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Three New Species of *Cistanthe* Spach (Montiaceae) from the Atacama Region, Chile with Additional notes on *Cistanthe* Taxonomy

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ABSTRACT

Three new species of Cistanthe Spach from Huasco Province, Atacama Region, Chile are diagnosed and described: C. ipniana Hershk. of C. sect. Rosulatae (Reiche) Hershk. and C. behacheliana Hershk. and C. gbifiana Hershk., both of C. sect. Cistanthe. Their morphology, ecology, and relationships are discussed. In addition, a recent revision of C. sect. Rosulatae is reviewed and corrected.

Keywords: *Cistanthe*, Montiaceae, Chile

1. Introduction

Cistanthe Spach (Montiaceae) sensu [1] comprises, including taxa named here, ca. 40 succulent, mostly herbaceous annual and perennial species. All but two species are endemic to the Chilean Floristic Region sensu [1], most of these native/endemic to geopolitical Chile, a few extending to the Andes of Argentina, and a few occurring in coastal SE Peru. For reasons described in [1, 2; cf. 3], species recognition has been exceptionally difficult in this genus. Nonetheless, considerable progress has been made within the past eight years. Between new species discoveries and new recognition of species formerly considered to be taxonomic synonyms [1, 2, 4–18], the number of species accepted here for Chile, 35, is more than twice the number accepted in a 2018 national floristic checklist [19], 17 (ignoring *Philippiamra* Kuntze species there classified in *Cistanthe*) two of which I consider synonyms, hence 15.

In order to facilitate my own ongoing work on *Cistanthe* taxonomy, I recognize here three new taxa from Huasco Province, Atacama Region, Chile. These are *C. ipniana*, an annual which I classify in *C.* sect. *Rosulatae* (Reiche) Hershk. sensu [6] (non [1]) and *C. behacheliana* and *C. gbifiana*, both perennial herbs which pertain to *C.* sect. *Cistanthe*. Recognition, diagnosis, and description here are expeditious and brief in order to make available the names for use in a more detailed work in progress.

2. Methodology

Plants were collected in the field and the plants were maintained in water ex situ for morphological analysis. Plants of all three species had floral buds but no open flowers in the field, but all flowered after collection.

The species here are named, diagnosed, and otherwise documented per the ICN [20]. Original resolution figures are included in a Supplemental File.

3. Results and Discussion

3.1 Taxonomy of Cistanthe ipniana

Cistanthe ipniana Hershk., sp. nov. Holotype: CHILE: Atacama Region, Huasco Province, Freirina Comuna, highway C-496 ca. 10 km west of the junction with highway C-500, in comparatively moist herbaceous patches in washes on south side of road, -28.903 -71.383, 280 m elev., 22 September 2025, *Hershkovitz s.n.* (SGO) (Fig. 1).

Diagnosis: Succulent annual herb similar to *C. lingulata* (Ruiz & Pav.) Carolin ex Hershk. and *C. thyrsoidea* (Reiche) Peralta & D.I.Ford in its linear leaves and erect rather than (sub-)rosettiform vegetative architecture but differing in having simple, unbranched cymes, much larger floral organ dimensions, bracts and sepals that are larger, membranous, and scarious at anthesis rather than much smaller, fleshy, and green, more numerous stamens and ovules, and a well-exserted style; similar to *C. litoralis* (Phil.) Carolin ex Hershk. and *C. longiscapa* (Barnéoud) Carolin ex Hershk. in all inflorescence and floral characteristics, but differing in having linear leaves and an erect habit similar to *C. lingulata* and *C. thyrsoidea* rather than a prostrate to ascending habit.

Description: Succulent erect annual herb, strict or less often branching from the base, the habit consequent to elongation of basal internodes following germination and early senescence of the basal leaves, up to 25 cm high, the 1° stem terminating in a cyme. **Taproot** slender, linear, up to ca. 4 mm broad, up to 10 cm long. **Branches** in leaf axils, up to ten along the 1° stem, becoming well separated by internode growth, unbranched, spreading-ascending, pale green, sometimes tinged reddish, up to 15 cm long, leafless basally, forming leafy 2° rosettes apically that terminate in a cyme. **Leaves** linear, gray-green-glaucous, sometimes tinged reddish abaxially, slightly inrolled along the margin, adaxial surface ± smooth, apex acute to oblique, up to 8 cm long and 1 cm broad, petioles indistinct. **Inflorescence** a cincinnus emerging from the 1° rosette and branch 2° rosettes, the 1° stem inflorescence peduncle up to 20 cm long, bearing 1-2 bracts, the branch stem inflorescence peduncles bractless, up to 10 cm long. **Involucral/inflorescence bracts** scarious before anthesis, amplexicaul, transparent, tinged red, the veins black, up to 7 mm long, 15 mm broad, the floral bracts up to 6 mm long, 10 mm broad. **Flowers** hypogynous, perfect, up to ca. 8 per cyme. **Pedicels** 5–10 mm long at anthesis. **(Pseudo)sepals** 2, broadly ovate, thin, initially pale green and lustrous but becoming scarious by anthesis, the abaxial enclosing but not clasping the adaxial, carinate, 9 mm long, the adaxial carinate, the margins fused in the apical 2 mm, 8 mm long. **Petals** 5, spathulate, sometimes emarginate/cleft, rose, pale yellow-green at the ca. 15mm long and broad. **Stamens** ca. 15–30, filaments whitish to rose, 3–4 mm long, anthers dorsifixed, versatile, reddish, 1.5 mm long. **Pistil** syncarpous, tricarpellate, ovary broadly ovate, green, ca. 2 mm long, style ca. 5–8 mm long, stigma branches 3, 1.5 mm long.. **Fruit** a loculicidal capsule, its morphology seen in 2000 but not here recalled in detail and not yet formed in the Type material. **Seeds** (per [21]) pusticulate-tomentose (see [22]).

Distribution. Similar specimens were recorded in [21] from Freirina Comuna and adjacent La Higuera Comuna of Elqui Province, Coquimbo Region. These include *Hershkovitz 00-139*, *00-160*, *00-264*, *02-75*, and *02-145*. All of these collections and photos thereof eventually were destroyed. Nonetheless, I consider that the species is distributed near the coast from northwestern La Higuera Comuna, Elqui Province, Coquimbo Region to southern Huasco Province, Atacama Region.

Etymology. Species I have named since 2018 all have honored individuals that contributed indirectly but significantly to my research. The present work honors organizations that likewise have made my work possible by providing invaluable online resources that are freely available to absolutely any researcher anywhere in the world regardless of institutional (viz. political) affiliation or socioeconomic condition. In this case, the epithet *ipniana* is a Latinized neologism that honors the International Plant Name Index, or IPNI (www.ipni.org), with whose staff I have had frequent interactions over the past eight years, and who have provided me with critical nomenclatural commentary.

Fig. 1 – *Cistanthe ipniana.* **A.** Google Earth image of the Type locality. **B.** A, magnified, showing the wash crossing Highway C-496 in which the plants were abundant. **C.** Some plants at the Type locality. **D.** Extracted and partially pruned plant. Note that the longest and most mature inflorescence branch is the 1° plant stem. The lateral branches develop first a terminal 2° rosette from which a long peduncle emerges. Sometimes the lateral inflorescences mature faster than the primary. Note also the nodes/internodes at the base of the primary stem. The internodes elongate in between initially brachyblastic basal rosette leaves which soon die. **E.** Image of a cymule with the first flower one day before anthesis. The sepal is mostly transparent at this stage, and the bracts are scarious. **F.** Abaxial sepal, lateral view, pre-anthesis. **G.** Abaxial sepal, ventral view showing the developing corolla. **H.** Adaxial sepal of F and G, ventral view showing fusion of the margins towards the apex. **I.** Flower.

Observations. *Hershkovitz 02-145* in [21] was collected perhaps 5 km east of the present Type locality. I attempted unsuccessfully to recollect the species from this original locality in 2022 and 2025, but the rainfall was much less than in 2002, hence the substrate was too dry. However, the species was abundant in some drainages at lower elevation to the west.

The species is distinguished easily on the basis of its peculiar combination of vegetative traits of *C. lingulata/thyrsoidea* and reproductive traits of *C. litoralis/longiscapa*. Nevertheless, I classify it in *C.* sect. *Rosulatae* rather than *C.* sect. *Thyrsoideae* Hershk. on the basis of its floral and seed traits. Because of morphological intergradation, [18] did not accept the segregation of *C.* sect. *Thyrsoideae* as a *C.* sect. *Rosulatae* subsection as proposed in [1] and did not cite its later elevation to a section in [6]. However, this segregation was based on molecular phylogenetic and not morphological evidence. Still, since the sections are sister, they can be combined without *C.* sect. *Rosulatae* becoming polyphyletic.

Otherwise, the 2025 revision [18] of Chilean *C.* sect. *Rosulatae* (including *C.* sect. *Thyrsoideae*), the first in 127 years, is timely and much needed, but it includes numerous problems:

(i) [18] failed to mention *C. floresiorum* J.M.Watson [15, cf. 1], whose pertinence to *C.* sect. *Rosulatae* (sensu [6]) is proven by molecular evidence [1, 21].

(ii) [18] evidently confused *C. coquimbensis* (Barnéoud) Carolin ex Hershk. with *C. chrysantha* (I.M.Johnst.) Peralta & D.I.Ford, while listing the latter as a synonym of *C. cymosa* (Phil.) Carolin ex Hershk. The authors cited but did not examine the *C. coquimbensis* Type, whose high resolution image is available online (www.gbif.org/es/occurrence/1212579002). As discussed in [2], the Type and its original (and accurate) description in [23] suggest that *C. coquimbensis* is closely related to and possibly not even distinct from *C. vicina* (Phil.) Carolin ex Hershk. The sepals of the numerous mature flowers of the Type are ca. 8–10 mm long, whereas [18] described the sepals as 5–7 mm long (as in *C. chrysantha*). Barnéoud [23] described the seeds as, effectively, hairy sensu [22], and even spinose, whereas [18] described the seeds as, effectively, pusticulate-tomentose sensu [22]. The result is that the white-flowered plants that [18] referred to *C. coquimbensis* and considered to be endemic to the Coquimbo Region are actually Coquimbo Region plants of *C. chrysantha*. Moreover, as described in [10; cf. 21], these white-flowered plants are common also in Huasco Province, Atacama Region, where they occur among pink-flowered plants of *C. cymosa*. Meanwhile, [18] described flower color in *C. cymosa* (including *C. chrysantha*) only as yellow.

(iii) [18] considered *C. subverticillata* (Phil.) Carolin ex Hershk. as a synonym of *C. trigona* (Bertero ex Colla) Carolin ex Hershk. This is peculiar, because the authors cited [2], which described/illustrated the clear differences between these species in their sepal and floral morphology, including style length. In fact, [2] demonstrated that *C. subverticillata* shares its characteristics with *C. chamissoi* (Barnéoud) Carolin ex Hershk. The former species usually has broader leaf blades, larger flowers, and greater inflorescence branching. At the same time, [18] recognized *C. glaucopurpurea* (Reiche) S.T.Ibáñez & Teillier, which [2] suggested, on the basis of its narrow leaves, pertained to *C. chamissoi*. But [18] also distinguished *C. glaucopurpurea* from *C. chamissoi* on the basis of greater inflorescence branching. Moreover, they referred to this species broader-leaves precordilleran plants from Elqui Province that [2] referred to *C. subverticillata*. Based on the evidence, I now propose that *C. glaucopurpurea* is a more coastal form of *C. subverticillata* with narrower leaves. Online images of a plant from the coastal ranges of Limarí Province (the source of the *C. glaucopurpurea* Type; https://www.inaturalist.org/observations/136659598) confirms this interpretation. The images show plants with linear 2° rosette leaves (similar to the *C. glaucopurpurea* Type illustrated in [18]), but also basal rosette leaves differentiated into a rhombic blade and tapered petiole (cf. [2]). Basal leaves are absent in the Type image in [18] and probably had senesced. Thus, I consider that *C. glaucopurpurea* is a synonym of *C. subverticillata*, and that the range of the latter includes the precordillera between the Metropolitana and Coquimbo Regions, extending to the coastal ranges in the last. Other evolutionary interpretations of *C. glaucopurpurea* are plausible (viz. hybridization with sympatric *C.*

chamissoi), but they do not alter the conclusion that the precordilleran plants are *C. subverticillata* and not *C. trigona*.

(iv) [18] discussed variability in the *C. longiscapa* (Barnéoud) Carolin ex Hershk. complex, but concluded that *C. litoralis* (Phil.) Carolin ex Hershk. was taxonomically the same as *C. longiscapa* (contra [12]). While I agree that more analysis is necessary, I am inclined to refer all coastal and interior lowland Atacama and Antofagasta Region plants to *C. litoralis*. This is based partially on seed morphology, but also on ecogeographic differences, since the Type of *C. longiscapa* is from the precordillera of Elqui Province, Coquimbo Region, and the Type of *C. litoralis* is from coastal Copiapó Province, Atacama Region [12]. Because of hydrological and temperature conditions, the coastal populations naturally tend to germinate/reproduce more perennially. Because of both greater precipitation even in drought years and Andes runoff, the precordilleran populations must germinate/reproduce at least more perennially than the lowland central Atacama plants, which germinate/reproduce on average perhaps every 5+ years. The result is that the coastal and precordilleran plants – which happen to represent the two Types – naturally would tend to differentiate and diverge. The precordilleran plants might tend to evolve a colder stratification temperature than either the coastal or lowland interior plants. And, as it happens, the lowland interior plants usually have the seed morphology as the coastal plants.

(v) [18] remarked that they reported for the first time the presence of *C. lingulata* in Chile. Actually, I had mentioned this in 2018 in [24], based on a collection I was shown in 2007. Perhaps I ought to have reported it at that time, but in the period 2007–2018, I was in a post-traumatic stupor consequent to the unimaginable, unspeakable, and unforgivable malevolent/predatory narcissistic abuse to which I was subject in the period 2000–2006, following the “engineering” of both my arrival to and prompt dismissal from the University of Chile and the deliberate professional, social, economic, and psychological destruction that malevolent/predatory narcissists systematically impose upon their victims (see also [25]). Consequently, during this period, I had no interest botany, least of all *Chilean* botany, especially given the complicity and even proactive participation (as “flying monkeys”) in this abuse by several academic colleagues. This explains why, 18 years after the fact, [18] reported “for the first time” the presence of *C. lingulata* in Chile. In any case, [24] was a preliminary version of [1], in which I omitted the *C. lingulata* reference. Later in [2], I reported that three of the six *C.* sect. *Thyrsoideae* species occurred in Chile, which indirectly referred to the presence of *C. lingulata*. [18] noted that *C. lingulata* and *C. thyrsoidea* were very similar, if not barely distinguishable. They reclassified all forms from north of Chile’s arid diagonal (viz. from the NE Antofagasta Region northward) as *C. lingulata* and all forms south of the diagonal (viz. from the Atacama Region southward) as *C. thyrsoidea* (cf. [19]).

(vi) [18] did not note that C. *thyrsoidea* commonly is cleistogamous (pers. obs. from plants in the field and in cultivation). Of course, this is not so evident from herbarium specimens.

(vii) [18] reported my 2022 assessment in [12] that *C. josetomasallendeana* Hershk. was restricted to the Type locality at Puerto Oscuro, Choapa Province, Coquimbo Region. I have found since that this species occurs at multiple sites throughout the Coquimbo Region and also is far more widespread at Puerto Oscuro than I had found initially.

As a final remark, since [2], I have come to appreciate that images of *C. weberbaueri* (Diels) Carolin ex Hershk. of SW Peru are visually indistinguishable from those of *C. vicina* in Chile. This parallels the case of *C. lingulata*/*thyrsoidea*, except that there are no plants of the first pair in far northern Chile. The finding is problematic, because in [6] (cf. [1]), I classified *C. vicina* in *C.* sect. *Rosulatae* and *C. weberbaueri* in *C.* sect. *Thyrsoideae*. The former assignment was based on molecular evidence in [21] (in which *C. vicina* plants were erroneously characterized as “giant forms” of *C. arenaria* (Cham.) Carolin ex Hershk.; see [2]), but I had no DNA of *C. weberbaueri*, and the expense of the permit process in Peru rendered its collection prohibitive. I classified *C. weberbaueri* in *C.* sect. *Thyrsoideae* based on the inflorescence, sepal, and seed characteristics shared with *C. thyrsoidea*, notwithstanding that the same traits were shared also with *C. vicina*. However, in [2], I argued that the sepal and seed traits shared by *C. vicina* and *C.* sect. *Thyrsoideae* were shared with *C.* sect. *Cistanthe*, hence likely are pleisiomorphic in *C.* sect. *Rosulatae*. This is fascinating from a historical biogeographic perspective, because *C.* sect. *Cistanthe*, *C.* sect. *Thyrsoideae*, and *C. vicina*/*weberbaueri*, taxa with the "primitive" traits, all share a Chile and SW Peru semi-disjunct distribution, whereas presumptively "derived" *C.* sect. *Rosulatae* are restricted to Chile. Meanwhile, the extreme hyperaridity of far northern Chile is considered to have originated relatively recently. Thus, the current semi-disjunction may represent vicariance of the ancestral *Cistanthe* complex followed by diversification into central Chile following the replacement of its primeval Tertiary forest with the more open Mediterranean climate vegetation that developed later.

3.2 Taxonomy of C. behacheliana

Cistanthe behacheliana Hershk., sp. nov. Holotype: CHILE: Atacama Region, Huasco Province, Freirina Comuna, highway C-500 ca. 22 km west of the junction with the Panamerican Highway, loose sandy substrate in washes below sand dune "outcrops" on slopes otherwise covered with shrubby coastal scrub vegetation. -28.967 -71.106, 500 m elev., 19 September 2025, *Hershkovitz s.n.* (SGO) (Fig. 2).

Diagnosis: Succulent hemicryptophytic or geophytic perennial her but probably facultatively annual, similar to *C. reshetiana*, differing in its decidedly fusiform taproot, broader leaves, smaller flowers, and prevalence of albinism, and similar to *C. philhershkovitziana* but differing in its stiffer and never deeply rugose leaves, more sinuous peduncles, paucity of inflorescence bracts, besides the prevalence of albinism.

Description: Succulent hemicryptophytic or geophytic rosettiform perennial but probably facultatively annual, rosettes up to 20 cm broad, branching at the caudex, but the branches also rosettiform. **Taproot** fusiform, fleshy, up to 12 cm long. **Stems** brachyblastic, caudical rhizome ca. 5 mm broad. **Leaves** spathulate to obovate, up to at least 8 cm long and 4 cm broad, the petiolar region tapered, up to 1 cm broad at the base, apex acute to obtuse, green-glaucous in albino plants, rarely gray-green glaucous and then tinged reddish abaxially, shallowly rugose adaxially. **Inflorescence** a cincinnus emerging from rosette leaf axils, the peduncles up to 20 cm long, somewhat to markedly sinuous, bearing a small foliar bract near the base and then a foliaceous bract with dark lines abaxially 2–4 cm apical to this, then with or without additional sterile bracts more apically. **Floral bracts** narrowly ovate, sessile, foliaceous at anthesis, becoming scarious, singular for the basal flower, ca. 8 mm long, thereafter 2, unequal, the larger up to 5 mm long, the smaller half this size, the flower associated with the smaller one, marked with brownish lines in albino plants, in pigmented plants not observed (yet). **Flowers** hypogynous, perfect, up to ca. 8 per cyme. **Pedicels** ca. 20 mm long at anthesis. **(Pseudo)sepals** 2, broadly ovate, unequal, the larger clasping the smaller, (5–)7–(10) mm long, foliaceous and somewhat lustrous after anthesis, marked with brownish lines in albino plants, in pigmented plants not observed (yet). **Petals** 5, white in albino plants, greenish at the base (not seen in a pigmented plant), spathulate, not emarginate/cleft, the apical margin crisped, 10–15 mm long and broad, aestivation quincuncial, the petals deaestivating in pollinated flowers, bringing the stamens in contact with the stigma. **Stamens** 15–25, filaments pale, ca. 4 mm long, anthers dorsifixed, versatile, yellow, ca. 1.2 mm long. **Pistil** syncarpous, tricarpellate, ovary ovate, green, ca. 3 mm long, style ca. 1 mm long, stigmas 3, incompletely fused, the individual carpel stigmatic margins recurved but incompletely fused with the stigmatic margins of adjacent carpels, hence the compound stigma appearing as 6-lobed. **Fruit** not seen. **Seeds** not seen.

Distribution. This species is known only from the Type locality, but mountain ranges in this section of Huasco Province remain poorly collected.

Etymology. The epithet *behacheliana* is a Latinized neologism that approximately pronounces the letters B-H-L (viz. pronounced "*Cistanthe B-H-L-iana*") which is the acronym for the Biodiversity Heritage Library (https://www.biodiversitylibrary.org), another organization that has contributed critically to my recent research on *Cistanthe*. The BHL makes freely available to absolutely any researcher anywhere in the world regardless of institutional (viz. political) affiliation or socioeconomic condition classical/antiquarian botanical literature essential for taxonomic research and otherwise scarce even in libraries.

Observations. An emergent rosette just initiating inflorescence development was illustrated as *C. philhershkovitziana* in [11]. At that time, I considered all such relatively small acaulescent plants from near the coast of the Valparaiso to Atacama Regions as this species. In fact, a more recent observation shows that *C. philhershkovitziana* extends further south to the littoral zone of the northernmost Libertador Bernardo O'Higgins Region. I attributed the variability in the species to shithappenous developmental plasticity consequent to local conditions. Recognition of *C. reshetiana* from Choapa Province, Coquimbo Region, perhaps 10 km from "typical" *C. philhershkovitziana* populations in the littoral zone, led me to revise my opinion and to examine the plants more closely. I will describe in detail elsewhere the distribution of *C. reshetiana*, which extends between Choapa and Elqui Provinces, Coquimbo Region, as well a revised distribution of *C. philhershkovitziana*.

The present plants confused me, because they are somewhat intermediate between *C. philhershkovitziana* and *C. reshetiana*. They share with the former decidedly fusiform roots and also occur in patches of nearly pure sandy substrate, in this case surrounded by denser and more organic substrate with much higher clay content and dominated by shrubbier vegetation. The plants share with *C. reshetiana* their geographic and ecological *localization* among shrubby vegetation some 40 km interior to the littoral zone, their more sinuous peduncle form, and their stiffer leaf texture. But they differ from both species, as described in the diagnosis. The flowers are notably small. My recognition of *C. behacheliana* bases partially on morphology, but also on geography and climate conditions that would tend to reinforce its evolutionary isolation. In particular, the coastal ranges from the southern Valparaiso Region to Elqui Province, Coquimbo Region, are relatively low and "open," with peaks mostly below 3000 m elevation often separated by broad valleys, with often a relatively broad coastal plain. In the La Higuera Comuna, Elqui Province, Coquimbo Region, just north of La Serena, the coastal ranges and precordillera are less well differentiated, with 4000–5000 m peaks extending more or less continuously from the Andes to the coast, the valleys are smaller, and the coastal plain is narrow in between the delta of the Río Elqui and Quebrada de los Chorros, some 50 km to the north. This transverse mountain range forms a barrier to northward advancing low pressure systems. Indeed, both rainfall and vegetation transition rather abruptly from semi-desert to desert conditions across ca. 50 km of latitude along the Panamerican Highway in between La Higuera and Cuesta Pajonales, Huasco Province, Atacama Region. *Cistanthe behacheliana* occurs in a mountainous zone on the northern, drier side of |this range, well isolated from both *C. philhershkovitziana* and *C. reshetiana*.

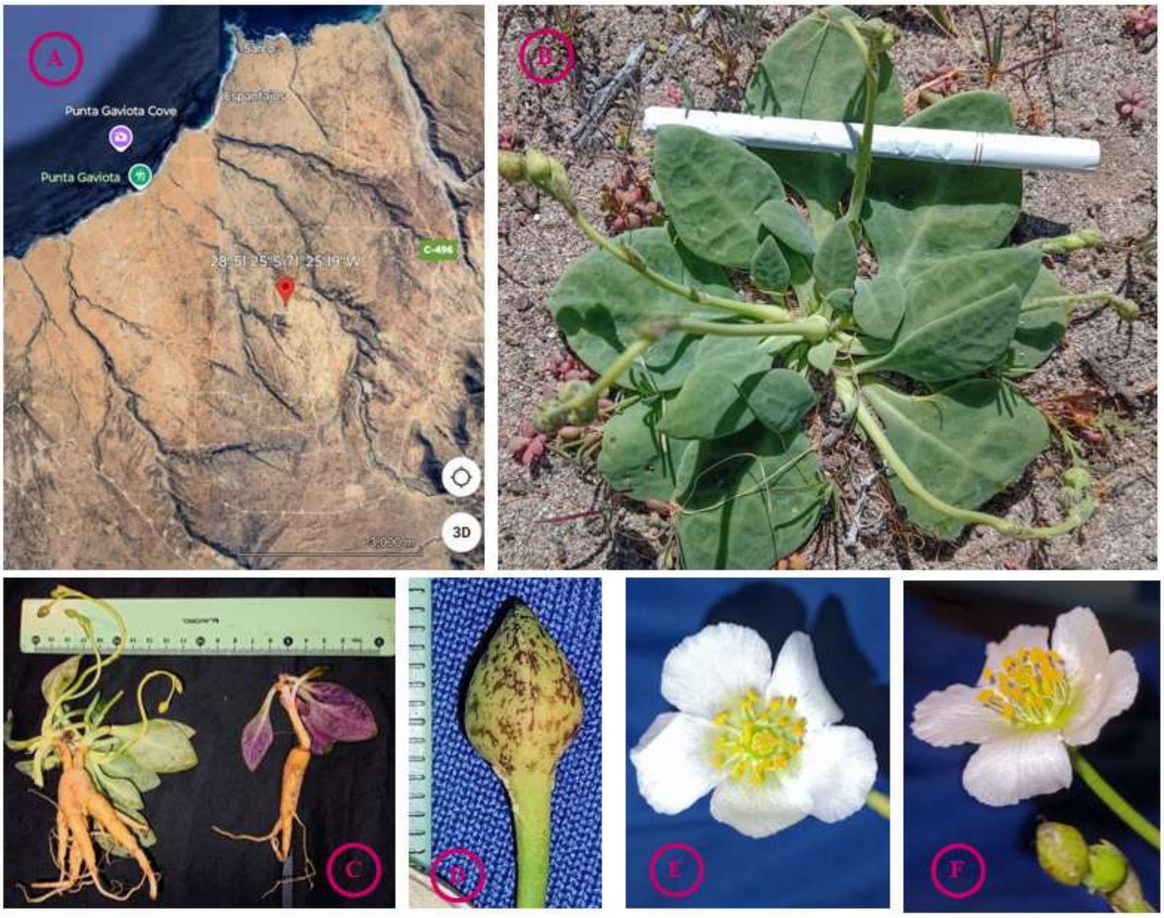

Fig. 2. – *Cistanthe behacheliana*. **A.** Google Earth image of the Type locality. **B.** Polar view of a plant at the type locality. The cigarette is 10 cm long. **C.** Lateral view of albino and pigmented plants, showing the colored abaxial leaf surface of the latter, and the decidedly fusiform roots with caudical rhizomes. **D.** Sepal showing brown markings. **E.** Flower, polar view. **F.** Flower, oblique view.

3.3 Taxonomy of C. gbifiana

Cistanthe gbifiana Hershk., sp. nov. Holotype: CHILE: Atacama Region, Huasco Province, Freirina Comuna, grounds around the main facility of Parque Eólico Sarco, ca. 16 km W of the junction of highways C-496 and C-500 and 4 km E of the coast, open shrubby vegetation dominated by *Eulychnia brevifolia* Phil. and *Frankenia chilensis* C.Presl. ex Schult. & Schult.fil. in dense, rocky, coarse whitish sand surrounding the facility, -28.903 -71.383, 283 m elev., 22 Sept 2025, *Hershkovitz s. n.* (SGO) (Fig. 3)

Diagnosis: Succulent geophytic rosettiform perennial herb but probably facultatively annual, similar to *C. philhershkovitziana*, differing in its harder taproot and thinner caudical rhizomes, markedly more rugose, obovate to suborbicular leaves that are relatively flaccid and have a suede-like grey-green adaxial surface texture and markedly reddish glaucous abaxial leaf surface. *Cistanthe philhershkovitziana* leaves are oblanceolate to spathulate, sometimes with rhombic blades and a tapering petiolar region, their surfaces sometimes are rugose (see [26]), though not as rugose as in *C. gbifiana*, their adaxial surface is suede-like to touch, and they usually are more rigid. They may be slightly tinged reddish on the abaxial surface, but not deeply so. The rosette stems are thick and resistant.

Description: Succulent geophytic rosettiform perennial but probably facultatively annual, rosettes up to 20 cm broad, sparsely or not branched at the caudex, but the branches also rosettiform. **Taproot** fusiform, thick but hard, up to 12 cm long. **Stems** brachyblastic, caudical rhizome 2 mm broad. **Leaves** obovate to suborbicular, up to ca. 8 cm long and 5 cm broad, nearly sessile or with a tapered petiolar region, up to 1 cm broad at the base, markedly rugose, somewhat flaccid and wilting rapidly when the plant is uprooted, adaxial surface suede-like to touch, dark gray-green, abaxial surface glaucous, magenta, apex rounded. **Inflorescence** a cincinnus emerging from rosette leaf axils, the peduncles up to 25 cm long, slightly sinuous, bearing a small rugose ± amplexicaul foliaceous bract near the base, ca. 18 mm long, and 4–5 evenly spaced and increasingly less foliaceous and more membranous (but green before anthesis) amplexicaul bracts apically, the membranous portion more basal and marginal and marked with black lines, 10–15 mm long. **Floral bracts** ovate, sessile, amplexicaul, green at anthesis, becoming scarious, singular for the basal flower, ca. 10 mm long, thereafter 2, unequal, the larger up to 8 mm long, the smaller half this size, the flower associated with the smaller one, all marked with black lines. **Flowers** hypogynous, perfect, up to ca. 8 per cyme. **Pedicels** 3 cm at anthesis. **(Pseudo)sepals** 2, broadly ovate, unequal, the larger clasping the smaller, up to ca. 15 mm long, foliaceous at anthesis, somewhat lustrous, marked with black lines. **Petals** 5, rose with irregular magenta spots at the base, spathulate, emarginate/cleft, ca. 20 mm X 20 mm. **Stamens** 40–50, filaments magenta, 6 mm long, anthers dorsifixed, versatile, golden, ca. 1.5 mm long. **Pistil** syncarpous, tricarpellate, ovary ovate, green, 4 mm tall, style whitish, 2 mm long, stigma very pale yellow, lobed, 2 mm broad. **Fruit** not seen. **Seeds** not seen.

Distribution. Similar plants occur in the coastal zone of southern to central Huasco Province.

Etymology. The epithet *gbifiana* is a Latinized neologism that honors the Global Biodiversity Information Facility (GBIF, www.gibif.org), which has been perhaps the most important single resource supporting my recent research on *Cistanthe*. GBIF makes freely available to absolutely any researcher anywhere in the world regardless of institutional (viz. political) affiliation or socioeconomic condition high resolution images of specimens from numerous herbaria, especially the largest and most important European ones like Paris, Geneva, and Kew, which include numerous *Cistanthe* Types, as well as "investigation grade" images of live plants in the field from the iNaturalist.org website, and tools for finding particular specimens and plants from particular regions. Obviously, travelling to visit these herbaria is prohibitively expensive for most researchers, as well as time- and energy-inefficient. Another organization, JSTOR, also holds a comparably large number of specimen images mostly from other herbaria, but these are accessible only to researchers working in subscribing institutions, which is useless for unaffiliated researchers and those in non-subscribing institutions throughout the world. Availability of high resolution specimen images is useful not only for researchers, but also for the contributing institutions, as it allows remote expert curation at no additional institutional expense, and it facilitates a broad range of biodiversity-related research. Thus, I suggest that, in the interest of further potentiating the value of specimen images and data in biodiversity research as well as further democratizing science, political forces should work to consolidate JSTOR and other smaller institutional herbarium image sites into GBIF.

Observations. I first became aware of this form via an image posted on a Facebook page in 2010 (https://www.forocactus.com/viewtopic.php?t=7842, still active at this writing) by Juan Pablo Acosta, a Chilean naturalist proactive in Chilean cactus exploration especially during the years 2010–2020. The image, part of a travelogue post, showed a plant from an unidentified canyon in (probably central) Huasco Province. It showed a plant growing in sand with rugose leaves and developing inflorescences, but no flowers, and it offered no identification or other commentary. I considered the plant to be a morph of *C. philhershkovitziana* and cited it thusly in 2022 in [11]. Coincidentally, while preparing [11], I received photos of similar plants, also from central Huasco Province, from Aron Cádiz Véliz, currently at CONC. He suggested that it might be an undescribed species and, if I could confirm this, he invited me to collaborate on its publication. I replied to the effect that I believed (at that time) that the plant pertained to *C. philhershkovitziana*, as indicated in [11]. Only my additional research on this complex has led me to recognize *collectively* all three *C. philhershkovitziana* segregates, viz. *C. behacheliana*, *C. gbifiana*, and *C. reshetiana*. As in the case for the other two segregates, my recognition of *C. gbifiana* is based only partially on its morphological differences. Again, it is supported by geography and ecology: the species is distributed in an ecologically well-defined coastal zone of southern Huasco Province that is somewhat solated to the south and east by mountains. Vegetative changes also are evident to the north, where coastal mountains and bluffs emerge directly adjacent to a relatively narrow littoral zone.

Fig. 3A–B – *Cistanthe gbifiana*. **A.** Google Earth image of the Type locality. **B.** The rugose leaf surface.

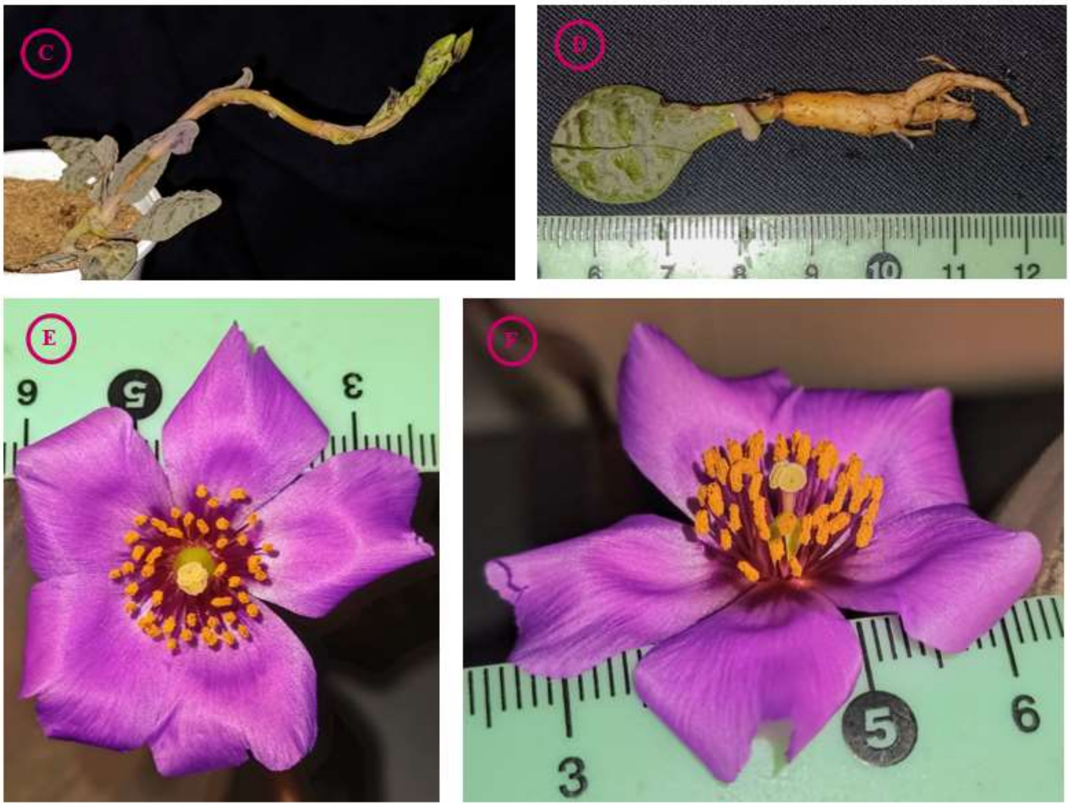

Fig. 3C–F. – C. A specimen repotted in sand. The specimens are very fragile following removal. Most of the rosette leaves of this plant died and were removed within a few days after collection. Also, the rosette stems are thin and fragile, and rosettes of most specimens, including this one, broke off within a few days. Unfortunately, owing to distraction, I failed to photograph plants on site. **D.** A seedling showing early development of the fusiform root. **E.** Flower, polar view. **F.** Flower, oblique view.

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Supplemental file

https://files.osf.io/v1/resources/7ev96/providers/osfstorage/?zip=

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