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Dudleya updated

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Fig. 1

Dudleya updated

Colin C. Walker

What's new in the world of dudleyas?

Dudleya is a cinderella genus in the Crassulaceae closely resembling the far more familiar and popular echeverias. Significantly, dudleyas are restricted to the winter rainfall region of western North America and hence require cool wet winters and hot dry summers, conditions that are tricky to replicate in cultivation, especially in the UK.

Another feature of dudleyas which has not endeared them to collectors is that the perennial species tenaciously retain their dead leaves, making them somewhat untidy and hence unpopular for the show

bench. Despite these shortcomings, the genus does have its followers, one of whom is Simon Snowden who wrote an introduction to the genus for the *Cactus and Succulent Review* (Snowden, 2020).

The new book *Dudleyas* (Fig. 2), published in May this year, should reinvigorate interest in these plants. What follows is an update on Simon's article based on Spath et al. (2024).

This book is a pictorial feast surveying these attractive rosette plants, mainly in habitat but also in cultivation.

Above: *Dudleya pachyphytum* with a 15cm diameter rosette

Dudleya displays a range of diversity from small, delicate deciduous geophytic corms to large robust, perennial rosettes up to 50cm or more across, usually with glaucous or farinose (powdery white) coverings to the leaves.

So, what is new in the world of dudleyas? Firstly, *Dudleya* has been shown to be monophyletic when it includes the formerly segregate genera *Hasseanthus* and *Stylophyllum*, meaning that this genus has a single evolutionary origin and hence, fortunately, it is taxonomically sound. It is, however, only very distantly related to *Echeveria* and its close relatives such as *Graptopetalum* and *Pachyphytum*. This is partially evidenced by the absence of any naturally-occurring or artificially-produced intergeneric hybrids between *Dudleya* and *Echeveria*.

Spath et al. accept 49 species, 23 subspecies and five possible 'new' species. They reprint a molecular family tree for the genus which clearly indicates that *Dudleya* taxonomy will need to change quite drastically in the coming years to accommodate the molecular evidence.

Firstly, the three currently accepted subgenera: *Dudleya*, *Hasseanthus* and *Stylophyllum*, are not supported by the molecular data, such that a new infrageneric classification is required. Secondly, some species currently composed of three or four subspecies will need to be split into several discrete species. The world of *Dudleya*, therefore, looks set for a step change in its taxonomy.

Spath et al. also provide a good perspective on the geographical distribution of the genus that occurs mainly in coastal western North America with many taxa endemic to one or a few of the Pacific Ocean islands and hence are narrow endemics.

From the conservation perspective, the authors have gone to great lengths to emphasise that this genus has been particularly targeted by poachers, who have illegally plundered natural populations. They stress the need for collectors to buy sustainably sourced material to circumvent plants being dug up from the wild. They are also cognisant of the danger that their new book could be the resource tool used to facilitate future illegal trade.

Here I showcase just five species, four of which I have grown and the fifth because not only does it have an interesting history but it also has a remarkably wide distribution relative to the rest of the genus.

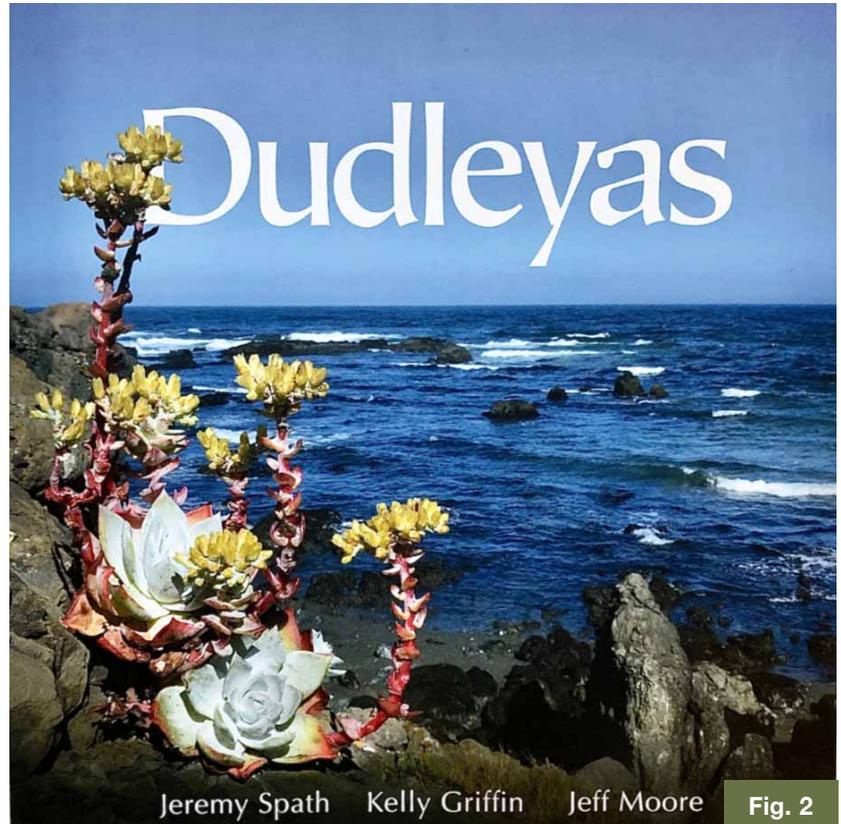


Fig. 2

Cover of the latest book on the genus

Dudleya pachyphytum

This is undoubtedly the jewel in the *Dudleya* crown and hence it is much sought after by collectors. The name '*pachyphytum*' was given in 1980 because the plant resembles those of the endemic Mexican genus *Pachyphytum* to which it is only distantly related. This name in turn comes from the Greek meaning 'thick plant' for its thick leaves (Figs. 1 and 3), which means that it is unlikely to be confused with any other member of its genus.

Its stems are initially erect as in my plant but with age they can grow up to 40cm long when they become decumbent, forming a branched cushion up to 70cm across. As shown in Fig. 3, my plant has yet to branch. Leaves are broadest at the base, up to 3.5cm across and 7.5cm long. The powdery farinose covering is incredibly easily marked. My plant has also yet to flower but the inflorescence is described as being nodding up to 14cm across bearing white flowers.



Fig. 3

Dudleya pachyphytum, about 14cm tall in a 12cm tall pot. Note especially the dead leaves

Spath et al. (2024) deservedly devote eight pages to this species and include 16 habitat photos, two of which are full page and all of which highlight its stunning beauty. Emulating the colour and clean looks of this plant in cultivation is a challenge even for the most experienced grower. This beauty unfortunately has its downside because this species, along with *D. farinosa*, has been specifically targeted by illegal poachers.

Dudleya pachyphytum is restricted in its distribution to the northern end of Cedros Island off the west coast of Baja California, hence making it a highly localised endemic. The good news from the conservation perspective, however, as reported by Spath et al. is that “The Mexican government has wisely but sadly restricted all access to this

part of the island to preserve the remaining plants”.

My plant is derived from the 1998 ISI distribution (ISI 98-40, HBG 81830) raised from seed produced on a self-pollinated plant collected on Cedros Island by R.M. Beauchamp in 1978. This also provides evidence that this species is slow-growing in cultivation since these seedlings took 20 years to reach saleable size.

Spath et al. are bang up to date since they include two species described as new only last year: *D. cochimiana* and *D. delgadilloi*, both also endemic to Cedros Island, which is also home to two other non-endemic species: *D. albiflora* and *D. acuminata*. This one Pacific Ocean island seems to be *Dudleya* heaven!



Fig. 4



Fig. 5

Dudleya albiflora

In contrast to *D. pachyphytum*, *D. albiflora* has a relatively wide distribution along a significant stretch of the western coast of Baja California, together with some inland and island populations, making it a species of least concern from the conservation point of view.

Dudleya albiflora bears narrow farinose leaves and my plant (Fig. 4) has branched. In habitat this species can grow into clumps up to 70cm across. An important point to note here is that *Dudleya* branching is caespitose (or cespitose) meaning that each rosette splits in the centre either dichotomously (into two) or more rarely trichotomously (into three). In contrast, echeverias offset or branch from the base. The dead leaves of dudleyas remain tenaciously attached to the stem and this feature, together with the mode of branching, makes propagation from cuttings somewhat tricky. I have no experience of trying to root *Dudleya* cuttings but by all accounts this is not always easy, unlike *Echeveria* propagation in which offsets generally root easily.

Dudleya albiflora is the only species I have so far flowered when in July – August 2024 (Fig. 5) it produced a 13cm tall inflorescence bearing seven branches. In habitat it is recorded as flowering in April to June. Not surprisingly the flowers are white, as are those of *D. pachyphytum*, whereas in most other species these are either pale yellow, yellowish or more rarely pink or red.

On Cedros Island a small form assumed to be *D. albiflora* with terete (circular in cross section) green leaves has been distinguished as one of the new species mentioned above: *D. delgadilloi*. Both species have similar white flowers and bloom at the same season hence intermediates between the two have been identified. Other species of *Dudleya* occur in both farinose and green forms, so whether the separation of the green forms as a distinct species is justified remains to be seen.

Based on the above features, *D. albiflora* has the appropriate common name of ‘white-flowered liveforever’; ‘liveforever’ being the general common name for all dudleyas.

Fig. 4 *Dudleya albiflora* about 15cm tall

Fig. 5 The flowers of *Dudleya albiflora*



Fig. 6

Dudleya cespitosa

This species was first described in 1803 by the renowned English botanist Adrian Hardy Haworth as *Cotyledon cespitosa*. Way back then *Cotyledon* was the catch-all genus including not only the more familiar European species (now in *Umbilicus*) but also American and African species. *Cotyledon* is now restricted to a small number of southern African species typified by *Cotyledon orbiculata*.

Notice especially that Haworth named his new species as '*cespitosa*'. Along the way this spelling was changed to '*caespitosa*' and this is how it has been generally spelt until the new *Dudleya* book appeared with the correction reverting to Haworth's original and hence valid spelling.

My plant (Fig. 6) lives up to its name by branching *caespitosely* (or *cespitosely* if you are American). Comparing *D. cespitosa* and *D. albiflora* these are very similar but the former has a far denser farinose

covering making it more attractive but also more easily marked and disfigured.

Dudleya cespitosa is an American species restricted to a narrow belt along the western coastline of California in a series of disconnected populations from north of San Francisco Bay southwards to San Diego County at its most southerly locality on the Cabrillo Monument. My plant is derived from the 2002 ISI distribution (ISI 2002-18, HBG 16598) as a rooted cutting from a plant collected by Otto Sokol on Anacapa Island, about 15 miles off the coast of Port Hueneme, California. Anacapa, incidentally, is the only Pacific Ocean island locality recorded for this species (Spath et al., 2024).

This species branches profusely to form large clumps of up to 100 rosettes. It is recorded as being quite variable and occurs in both farinose and green forms. Its flowers are a bright canary yellow borne on inflorescences up to 60cm tall.

Dudleya cespitosa
about 13cm
across

Dudleya greenei

This species looks like an intermediate between the really chunky-leaved *D. pachyphytum* and the narrower-leaved *D. cespitosa*. It is in fact a very close relative of the latter and may only be a segregate of it.

The type locality of *D. greenei* is Santa Cruz Island off the west coast of California where plants were first collected by Professor Edward Lee Greene in 1886. It is therefore named after a person and not for the colour of its leaves!

Individual white farinose rosettes (Figs. 7 and 8) range from 12–22cm across on branched stems up to 15cm long that can divide to form clumps up to 1m in diameter. Its inflorescence is up to 22cm tall bearing pale yellow to white flowers produced from May till July in habitat.

It is an island endemic occurring on just three Pacific Ocean islands (the Californian Channel Islands): San Miguel and Santa Rosa, in addition to Santa Cruz, where it grows on coastal cliffs up to 150m altitude where it is relatively uncommon.

Dudleya arizonica

Of the five species illustrated here this is the only one that I have never grown. It is included here for two reasons. Firstly, it is an example of the outstanding work of the famous English botanical artist Mary Emily Eaton, whose work was showcased in the last issue of the *Cactus and Succulent Review* (Shaw, 2024) with examples from Britton & Rose's renowned four volume monograph *The Cactaceae* (1919–1923). Eaton, however, painted a wide range of other plants including succulents, many of which appeared in *Addisonia*, the scientific house journal of the New York Botanical Garden where she was employed. Fig. 9 is reproduced from that source, first published by Rose (1923) when he described *D. arizonica* as a new species. In addition to Eaton's published work, the National Geographic Society of Washington D.C. apparently possesses about 500 of her unpublished paintings (Blunt & Stearn, 1994).



Fig. 7

Dudleya greenei in a 9cm diameter pot

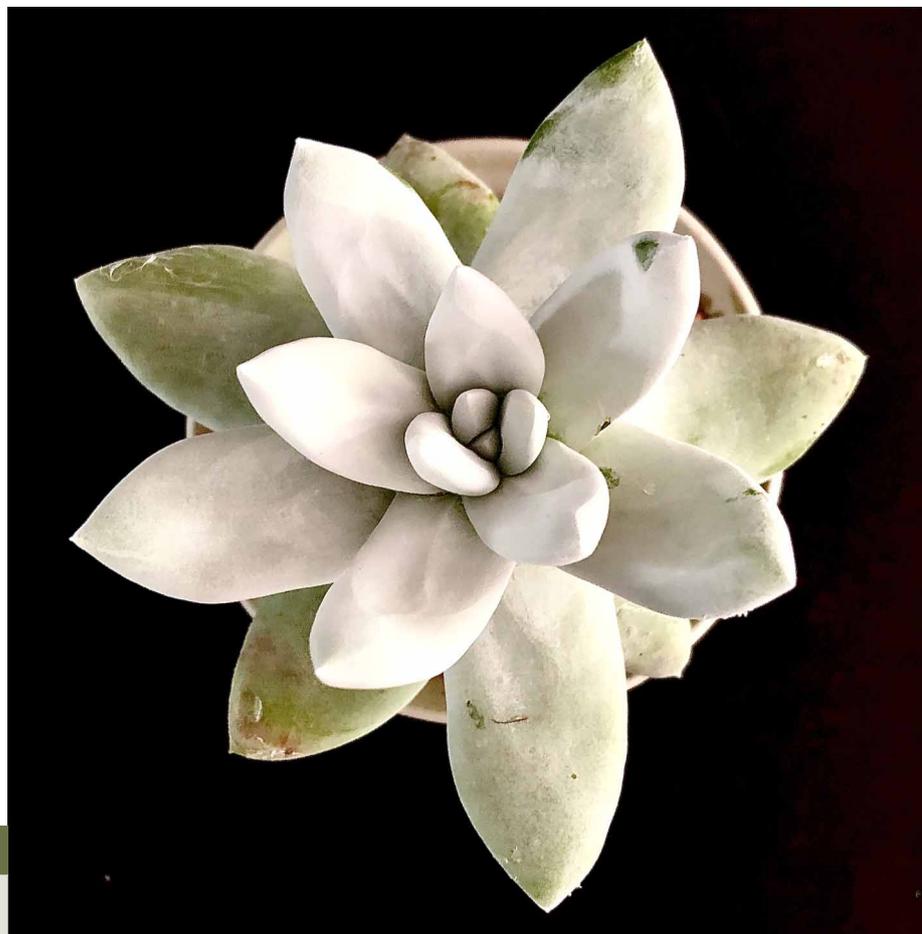


Fig. 8

Dudleya greenei with a 10cm diameter rosette

The second reason for including *D. arizonica* is that, in contrast to *D. pachyphytum* and *D. greenei* which are narrow island endemics, the 'inland' species *D. arizonica* has the widest distribution of all, ranging from south-west Utah south to Ángel de la Guarda Island in the Gulf of California. Even more significantly, this is the only *Dudleya* species occurring in mainland Mexico where, in stark contrast, the genus *Echeveria* is at its most diverse with perhaps 140 endemic species.

Dudleya arizonica was first collected by Mrs. Charles Bly of Yucca, Arizona on rocky canyon walls in Mohave County. It is now known to occur in at least five widely-spaced populations in this US state, where the only other native *Dudleya* is *D. saxosa* subsp. *collomiae*. *Dudleya arizonica* had been reduced to subspecific status as *D. pulverulenta* subsp. *arizonica* in 1943 but has since been reinstated as a distinct species (Spath et al., 2024).

Dudleya arizonica has short stems, small rosettes of 15–25 leaves and is also less densely farinose than the larger, typical *D. pulverulenta*. Its inflorescence is up to 60cm tall bearing red or apricot-yellow flowers. ■

Photos: Colin C. Walker

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Fig. 9

Dudleya arizonica in a watercolour painting by Mary Eaton (from Rose, 1923)