



## NEW RECORDS FOR THE FLORA OF THE NITRATE COAST

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Among the very interesting Chilean plants that have been sent to the Gray Herbarium for determination by Father Anastasio Pirion are some obtained during the past collecting season by Father Félix Jaffuel. His responsible position in his Order having occasioned a visit to Perú and Bolivia, Father Jaffuel took advantage during his return voyage of the brief stops by the steamer for botanizing at Tocopilla and Antofagasta. The vegetation at these arid localities is found, not about the outskirts of the town near sea-level but only towards the fog-bathed crests of the rough, precipitous coastal hills at some distance from the boat-landing. The region is usually passed as one quite barren of plants. While this is not true the plants are very few and localized and are to be found

only by a determined and energetic botanist who is looking for them. Father Jaffuel's collection was made with no small expenditure of effort and it consequently stands as further evidence of his rare enthusiasm as a collector. He botanized at Tocopilla on Oct. 27, 1930 and at Antofagasta, two days later, on Oct. 29, 1930.

Father Jaffuel's collections contain a goodly number of interesting range-extensions and seventeen species not included in my «Flora of the Nitrate Coast», Contr. Gray Herb. IXXXV. 138-163 (1929). In the following list I have cited those collections of his which clarify obscure or questionable records or which add previously unreported localities for the species on the Nitrate Coast. His collections are designated by the initials, FJ, followed by his collection number. The specific names followed with a complete bibliographic reference are those not found in my «Flora» of this northern coast of Chile. Indeed the present paper may be considered as the first supplement to that account of the flora of the nitrate ports and adjacent coast.

**Stipa annua** Mez.—Collected at Antofagasta (FJ. 1130). Otherwise known in Chile only from Taltal and Tocopilla.

**Stipa speciosa** Trin.—& Rupr. Mem. Acad. St. Petersburg. 6, v. 45 (1842).—Collected at Antofagasta (FJ. 1129). Clearly the same form of the species as I collected in the coastal region of the Dept. of Taltal. The species is extended north from Miguel Díaz.

**Sisyrinchium** sp.—Collected at Antofagasta (FJ. 1131, 1134). The material lacks flowers and underground parts. It is a more slender plant than *S. graminifolium* Lindl., which ranges north to the coastal hills of the Dept. of Taltal. The fruiting pedicels are more exerted and the outer valves of the spathe are much more slender. The papery bracts inside the spathe are not evident. Flowering material showing the underground structures of this plant is needed before it can be specifically identified.

**Parietaria debilis** Forst.—Collected at Tocopilla (FJ. 1019). Previously known in the region from Antofagasta and Iquique.

**Quinchamalium** sp.—A coarse succulent plant referable to *Q. carnosus* Ph. has been collected at Antofagasta (FJ. 1139) and a slender smaller flowered one suggestive of the forms of central Chile has been collected at Tocopilla (FJ. 1002). Specific lines in this genus are extremely vague if not quite illusionary. I am becoming more and more convinced that

the genus will eventually have to be treated as consisting of a single extremely variable species. On the Nitrate Coast the genus has been reported only from Cobija.

**Calandrinia cachinalensis** Ph.—Collected at Antofagasta (FJ. 1041) and Tocopilla (FJ. 998). These collections are quite characteristic of the species and hence substantiate my previous report of it, based upon imperfect material from Antofagasta. It seems very likely that the reported occurrence of *C. grandiflora* at Iquique was based upon misdetermined material of this species.

**Calandrinia cymosa** Ph.—Anal. Univ. Chile IXXXV. 192 (1893).—Collected at Antofagasta (FJ. 1113). Not previously reported from north of Miguel Díaz. It now seems that *C. chrysantha* Johnston, from Tocopilla, might possibly represent a coarse, large-flowered phase of the species.

**Spergularia stenocarpa** (Ph). Johnston, Contr. Gray Herb. IXXXV. 41 (1929).—Collected at Tocopilla (FJ. 1017). An extension of range north from Paposo.

**Spergularia aberrans** Johnston.—Collected at Antofagasta (FJ. 1136) and Tocopilla (FJ. 1007). The material from Tocopilla is sterile but in details of pubescence, etc., as well as in general features of habit, it reveals its specific identity. The species has been known only from the type that was collected at Antofagasta.

**Astragalus viciiformis** Ulbr.—Collected at Antofagasta (FJ. 1146) and Tocopilla (FJ. 1008). Previously reported in the area only from Iquique and Tocopilla.

**Adesmia pussilla** Ph. Fl. Atac. 15 (1860).—Collected at Antofagasta (FJ. 1155). Not previously known north of Paposo.

**Hoffmanseggia gracilis** (R. & P.) H. & A.—Collected at Antofagasta (FJ. 1147). Previously reported from Tocopilla.

**Erodium cicutarium** L'Hér. ex Aiton, Hort. Kew ii. 414 (1789).—Collected at Tocopilla (FJ. 1009). Not previously reported from the Nitrate Coast.

**Erodium malacoides** (L.) Willd. Phyt. i. 10 (1794).—Collected at Tocopilla (FJ. 1056). The first record for northern Chile.

**Oxalis bulbocastanum** Ph.—In his recent monograph of the genus, Kunth, Pflanzenr. (Heft. 95) iv. Fam. 130, pg. 199 (1930), reduces his *O. occidentalis* to this species. Philippi's species, consequently, is now known from the Nitrate Coasts at Antofagasta and Iquique.

**Frankenia chilensis** Presl, var **aspera** (Ph.) Johnston.—Collected at Tocopilla (FJ. 1021). This extends the range of the species north from Cobija and Antofagasta. Referable to this variety is *Tetrolema boliviense* Zurcz, cf. Rev. Chilena XXXIV. 229 (1930).

**Loasa sessiliflora** Ph.—Collected at Antofagasta (FJ. 1148) and Tocopilla (FJ. 999). Previously known from only three collections, one from Antofagasta and two others near the type-station in the Dept. of Taltal.

**Gymnophyton foliosum** Ph. Fl. Atac. 24 (1860).—Collected at Antofagasta (FJ. 1123). Not previously known north of Paposo.

**Domeykoa oppositifolia** Ph. Fl. Atac. 25 (1860).—Collected at Antofagasta (FJ. 1135) and Tocopilla (FJ. 1032). An extension of range north from Miguel Díaz.

**Eremocharis fruticosa** Ph. Fl. Atac. 25 (1860).—Collected at Cobija (Gaudichaud); cf. Rev. Chilena XXXIV. 231 (1930).

**Apium laciniatum** (DC.) Urban.—Collected at Antofagasta (FJ. 1114). Previously reported from Iquique.

**Gilia glutinosa** Ph.—Collected at Antofagasta (FJ. 1145). Collections have been made at Cobija and Iquique.

**Heliotropium linariaefolium** Ph. Fl. Atac. 38 (1860).—Material collected at Tocopilla (FJ. 1053) and Iquique (Salinas) seems to represent a strongly xerophytic phase of this species. The material, however, is scanty and poor in quality and consequently the determination must remain questionable until more complete and better collections are available for study. The corollas seem to be orange-colored. *Heliotropium linariaefolium* is the only species in the genus with corollas of this color. The species is not otherwise known north of Paposo.

**Heliotropium** sp.—Collected at Antofagasta (FJ. 1120 and Pennell 13022). Father Jaffuel's material shows that the plant has white or ochroleucous corollas. It seems, in fact, to be close to *H. Philippianum* Johnston, of the coastal hills of the Dept. of Taltal, but differs in its low spreading habit of growth and smaller copiously hairy leaves. Possibly it may represent a pronounced xerophytic phase of that species.

**Verbena atacamensis** Reiche, Anal. Univ. Chile CXXIII. 371 (1908).—Collected at Antofagasta (FJ. 1145). Not previously reported north of Miguel Díaz.

**Bargemontia aplocaryoides** (Gaud.) Johnston.—Collected at Tocopilla (FJ. 1046). Previously collected at Cobija.

**Bargemontia peruviana** Gaud.—Collected at Antofagasta (FJ. 1118) and Tocopilla (FJ. 1043). Previously collected at Antofagasta and Cobija.



**Bargemontia alibrexioides** (Gaud.) Johnston.—Collected at Cobija (Gaudichaud, the type) and Tocopilla (FJ. 1023, 1031). I have studied authentic material of this species at Berlin. The new collections from Tocopilla agree remarkably with it. They prove the species to be well worthy of recognition. It is most closely related to *B. clivicola* Johnston and *B. inconspicua* Johnston, species known from Tocopilla and Antofagasta respectively. The three species concerned have the base of the stamens glabrous and have the branchlets covered with rather short, spreading, simple, decidedly glandular hairs. The strongly revolute margins of the leaves and calyx-lobes, and the elongate corolla quickly distinguish *B. alibrexioides* from its immediate relatives.

**Galium Aparine** L.—Collected at Tocopilla (FJ. 1050). Previously collected at Iquique.

**Cruckshanksia pumila** Clos in Gay, Fl. Chile III. 196 (1847).—Collected at Antofagasta (FJ. 1158). An extension of range north from Miguel Díaz.

**Piqueria Cumingii** Robinson, Proc. Am. Acad. XLII. 11 (1906).—Collected at Cobija (Gaudichaud), Tocopilla (FJ. 1026) and «Cobija, Iquique et Arica» (Cuming 953, the type). This endemic shrub was inadvertently omitted from my list of the flora of the Nitrate Coast.

**Amblyopappus pusillus** H. & A.—Collected at Antofagasta (FJ. 1156). Also known from Tocopilla.

**Cephalophora litoralis** Ph. Fl. Atac. 34 (1860).—Collected at Tocopilla (FJ. 1028). Not previously known north of Paposo.

**Perityle Emoryi** Torr., var. **elata** (Ph.) Johnston, Contr. Gray Herb. LXXXV. 127 (1929).—Collected at Antofagasta (FJ. 1126, 1138). First collections north of Miguel Díaz.

**Chuquiragua ulicina** H. & A., var. **incana** (Ph.) Johnston, Contr. Gray Herb. LXXXV. 131 (1929).—Collected at Tocopilla (FJ. 1051). An extension of range north from El Cobre.

**Malacothrix Clevelandi** Gray, Bot. Calif. i. 443 (1876).—Collected at Tocopilla (FJ. 1006). A remarkable northward extension of a rare plant previously known in South America only from the coastal region between Coquimbo and Chañaral.

**Chaetanthera tenella** Less. Syn. Comp. 114 (1832).—Collected at Antofagasta (FJ. 1142). Otherwise known in northern Chile only from material collected by Werdermann (no. 815) at Taltal and distributed mixed with *C. linifolia*, var. *taltalensis* Johnston. The record for *C. tenella* was inadvertently omitted from my catalogue of the flora of the Taltal region.