but later as a variety of *S. cymbalarifolius* (L.) Less. (Harvey 1865).

As circumscribed by Harvey (1865) and subsequent authors, *S. cymbalarifolius* is a polymorphic, tuberous pyrophyte with petiolate basal leaves and smaller, sessile cauline leaves.

The blade of the basal leaves is variously sagittate to reniform or lyrate and pinnatisect, often purple beneath, and either subglabrous or roughly hairy. The capitula are radiate, either purple or white, and solitary or few on scaly peduncles, rarely grouped in lax corymbs. The involucre bracts are few, and unusually broad for *Senecio*, somewhat resembling those in *Othonna*. The species is restricted to southwestern South Africa, from the Cederberg to Bredasdorp (Goldblatt & Manning 2000; Manning & Goldblatt 2012).

Among the material of *Senecio/Brachyrhynchos cymbalarifolius* that was available to him, Candolle (1838) distinguished various combinations of leaf shape and corolla colour as separate varieties, distinguishing plants with lyrate-pinnatisect leaves and 'yellow' (actually white or cream-coloured) florets as var. *flavus*, those with lyrate-pinnatisect leaves and purple florets as var. *purpureus*, and those with suborbicular or reniform leaves and purple florets as var. *rotundifolius*. These distinctions were maintained by Harvey (1865), who included *S. hastifolius* as a fourth variety, var. *hastifolius*, distinguished by its deeply 3- to 5-lobed or pedatifid leaves and yellowish (again actually white or cream-coloured) florets. Both Candolle (1838) and Harvey (1865) had access to very few specimens. We have now examined many more collections and have studied both *S. cymbalarifolius* and *S. hastifolius* in the wild at several localities on and around the Cape Peninsula.

Materials and methods

We examined the types as well as all relevant material from Bolus Herbarium (BOL), Compton Herbarium (NBG) and South African Museum (SAM) [acronyms following Thiers (2015)]. We also studied wild populations in the field on the Cape Peninsula and on the Drakenstein Mountains.

Results

Senecio cymbalarifolius is one of three evidently allied geophytic species with distinctive tuberous rootstock and annual stems with petiolate basal leaves, treated by Harvey (1865) in his



Source: Breyné, J., 1739, *Prodomi Fasciculi Rariorum Plantarum Primus et Secundus, etc.*, Danzig

FIGURE 1: Iconotype of *Othonna sanchifolia* L. in Johann Breyné *Prodomi fasciculi rariorum plantarum primus et secundus*: 31 t. 21, f.1 (1739).



FIGURE 2: Original material of *Othonna cymbalarifolia* L. South Africa, 'Cap Bonae Spei', without date, Oldenland s.n. (G-herb. Burm.). (a), G00818193 [= *Senecio cymbalarifolius* var. *cymbalarifolius*]; (b), G00818194 [= *S. cymbalarifolius* var. *hastifolius*]; (c), G00818195 (lectotype, designated here) [= *S. cymbalarifolius* var. *cymbalarifolius*]; (d), G00818196 [= *S. cymbalarifolius* var. *cymbalarifolius*].



FIGURE 3: Holotype of *Cineraria hastifolia* L. South Africa, 'Cap. Bonae Spei', Sparrmann s.n., Herb. Linn. No. 1000.34 (LINN).

informal group *Paucifolii*. The group comprises *S. cordifolius* L.f., with cordate to ovate basal leaves with finely toothed, revolute margins and bright yellow, radiate capitula; *S. cymbalarifolius*, with polymorphic foliage with sagittate to reniform or lyrate to pinnatisect basal leaves and purple or white, radiate capitula; and *S. incertus* DC., which differs from *S. cymbalarifolius* in its discoid capitula (Harvey 1865; Manning & Goldblatt 2012). All three species are endemic to the Core Cape Floristic Region.

Senecio cymbalarifolius sensu Harvey (1865) is the most variable of the three species. Northern populations of *S. cymbalarifolius*, from the Cederberg and Cold Bokkeveld, have consistently orbicular basal leaves, sometimes with a pair of small lateral leaflets, and purple capitula. Populations from south of Ceres to the Cape Peninsula and Bredasdorp, however, are highly polymorphic in their foliage and in the colour of the florets. The colour of the florets varies among populations from the Cape Peninsula to Bredasdorp, with both purple and white-flowered plants of the various leaf morphs co-occurring at several localities. Significantly, flower colour also varies within populations and leaf morphs. Thus, several collections [e.g. Boucher 1890, 1891 (NBG)] from Kogelberg comprising individuals with consistently orbicular leaves with a pair of small lateral

leaflets have florets that are either purple (Boucher 1890) or white (Boucher 1891). It is thus clear that floret colour is not taxonomically significant in this species. There is also a continuous gradation in leaf morphology from simple, suborbicular blades to pinnatisect blades, sometimes within a single individual. Among plants with pinnatisect leaves, the terminal lobe is always at least twice as large as the lateral lobes and coarsely toothed. From the inter- and intrapopulation variation that we have seen, we conclude that there is no merit in maintaining a taxonomic distinction among vars. *flavus*, *purpureus* and *rotundifolius*.

This is not so in the case of *S. cymbalarifolius* var. *hastifolius*, however. We have examined several populations of plants corresponding to var. *hastifolius* and var. *purpureus* on the Cape Peninsula. In all instances, these populations were in close proximity to one another but we found no intermediates between them. Among the Cape Peninsula populations, plants of var. *hastifolius* are invariably white-flowered whereas those of var. *purpureus* are consistently purple-flowered. The two variants also occupy different ecological niches, with var. *purpureus* occurring on damp, rocky, often S-facing slopes or in the lee of large sandstone boulders, and var. *hastifolius* restricted to flat seepages or vleis on sandy plateaus. Examination of all available herbarium material confirms the morphological distinction in the foliage between plants of var. *hastifolius* and other forms of *S. cymbalarifolius*, as well as the ecological separation between them. The distinction in floret colour is not evident elsewhere across the range of these two varieties, however, and both occur as purple- and white-flowered plants.

Our observations on morphology and ecology lead us to conclude that *S. cymbalarifolius* var. *hastifolius* is correctly recognised as a species distinct from *S. cymbalarifolius*, and we accordingly resurrect the name at species rank.

Oldenland's type material of *Cineraria cymbalarifolius* consists of four herbarium sheets in the Burmann Herbarium in Geneva (Figure 2A–D). One of these, G00818193 (Figure 2A), bears two plant specimens; another, G00818194 (Figure 2B), bears three plant specimens; and the remaining two sheets, G00818195 (Figure 2C) and G00818196 (Figure 2D), bear just a single plant specimen each. All four sheets bear annotations in Oldenland's hand but just one of them, G00818195 (Figure 2C), bears the polynomial *Jacobaea cymbalariefolia biflora*. This collection, which we accordingly designate as the lectotype, matches our narrower circumscription of *S. cymbalarifolius*, as do the two sheets G00818193 and G00818196. The fourth sheet, G00818194, represents the plants that we treat here as *S. hastifolius*. Our identification of the specimens on these four sheets as representing these two separate species is borne out by corresponding determination labels for '*Senecio cymbalarifolius* (L.) Less.' and '*Senecio hastifolius* (L.f.) [sic.] Less.' that were affixed to the specimens in June 1929 by the South African botanist C.A. Smith (1893–1956).

It is possible or indeed likely that the type of *O. sonchifolia* was cultivated from tubers from one of the three populations

of plants of *S. cymbalarifolius* represented by Oldenland's herbarium specimens but this remains only a possibility. In any event, the illustration cannot be matched directly to one of the pressed specimens.

Taxonomic treatment

Senecio sonchifolius (L.) J.C. Manning & Magoswana, *comb. nov.* *Othonna sonchifolia* L., Sp. Pl. 2: 924 (1753) [non *O. sonchifolia* DC. (1838), nom. illeg. = *O. bulbosa* L. (1753)]. *Cineraria sonchifolia* (L.) L., Sp. Pl. ed. 2, 2: 1243 (1763). *Doria sonchifolia* (L.) Thunb., Nov. Gen. Pl.: 167 (1800). Type: South Africa, without precise locality or date, *Oldenland s.n.*, illustration in Breyne, Prodr. Fasc. Rar. Pl.: 31 t. 21, f.1 (1739).

Othonna cymbalarifolia L., Pl. Rar. Afr.: 24 (1760), *syn. nov.* *Cineraria cymbalarifolia* (L.) L., Sp. Pl. ed. 2, 2: 1242 (1763). *Senecio cymbalarifolius* (L.) Less., Syn. Gen. Compos.: 391 (1832). *Brachyrhynchos cymbalarifolius* (L.) DC., Prodr. 6: 438 (1838). Type: South Africa, 'Cap Bonae Spei', without date, *Oldenland s.n.* (G-herb. Burm. G00818194 – image!, lecto., designated here).

Brachyrhynchos cymbalarifolius var. *flavus* DC., Prodr. 6: 438 (1838), *syn. nov.* *Senecio cymbalarifolius* var. *flavus* (DC.) Harv. in Harv. & Sond., Fl. Cap. 3: 375 (1865). Type: South Africa, 'Draakenstensberg' [Drakenstein Mtns], without date, *Drège s.n.* (G-DC. – image!, holo.).

Brachyrhynchos cymbalarifolius var. *purpureus* DC., Prodr. 6: 438 (1838), *syn. nov.* *Senecio cymbalarifolius* var. *purpureus* (DC.) Harv. in Harv. & Sond., Fl. Cap. 3: 375 (1865). Types: South Africa, 'Draakenstensberg' [Drakenstein Mtns], without date, *Drège s.n.* (G-DC – image!, syn.); South Africa, 'in distr. urbis', without date, *Ecklon s.n.* (G-DC – image!, syn.).

Brachyrhynchos cymbalarifolius var. *rotundifolius* DC., Prodr. 6: 438 (1838), *syn. nov.* *Senecio cymbalarifolius* var. *rotundifolius* (DC.) Harv. in Harv. & Sond., Fl. Cap. 3: 375 (1865). Type: South Africa, 'Genadenthal [Genadendal]', without date, *Delessert s.n.* (G-DC – image!, holo.).

Senecio hastifolius (L.) Less., Syn Gen. Compos.: 392 (1832); Thunb., Fl. Cap.: 672 (1823). *Cineraria hastifolia* L., Suppl. Pl.: 376 (1782). *Senecio cymbalarifolius* var. *hastifolius* (L.) Harv. in Harv. & Sond., Fl. Cap. 3: 375 (1865). Type: South Africa, 'Cap. Bonae Spei', without date, *Sparrmann s.n.* (LINN 1000.34 – image!, holo.).

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

J.M. was the project leader, L.M., A.M. and J.B. made conceptual contributions.

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