

Fig. 74. - *Daboecia azorica*

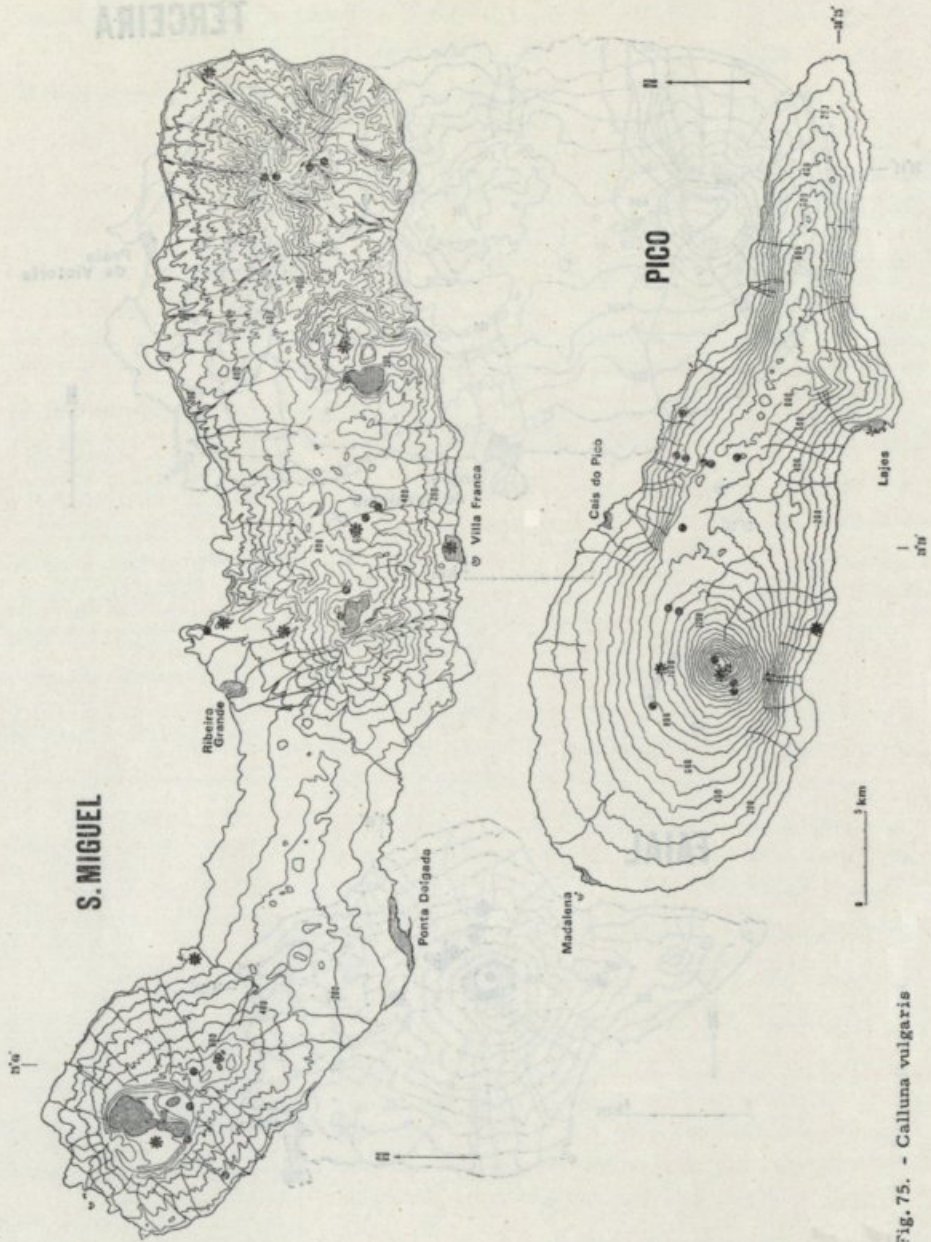


Fig. 75. - *Calluna vulgaris*



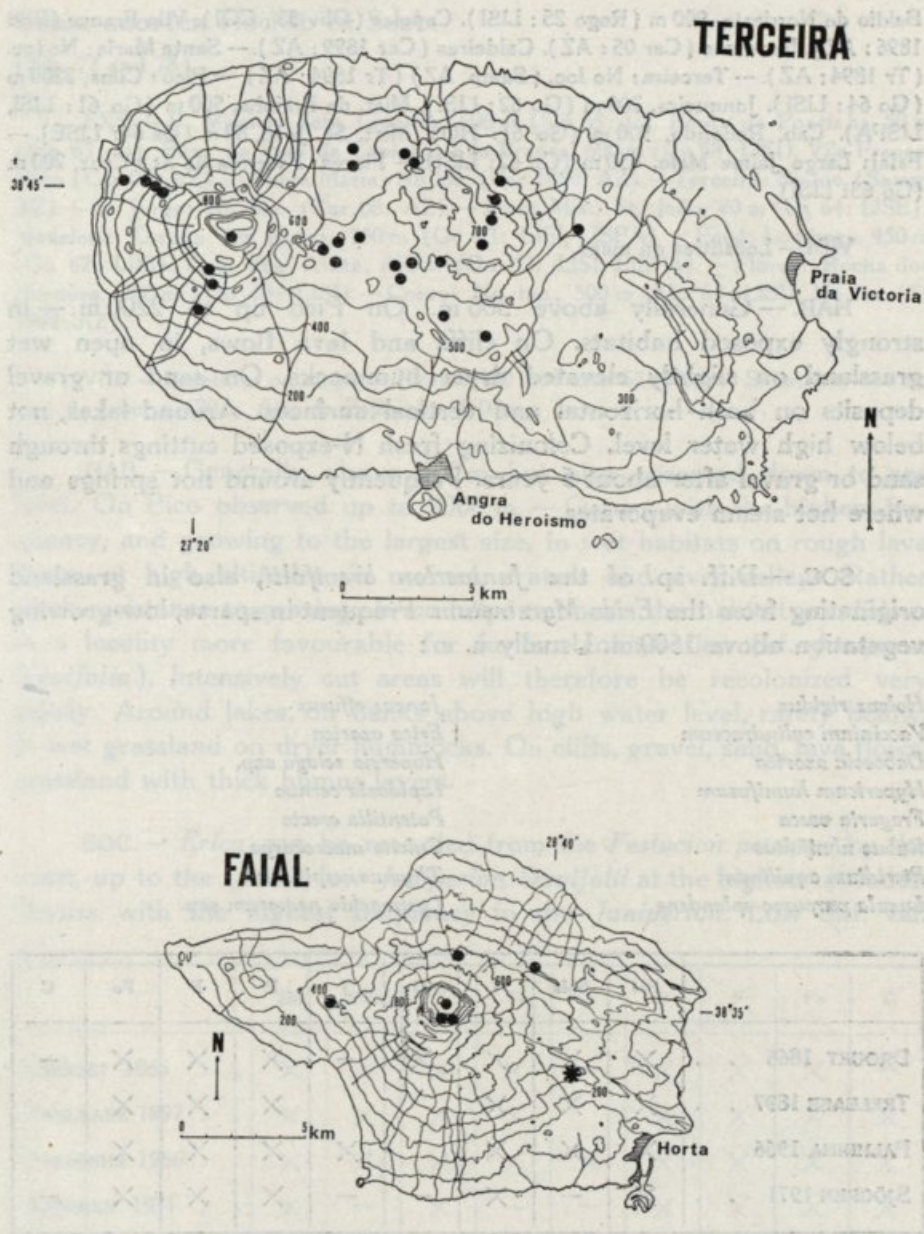


Fig. 76. - *Calluna vulgaris*

Baldio de Nordeste, 900 m (Rego 25: LISI). Capelas (Oliv 53: COI). Vila Franca (Rod 1896: AZ). Nordeste (Car 05: AZ). Caldeiras (Car 1899: AZ). — Santa Maria: No loc. (Tr 1894: AZ). — Terceira: No loc. (Samp. AZ) (Tr 1894: AZ). — Pico: Cima, 2200 m (Go 64: LISI). Junqueira, 700 m (Go 62: LISI). Mist. da Prainha, 500 m (Go 61: LISI, LISFA). Cab. Redondo, 900 m (Go 61: HO). Mist. St. João, 80 m (Ds 64: LISE). — Faial: Largo Jaime Melo, 450 m (Go 62: LISI). — Flores: Fazenda da St.<sup>a</sup> Cruz, 200 m (Go 63: LISI).

VIDI — Localities on maps.

HAB. — Generally above 300 m. On Pico up to 2200 m. — In strongly exposed habitats. On cliffs and lava flows, in open wet grassland on slightly elevated dryer hummocks. On sand or gravel deposits on both horizontal and vertical surfaces. Around lakes, not below high water level. Colonizing fresh N-exposed cuttings through sand or gravel after about 5 years. Frequently around hot springs and where hot steam evaporates.

SOC. — Diff. sp. of the *Juniperion brevifolii*, also in grassland originating from the *Erico-Myrsinetum*. Frequent in sparse, low-growing vegetation above 1500 m. Usually u. c.:

*Holcus rigidus*  
*Vaccinium cylindraceum*  
*Daboecia azorica*  
*Hypericum humifusum*  
*Fragaria vesca*  
*Rubus ulmifolius*  
*Pteridium aquilinum*  
*Luzula purpureo-splendens*

*Juncus effusus*  
*Erica azorica*  
*Huperzia selago* ssp.  
*Lepidozia cernua*  
*Potentilla erecta*  
*Culcita macrocarpa*  
*Thymus cespititius*  
*Lysimachia nemorum* ssp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	
PALHINHA 1966 .	×	×	×		×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from « tout l'archipel », which was in this case certainly no exaggeration.



**Erica azorica** Hochst. ex Seub.

(Fig. 77 and 78)

EXS. — S. Miguel: Sete Cidades, 600 m (Sjn 65: U). Ponta da Pontirha, 50 m (Sjn 65: U). Base do Pico da Capinha, Vila Franca, 600 m (Cy 58: LISI). Vila Franca, Ilhéu (Car 03: AZ). — Santa Maria: No loc. (Car 1899: AZ). — Terceira: No loc. (Samp: AZ). — S. Jorge: No loc. (Car 08: AZ). — Pico: Mist. St. João, 80 m (Ds 64: LISE). Madalena, Quinta das Rosas, 150 m (Go 63: LISI, LISFA). — Faial: Lombega, 450 m (Go 62: LISI). Cab. dos Trinta, 650 m (Go 62: LISI, LISFA). — Flores: Rocha dos Bordões, 300 m (Go 63: LISI). — Corvo: No loc., 500 m (Go 64: LISI). No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: 160 m. Porto São Pedro. Sapateira, 410 m. Lag. da Lomba, 620 m. Alto da Fajãzinha, 460 m.

HAB. — Generally above 300 m but also observed down to sea level. On Pico observed up to 2000 m. — Occurs with the highest frequency, and growing to the largest size, in wet habitats on rough lava flows, at high altitudes, in ravines, craters and river valleys. Rather weak resistance to grazing. *Erica* helps to make the habitat conditions in a locality more favourable for further colonization (cf. *Juniperus brevifolia*). Intensively cut areas will therefore be recolonized very slowly. Around lakes, on banks above high water level, rarely below. In wet grassland on dryer hummocks. On cliffs, gravel, sand, lava flows, grassland with thick humus layers.

SOC. — *Erica* can be recorded from the *Festucion petraeae* by the coast, up to the sparse, low *Juniperion brevifolii* at the highest altitudes. Occurs with the highest frequency in the *Juniperion*. Low diff. val.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	×

DISTRIB. — First cit. by FORSTER (1787). No recent extension of distrib. Less frequent, however, on all islands because of forest clearance to open up grazing land, and for fuel and house building.





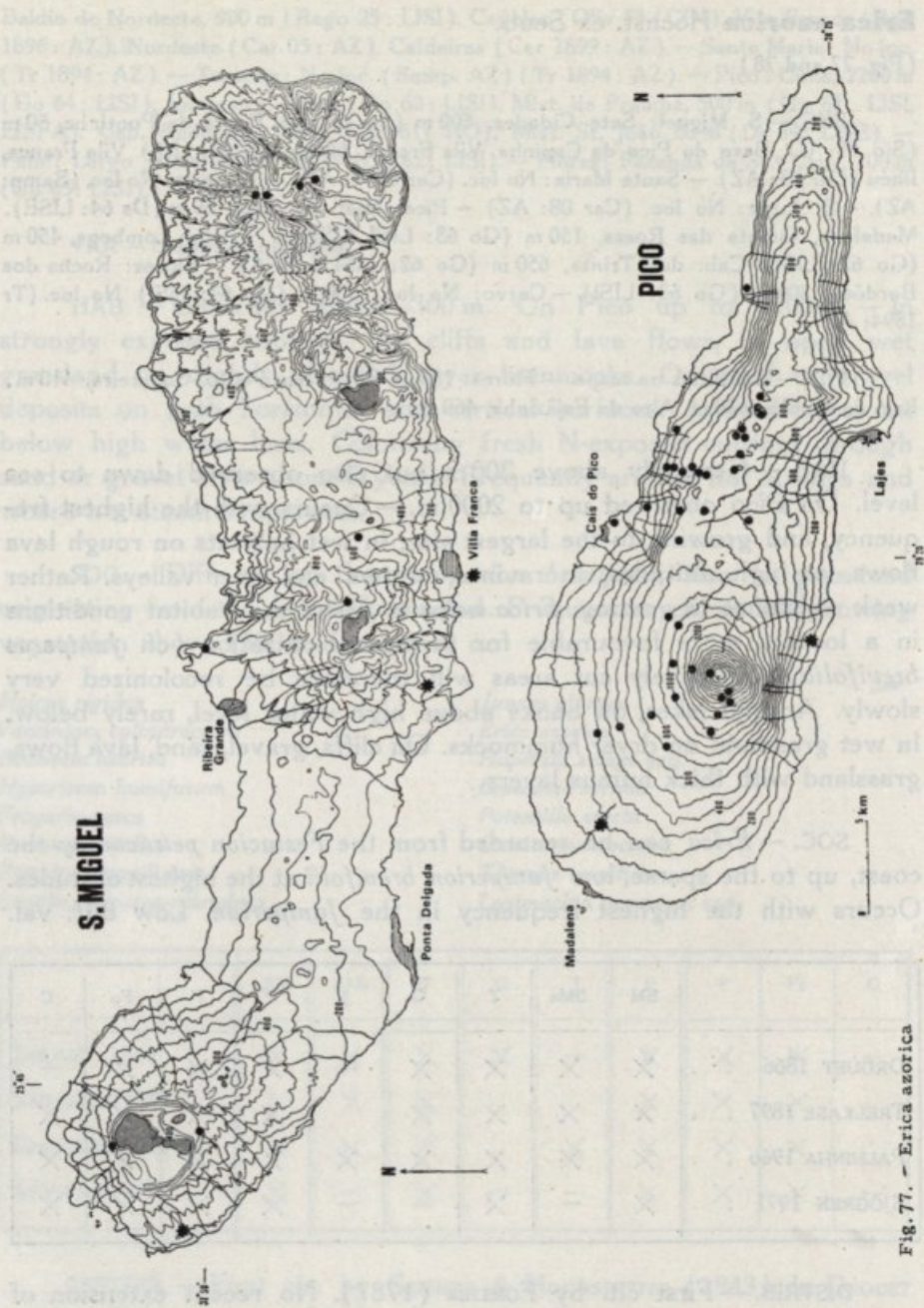
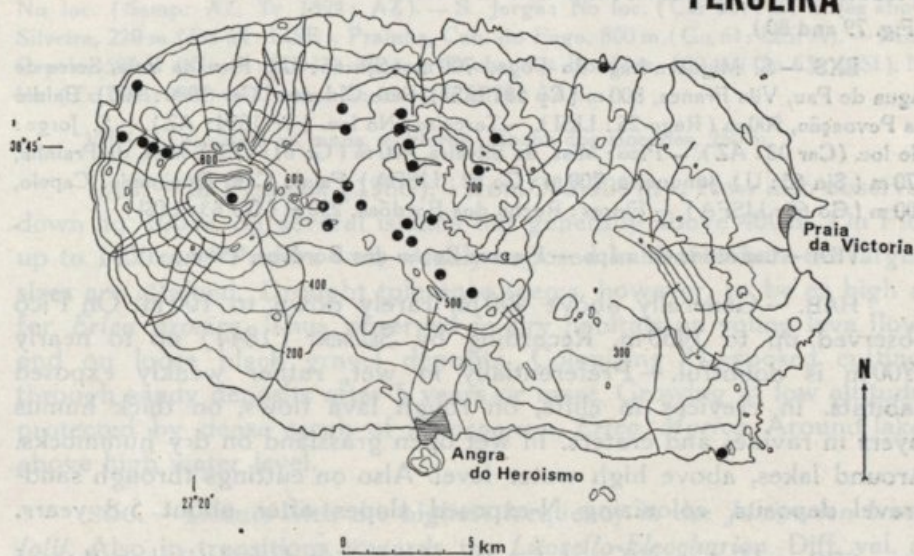


Fig. 77. - Erica azorica



**TERCEIRA**



**FAIAL**

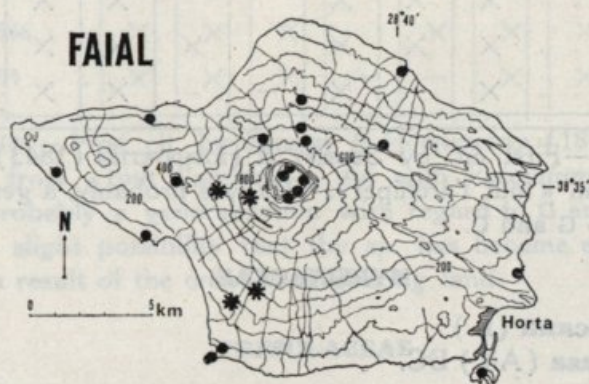


Fig. 78. - *Erica azorica*

**Vaccinium cylindraceum** Sm. in Rees

(Fig. 79 and 80)

EXS. — S. Miguel: Lag. do Fogo, 700 m (Sjn 65: U). Pico da Vela, Serra de Água de Pau, Vila Franca, 800 m (Cy 58: LISI). Sete Cidades (Car 1900: AZ). Baldio da Povoação, 900 m (Rego 25: LISI). — Terceira: No loc. (Tr 1894: AZ). — S. Jorge: No loc. (Car 08: AZ). — Pico: Mist. da Silveira, 400 m (Go 61: LISI). Mist. da Prainha, 270 m (Sjn 65: U). Junqueira, 700 m (Go 62: LISFA) Faial: Cab. Queimado, Capelo, 400 m (Go 63: LISFA). — Flores: Rocha dos Bordões, 250 m (Go 63: LISI).

VIDI — Localities on maps. — Flores: Rocha dos Bordões, 250 m.

HAB. — Generally above 400 m. rarely down to 100 m. On Pico observed up to 1450 m. Recording by SEUBERT (1844) up to nearly 1700 m is doubtful. — Preferentially in wet, rather weakly exposed habitats. In crevices in cliffs, on rough lava flows, on thick humus layers in ravines and craters. In wet open grassland on dry hummocks. Around lakes, above high water level. Also on cuttings through sand-gravel deposits, colonizing N-exposed slopes after about 5-8 years.

SOC. — Higher diff. val. for the *Juniperion brevifolii* than that of *Erica ozorica*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	
PALHINHA 1966 . .	×	×	×		×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel». This was probably, a generalization with regard to G and C.

**MYRSINACEAE****Myrsine africana** (L.)var. **retusa** (Ait.) DC.

(Fig. 81 and 82)

EXS. — S. Miguel: Sete Cidades, 600 m (Sjn 65: U). Tronqueira Nordeste, 900 m (Go 59: LISI). Casa Velha, Sete Cidades, 400 m (Cy 58: LISI). Cume do Pico da Lagoinha, Vila Franca, 650 m (Cy 58: LISI). Mata dos Barreiros, 750 m (Rego 25: LISI). Termo da Lagoa (Car 02: AZ). Água de Pau (Car 1891: AZ). Rego d'Água (Car 1898: AZ). — Santa Maria: Pico Alto above bifurcation, 450 m (Ds 64: LISE).



No loc. (Car 1899: AZ). — Terceira: Terra Brava in face of Boi, 600 m (Ds 64: LISE). No loc. (Samp: AZ, Tr 1894: AZ). — S. Jorge: No loc. (Car 08: AZ). Lajes above Silveira, 220 m (Ds 64: LISE). Prainha, Cab. do Fogo, 800 m (Go 61: LISFA). — Faial: Capelo, 500 m (Go 61: HO). — Flores: Rocha dos Bordões, 300 m (Go 63: LISI). No loc. (Tr 1894: AZ). — Corvo: No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: Rocha dos Bordões, 250 m.

HAB. — In PALHINHA (1966), «from 300-900 m». Now also observed down to 100 m on several islands but generally above 400 m. On Pico up to 1400 m. — Prefers wet, weakly exposed habitats where the largest sizes are attained. Drought tolerance seems, however, to be as high as for *Erica azorica*. Thus observed in dry habitats on young lava flows and on loose black gravel deposits. Colonizing N-exposed cuttings through sandy deposits after 5 years or more. Growing at low altitudes protected by dense scrub of *Pittosporum*, *Erica*, *Myrica*. Around lakes above high water level.

SOC. — Occurs with the highest frequency in the *Juniperion brevifolii*. Also in transitions towards the *Litorello-Eleocharion*. Diff. val. as low as that of *Erica azorica*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . . .	×	×	×			×	×	×	×
PALHINHA 1966 . . .	×	×	×		×	×	×	×	×
SJÓGRFN 1971 . . .	×	×	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel». As with *Vaccinium cylindraceum* this was probably a generalization with regard to G and C. There is, however, a slight possibility that the sp. has become extinct in these islands as a result of the creation of grazing land.

## PRIMULACEAE

### *Lysimachia nemorum* L.

ssp. *azorica* (Hornem. ex Hooker) Palhinha

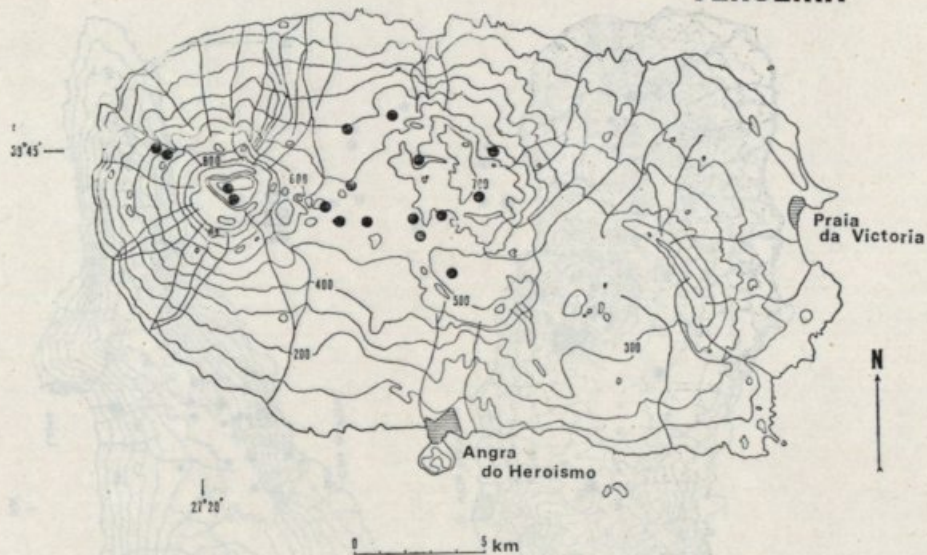
(Fig. 83 and 84)

EXS. — S. Miguel: Lag. do Congro, 520 m (Sjn 65: U). W of Casal, 600 m (idem). Sete Cidades, 400 m (idem). Tronqueira encosta NE, 800 m (Cy 59: LISI).





**TERCEIRA**



**FAIAL**

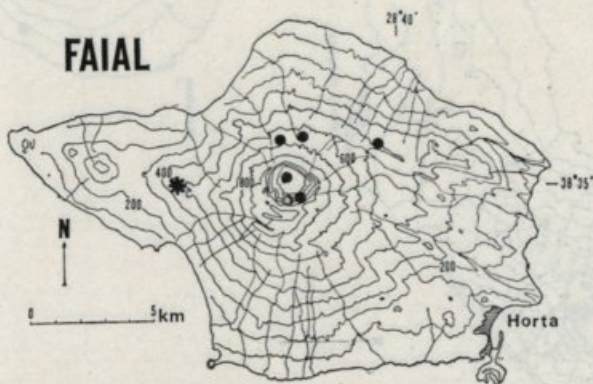


Fig.80. - *Vaccinium cylindraceum*

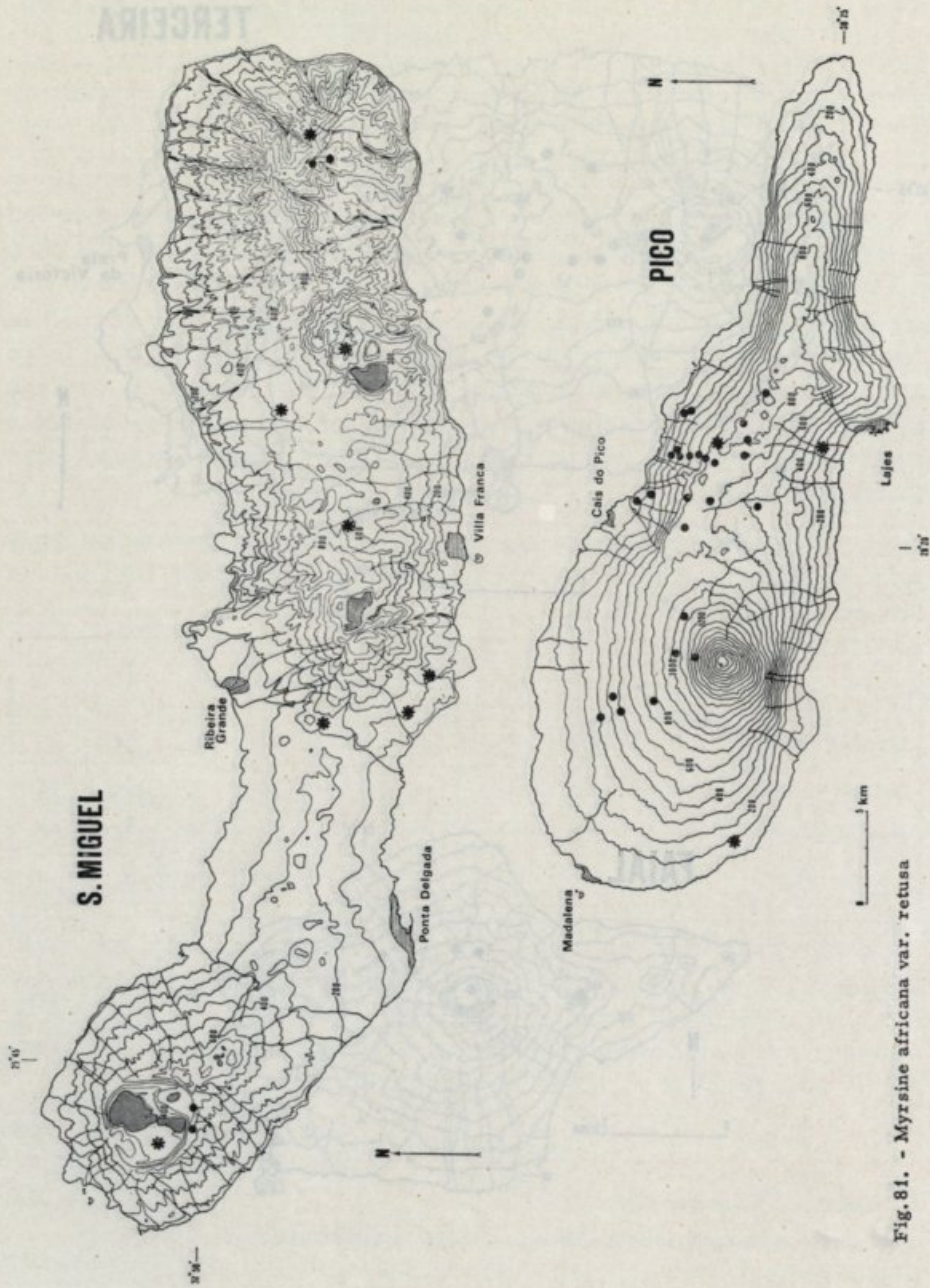
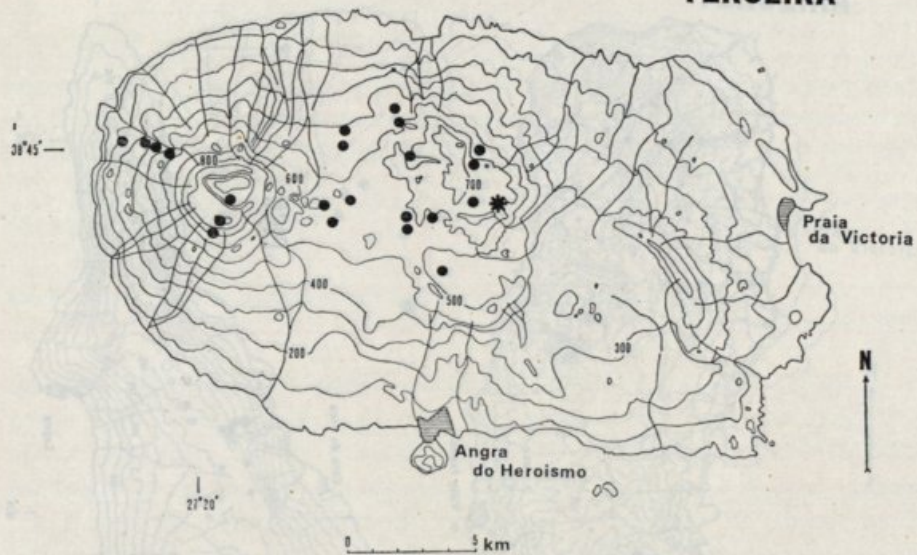


Fig. 81. - *Myrsine africana* var. *retusa*



**TERCEIRA**



**FAIAL**

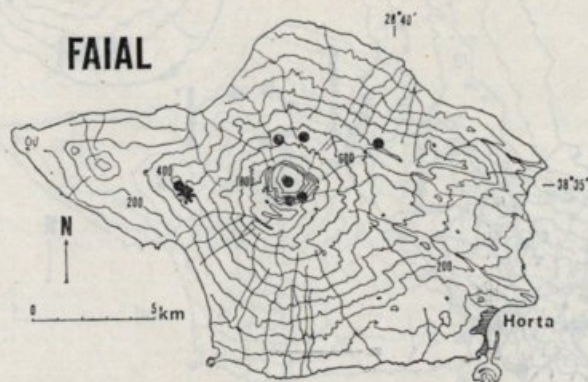


Fig. 82. *Myrsine africana* var. *retusa*

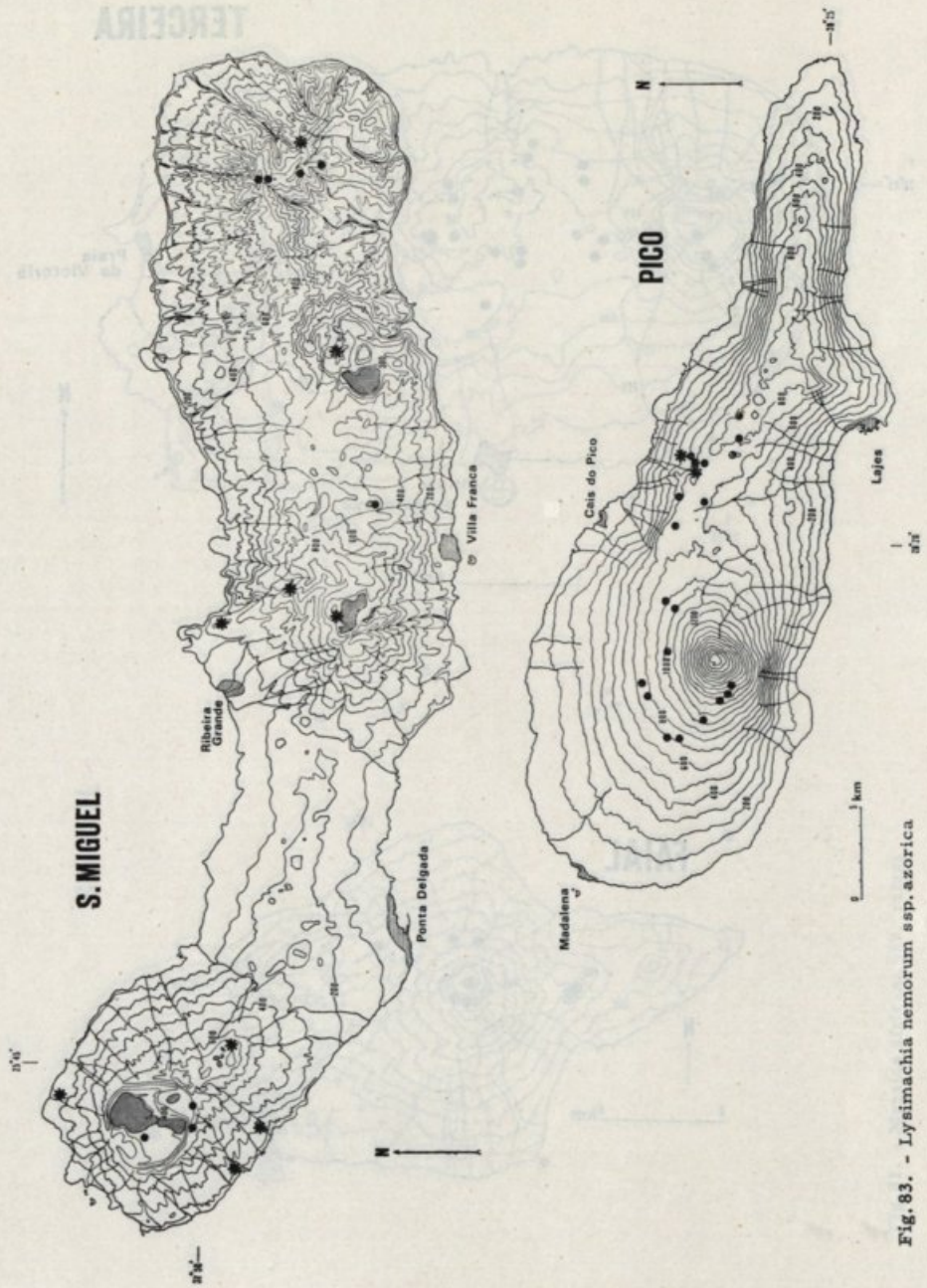


Fig. 83. - *Lysimachia nemorum* ssp. *azorica*



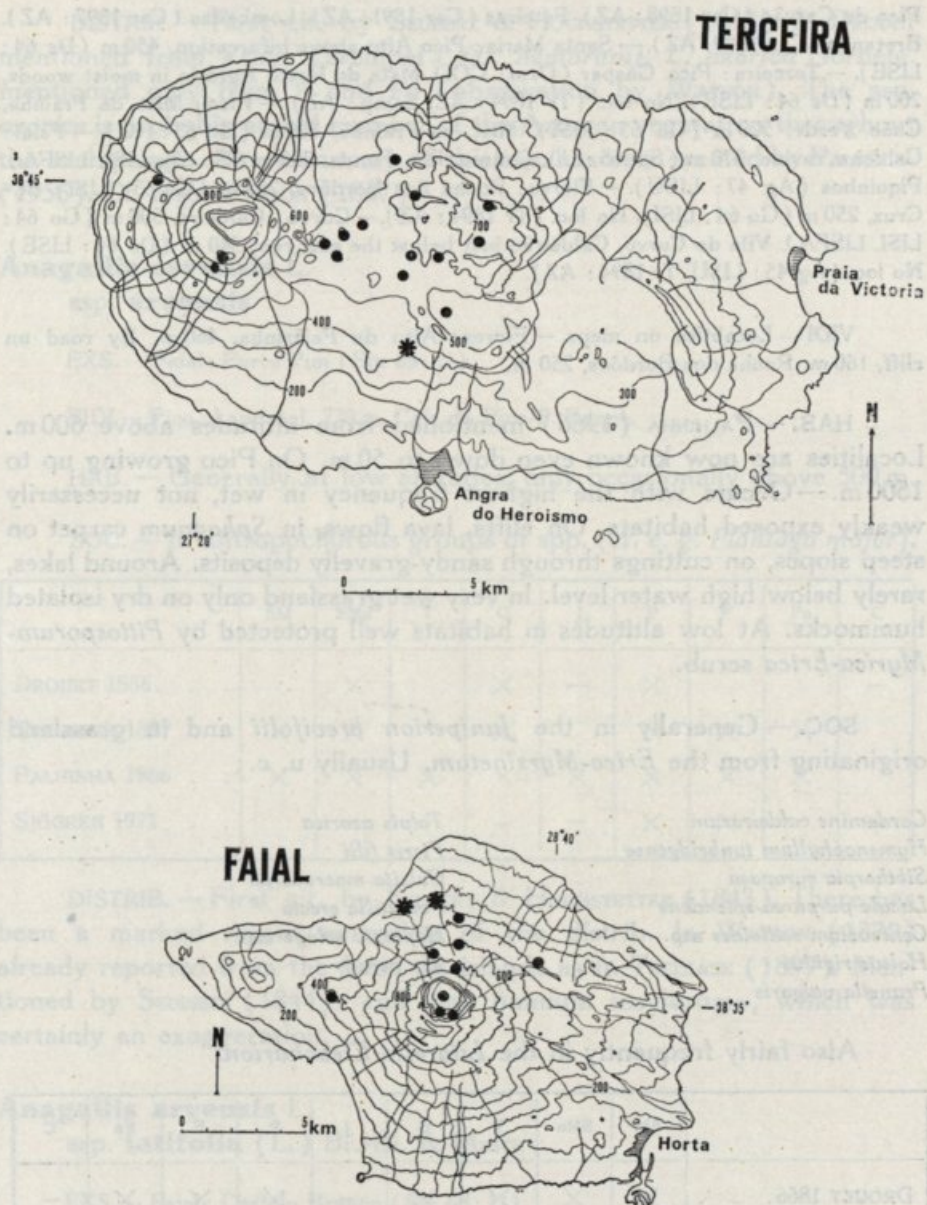


Fig. 84. - *Lysimachia nemorum ssp. azorica*

Pico do Carvão (Car 1898: AZ). Feteiras (Car 1891: AZ). Lombadas (Car 1897: AZ). Bretanha (Car 1899: AZ). — Santa Maria: Pico Alto above bifurcation, 450 m (Ds 64: LISE). — Terceira: Pico Gaspar (Orm: COI). Mata do Posto Agrário in moist woods, 200 m (Ds 64: LISE). No loc. (Tr 1894: AZ, Samp: AZ). — Pico: Mist. da Prainha, Chão Verde, 500 m (Go 63: LISI). Mist. da Prainha, 700 m (Go 63: HO). — Faial: Caldeira, ravine, 770 m (Sjn 65: U). Cedros, Rib. Funda, 700 m (Go 62: LISI, LISFA). Piquinhos (Ag 47: LISU). — Flores: Rocha dos Bordões, 250 m (Go 63: LISI). St.<sup>a</sup> Cruz, 250 m (Go 64: LISI). No loc. (Tr 1894: AZ). — Corvo: Caldeira, 500 m (Go 64: LISI, LISFA). Vila do Corvo, Caldeirão just below the east rim, 540 m (Ds 64: LISE). No loc. (Ag 45: LISU, Tr 1894: AZ).

VIDI — Localities on maps. — Flores: Alto da Fajãzinha, 460 m. By road on cliff, 160 m. Rocha dos Bordões, 250 m.

HAB. — PALHINHA (1966) mentioned from altitudes above 600 m. Localities are now known even down to 50 m. On Pico growing up to 1500 m. — Occurs with the highest frequency in wet, not necessarily weakly exposed habitats. On cliffs, lava flows, in *Sphagnum* carpet on steep slopes, on cuttings through sandy-gravelly deposits. Around lakes, rarely below high water level. In very wet grassland only on dry isolated hummocks. At low altitudes in habitats well protected by *Pittosporum-Myrica-Erica* scrub.

SOC. — Generally in the *Juniperion brevifolii* and in grassland originating from the *Erico-Myrsinetum*. Usually u. c.:

*Cardamine caldeirarum*  
*Hymenophyllum tunbridgense*  
*Sibthorpia europaea*  
*Luzula purpureo-splendens*  
*Centaurium scilloides* ssp.  
*Holcus rigidus*  
*Prunella vulgaris*

*Tolpis azorica*  
*Picris filii*  
*Culcita macrocarpa*  
*Potentilla erecta*  
*Huperzia selago* ssp.  
*Ilex perado*

Also fairly frequently in the *Litorello-Eleocharion*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897. . .	×	×	×			×	×	×	×
PALHINHA 1966. . .	×	×	×		×	×	×	×	×
SJÖGREN 1971. . .	×	×	×	—	—	×	×	×	×



DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel» (*L. nemorum*), *L. azorica* Hornem. mentioned only from F and Fo (observation by WATSON). The ssp. *azorica* is probably an old member of the Azorean vegetation throughout the archipelago. The taxonomy of this ssp. has been treated by PALHINHA (1956). Cf. also WATSON (1847).

### **Anagallis arvensis L.**

ssp. **arvensis**

EXS. — Faial: Porto Pim (Sjn 65: U).

VIDI — Pico: Landroal, 770 m. Cais do Pico-S. Roque.

HAB. — Generally at low altitudes, only occasionally above 500 m.

SOC. — In antropochorous groups of spp. (cf. e. g. *Plantago major*).

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×		×	—	×			—
TRELEASE 1897 . .	×	×		×		×	×	×	
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). There has been a marked recent extension of the distrib. In WATSON (1870) already reported from the same six islands as in TRELEASE (1897). Mentioned by SEUBERT (1844): «ad vias omnium insularum», which was certainly an exaggeration.

### **Anagallis arvensis L.**

ssp. **latifolia** (L.) Br.-Bl. & Maire

EXS. — Faial: Castelo Branco (Sjn 68: U).

HAB. — Observed only in a few localities close to the coast, on sandy deposits.

SOC. — Sociological preference ill-defined.

	SM	SMa	T	G	J	P	F	F <sub>0</sub>	C
DROUET 1866. . .					—		×		—
TRELEASE 1897 . .	×	×					×		
PALHINHA 1966 . .	×	×	×	×		×	×		
SJÖGREN 1971 . .		—		—	—		×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Marked recent extension of distrib.

### **Anagallis tenella** (L.) L.

EXS. — Pico : Lag. do Capitão, 750 m (Sjn 65, 68: U).

VIDI — Pico : Lag. do Capitão, 740 m. By road Cais do Pico-Lajes, 590 m. Torrinhas, 890 and 1000 m. Mist. da Praínha, 600 and 700 m. Lag. do Caiado. Lag. Seca. E of Lag. Caiado, 820 m. Pico Agado, E of Grotões. Lake in Grotões, 800 m. Lag. do Landroal.

HAB. — Generally above 500 m. — Prefers wet, strongly exposed habitats. In natural grassland and in grassland cleared from the *Erico-Myrsinetum*, frequently dominant in depressions. Around lakes, also far below high water level.

SOC. — Diff. sp. of the *Litorello-Eleocharion* and the *Anagallidetum tenellae*. Usually u. c.:

*Prunella vulgaris*  
*Vaccinium cylindraceum*  
*Calluna vulgaris*  
*Luzula purpureo-splendens*  
*Scirpus fluitans*

*Anthoxanthum odoratum*  
*Hydrocotyle vulgaris*  
*Eleocharis multicaulis*  
*Agrostis castellana*

	SM	SMa	T	G	J	P	F	F <sub>0</sub>	C
DROUET 1866. . .		×			—	×			—
TRELEASE 1897 . .		×				×		×	
PALHINHA 1966 . .		×			×	×		×	
SJÖGREN 1971 . .		—		—	—	×			—



DISTRIB. — First cit. by DROUET, who might have overlooked the sp. on Fo. There are more localities with suitable habitat conditions available now in recently cleared grassland for grazing, so a further spread to other islands in the archipelago is probable.

### PLUMBAGINACEAE

#### *Limonium vulgare* Miller.

EXS. — S. Miguel: Ginetes, coast (Sjn 65: U).

HAB. — Observed only close to the coast on densely packed sandy deposits.

SOC. — No sociological preference can yet be mentioned for this rare sp.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×			—	×			—
TRELEASE 1897 . . .	×	×	×			×			
PALHINHA 1966 . . .	×	×	×			×			
SJÖGREN 1971 . . .	×	—		—	—				—

DISTRIB. — First cit. by DROUET. Rather stable recent distrib. Suitable habitat conditions are also available on F.

### OLEACEAE

#### *Picconia azorica* (Tutin) Knobl.

EXS. — Pico: Madalena, Quinta das Rosas, 150 m (Go: HO). Piedade, 150 m (Go: HO). — Faial: Varadouro, 50 m (Sjn 65: U). — Flores: Rocha dos Bordões, 250 m (Go: HO).

VIDI — Pico: Miradouro do Cais do Pico, 170 m.

HAB. — In PALHINHA (1966), «300-600 m». Now also observed below 300 m. Rare sp., altitude and ecological preference difficult to define.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×				×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×	×	×	—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET the usual guess: «tout l'archipel». In WATSON (1870) reported only from SM, P, F, Fo. There are now few localities left because of extensive felling. Valuable wood for house fittings. This tree might now be almost extinct on some islands.

#### GENTIANACEAE

##### *Centaurium maritimum* (L.) Fritsch

EXS.—S. Miguel: Ginetes, coast (Sjn 65: U).—Terceira: Ponta do Porto Novo (Sjn 68: U).

VIDI—Faial: Farol da Ribeirinha, 150 m.

HAB.—Close to the coast. Probably not above 200 m.—Preferentially on strongly exposed, sandy deposits. Also observed on rough steep cliffs with humus layer and sand accumulated in crevices.

SOC.—In the *Festucion petraeae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×			—	×	×		—
TRELEASE 1897 . .	×	×				×	×		
PALHINHA 1966 . .	×	×				×	×		
SJÖGREN 1971 . .	×	—	×	—	—		×		—

DISTRIB.—First cit. by DROUET (observation on SM by WATSON). Unusually stable distrib.



***Centaurium erythraea* Rafn.**

EXS. — Pico : Coast, S. Roque (Sjn 65 : U). Mist. da Prainha, 300 m (Sjn 68 : U).  
— Flores : Fajãzinha, 120 m (Sjn 65 : U).

VIDI — Faial : Castelo Branco.

HAB. — Close to the coast. Not observed above 300 m. — On sand-gravel deposits. Horizontal ground, vertical cuttings.

SOC. — In the *Festucion petraeae*. Also observed above the upper altitude limit of this all.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×			—		×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×	×	×	—

DISTRIB. — First cit. by FORSTER (1787). There might have been a recent extension of the distribution.

***Centaurium scilloides* (L. fil) Samp.**

ssp. ***massonii*** (Sweet) Palhinha

(Fig. 85 and 86)

EXS. — S. Miguel : Lag. do Congro, 400 m (Sjn 65 : U). Nordeste, Serra da Tronqueira, 730 m (Ds 64 : LISE). Serra Gorda (Car 1898 : AZ). Pico da Vara (Car 05 : AZ). Vila Franca, Ilhéu (Car 03 : AZ). Pico do Carvão (Car 1898 : AZ). Relva (Car 1898 : AZ). Lombadas (Car 1897 : AZ). — Santa Maria : Pico Alto above bifurcation, 450 m (Ds 64 : LISE). — Terceira : Mata do Posto Agrário, 200 m (Ds 64 : LISE). — Pico : Miradouro do Cais do Pico, 180 m (Sjn 65 : U). Alto do Chão Verde, 700 m (Go 63 : LISI). — Faial : Caldeira (Sjn 65 : U). Cedros, 300 m (Go 62 : HO). Cedros, Rib. Funda, 700 m (Go 62 : LISI, LISFA). Cabouco, 550 m (Go 62 : LISI). Falca, 350 m (Go 62 : HO). — Flores : St.<sup>a</sup> Cruz, 5 m (Go 64 : LISI). Rocha dos Bordões, 250 m (Go 63 : LISI). No loc. (Tr 1894 : AZ).

VIDI — Localities on maps.

HAB. — Generally above 300 m. Rarely also in localities below 100 m. Not observed above 1000 m. — Prefers wet, but not necessarily weakly exposed habitats. On cliffs, lava flows sandy-gravelly deposits. On thick humus layer in wet open grassland. At low altitudes e. g. in

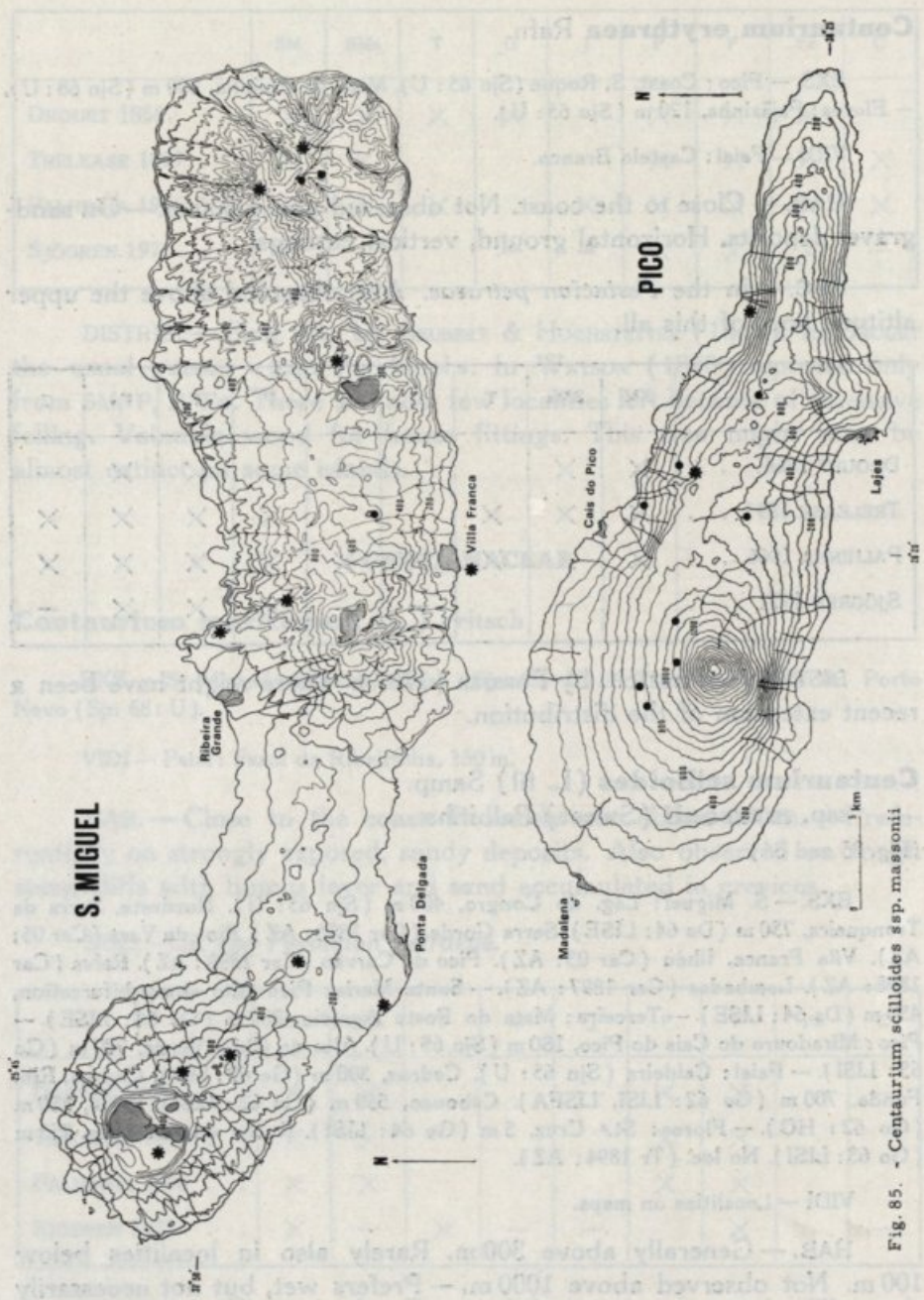


Fig. 85. - *Centaurium scilloides* ssp. *massonii*



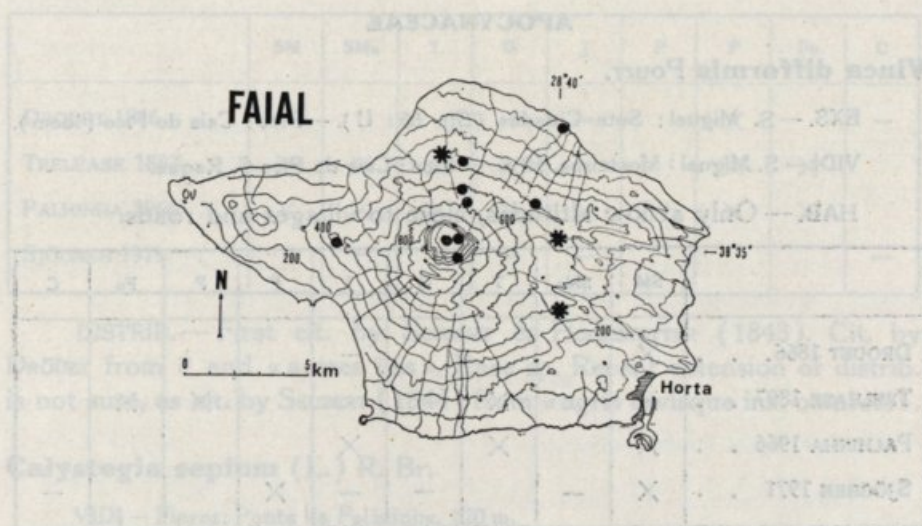
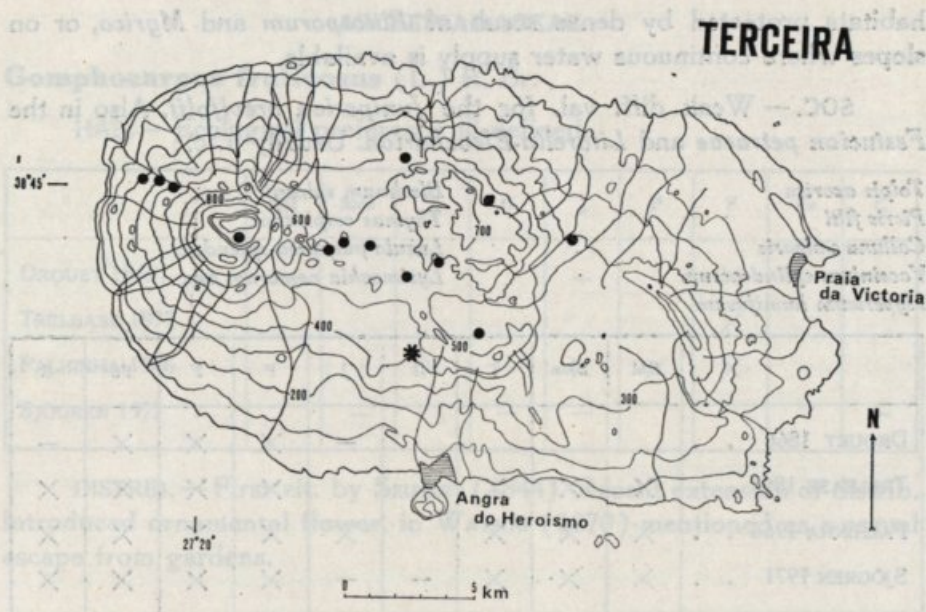


Fig. 86. - *Centaurium scilloides* ssp. *massonii*

habitats protected by dense scrub of *Pittosporum* and *Myrica*, or on slopes where continuous water supply is available.

SOC.— Weak diff. val. for the *Juniperion brevifolii*. Also in the *Festucion petraeae* and *Litorello-Eleocharion*. Usually u. c.:

*Tolpis azorica*

*Picris filii*

*Calluna vulgaris*

*Vaccinium cylindraceum*

*Hypericum humifusum*

*Blechnum spicant*

*Thymus cespititius*

*Luzula purpureo-splendens*

*Lysimachia nemorum* ssp.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—	×	×	×	—
TRELEAVE 1897 . . .	×	×	×			×	×	×	×
PALHINHA 1966 . . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . . .	×	×	×	—	—	×	×	×	×

DISTRIB.— First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET, observation from P made by WATSON (1844). This sp. was certainly overlooked by DROUET on SM, SMA and T.

#### APOCYNACEAE

##### *Vinca difformis* Pourr.

EXS.— S. Miguel: Sete Cidades (Sjn 65: U). — Pico: Cais do Pico (idem).

VIDI— S. Miguel: Mosteiros, 50 m. — Pico: Cais do Pico-S. Roque.

HAB.— Only at low altitudes, close to villages and roads.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEAVE 1897 . . .	×		×				×	×	
PALHINHA 1966 . . .	×		×		×				
SJÖGREN 1971 . . .	×	—		—	—	×			—

DISTRIB.— First cit. by DROUET. Recently spreading within the archipelago.



## ASCLEPIADACEAE

**Gomphocarpus fruticosus** (L.) R. Br.

HAB. — Ecological preference ill-defined.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×		—
TRELEASE 1897 . .							×		
PALHINHA 1966 . .			×		×	×	×		
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by SEUBERT (1844). Recent extension of distrib. Introduced ornamental flower, in WATSON (1870) mentioned as a casual escape from gardens.

## CONVOLVULACEAE

**Convolvulus arvensis** L.

HAB. — Antropochorous sp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×		—
TRELEASE 1897 . .	×	×	×	×			×	×	
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Cit. by DROUET from F and « autres îles ». Rare sp. Recent extension of distrib. is not sure, as cit. by SEUBERT (1844) from « agris arvisque ins. omnium ».

**Calystegia sepium** (L.) R. Br.

VIDI — Flores: Ponta da Fajãzinha, 120 m.

HAB. — Observed only on steep cuttings through densely packed sandy deposits.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—		×	×	—
TRELEASE 1897 . . .							×	×	×
PALHINHA 1966 . . .							×	×	×
SJÖGREN 1971 . . .		—		—	—			×	—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Distrib. remarkably stable, and restricted to the three westernmost islands of the archipelago. Rare sp.

***Ipomoea stolonifera* J. F. Gmel. in L.**

EXS.—Faial: Porto Pim (Sjn 68: U).

HAB.—Only close to the coast, only observed growing on loose sandy deposits.

SOC.—Diff. sp. of the *Polygonetum maritimi*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—		×		—
TRELEASE 1897 . . .							×		
PALHINHA 1966 . . .						×	×		
SJÖGREN 1971 . . .		—		—	—		×		—

DISTRIB.—First cit. by WATSON (1843), since then very stable distrib., spreading only to P from the nearby F.

**BORAGINACEAE**

***Heliotropium europaeum* L.**

EXS.—Terceira: S. Mateus (Sjn 68: U).—Pico: Cachorro (idem).

VIDI—Faial: Porto Pim.

HAB.—Probably not above 300 m.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×	×	—	×			—
TRELEASE 1897 . .			×	×	×	×			
PALHINHA 1966 . .			×	×	×	×	×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent slight extension of distrib. For a long time the species has been restricted to the central islands of the archipelago in a remarkable way. Mentioned by WATSON (1843) from P.

**Borago officinalis L.**

EXS. — Pico: Cais do Pico (Sjn 65: U).

HAB. — Ecological preference ill-defined.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .			×				×		
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by FORSTER (1787). Then not recorded over a long period. Rare sp.

**Myosotis maritima Hochst. ex Seub.**

HAB. — Close to the coast.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×	×		—
TRELEASE 1897 . .				×	×	×	×		×
PALHINHA 1966 . .			×	×	×	×	×		×
SJÖGREN 1971 . .		—		×	—				—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Probably no recent extension of distribution.

**Myosotis discolor** Pers.

HAB.—Ecological preference unknown.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .		×			—				—
TRELEASE 1897 . . .	×	×							
PALHINHA 1966 . . .	×	×	×		×				
SJÖGREN 1971 . . .		—		—	—				—

DISTRIB.—First cit. by SEUBERT (1844). Marked restriction of recent distrib. to the E part of the archipelago.

**Echium lycopsis** L.

EXS.—Terceira: Canada da Luz, 100 m (Sjn 65: U).

VIDI—Terceira: W of Porto Judeu.—Faial: Porto Pim.

HAB.—Below 300 m.—In dry, strongly exposed habitats, on sand or gravel.

SOC.—In antropochorous associations but also frequently in the *Festucion petraeae* u. c. such spp. as:

*Foeniculum vulgare* var.  
*Geranium robertianum*  
*Polypogon maritimum*  
*Briza maxima*

*Polycarpon tetraphyllum*  
*Lotus subbiflorus*  
*Anisantha madritensis*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×			—				—
TRELEASE 1897 . . .	×	×	×					×	
PALHINHA 1966 . . .	×	×	×					×	
SJÖGREN 1971 . . .		—	×	—	—		×		—



DISTRIB. — First cit. by SEUBERT (1844). There has probably been a recent extension of the distrib. Might spread to other islands in the future.

### VERBENACEAE

#### *Lantana camara* L.

VIDI — Terceira : Several localities. — Pico : Several localities. — Faial : Porto Pim.

HAB. — Introduced and often escaped, close to villages and roads and fields. Frequently naturalized on lava flows at low altitudes, mixed with *Pittosporum* and *Myrica*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by PALHINHA (1966). Now spreading within the archipelago. Becoming a dangerous competitor to the natural *Myrica* vegetation at low altitudes, eventually may be to nearly the same extent as *Pittosporum*.

#### *Verbena officinalis* L.

EXS. — Terceira : N slope of St.<sup>a</sup> Bárbara (Sjn 68 : U).

HAB. — Introduced and escaped. Below 300 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—	×	×	×	—
TRELEASE 1897 . .	×	×	×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—	×	—	—				—

DISTRIB. — First cit. by FORSTER (1787). Recent establishment throughout the archipelago has been very rapid.

**Verbena venosa** Gill. & Hooker

EXS. — Faial: N of Horta, by road, 100 m (Sjn 68: U).

HAB. — At low altitudes close to roads and villages.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .		×					×		
SJÖGREN 1971 . .		—		—	—		×		—

DISTRIB. — Recently introduced. This sp. might in the near future become as widely spread as *V. officinalis*.

**LAMIACEAE****Scutellaria minor** Hudson.

EXS. — Pico: By road Lajes-Cais do Pico, 590 m (Sjn 68: U).

HAB. — Probably antropochorous.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .			×		×	×			
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by TUTIN & WARBURG (1932). Recent invasion. Distrib. still restricted to the central islands of the archipelago.

**Marrubium vulgare** L.

EXS. — Terceira: Porto Martins (Sjn 65: U).

HAB. — Antropochorous sp.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×		×	—	×			—
TRELEASE 1897 . . .	×	×	×	×	×	×			
PALHINHA 1966 . . .	×	×	×	×	×	×			
SJÖGREN 1971 . . .	×	—	×	—	—	×			—

DISTRIB. — First cit. by DROUET. Recently extended distrib. Still restricted to the eastern and central islands. Rare sp. Further extension of distrib. uncertain.

### **Prunella vulgaris L.**

VIDI — S. Miguel: Sete Cidades, 460 m. E of Vista do Rei. Ravine Sete Cidades, 510 m. Lag. das Empadadas, 720 m. Pico da Vara, 1000-1100 m. — Terceira: Cald. Guilh. Moniz, 420 m. St.<sup>a</sup> Bárbara, 450-600 m. Mata do Estado, 350 m. — Pico: Torrinhãs, 1000 m. Lag. Seca. E Lag. do Caiado, 820 m. Lag. do Paul. Lake in Grotões. Cab. do Afonso, 700 m. Lake E of Landroal, 770 m. W of Lag. do Caiado, 820 m. Lag. do Landroal, 770 m. Miradouro do Cais do Pico, 170 m. — Faial: Bottom of Caldeira. Caldeira, 850 m. Alto da Pedreira, 520 m. N of Caldeira, 600 m. — Flores: By road, 160 m.

HAB. — No distinct altitude preference. Observed between 150-1100 m. — In wet strongly exposed habitats in open grassland, around lakes, also below high water level. Also colonizing rather dry, steep cuttings through sandy deposits.

SOC. — Diff. sp. of the *Anagallidetum tenellae* and of the *Litorello-Eleocharion*. Usually u. c.:

*Rubus ulmifolius*

*Holcus rigidus*

*Anthoxanthum odoratum*

*Potentilla erecta*

*Hydrocotyle vulgaris*

*Luzula purpureo-splendens*

*Lysimachia nemorum* ssp.

*Juncus effusus*

*Litorella uniflora*

(*Breutelia azorica*)

Also in the *Ornithopo-Gaudinietum* and where this ass. occurs mixed with antropochorous spp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×			—	×	×		—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Probably overlooked by DROUET on T and Fo. Future records from G are also probable.

### **Lamium amplexicaule L.**

VIDI — Pico: Cais do Pico-S. Roque.

HAB.—Antropochorous sp. Below 300 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×				—				—
TRELEASE 1897 . .	×								
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB.—First cit by DROUET (observation by WATSON). One of the few recently introduced weeds with only very slowly extending distribution.

### **Ballota nigra L.**

VIDI — S. Miguel: Rib. Quente, coast.

HAB.—Antropochorous sp., observed only on coarse gravelly deposits.

DISTRIB.—First cit. by DROUET (observation by WATSON). Unusually stable distrib. for a recently introduced weed (cf. *Lamium amplexicaule*). Only on SM. Rare sp.



**Stachys arvensis (L.) L.**

VIDI — S. Miguel: Feteiras, 100 m. Fenais da Luz. Rib. Quente. — Pico: Cais do Pico.

HAB. — Generally close to roads and fields, below 300 m. — In dry strongly exposed habitats. On sand-gravel, stone walls, coastal cliffs.

SOC. — In antropochorous communities, u. c.:

*Pteridium aquilinum*

*Urtica morifolia*

*Sonchus asper*

*Mercurialis annua*

*Conyza canadensis*

*Poa annua*

*Oxalis pes-caprae*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×		×		—		×		—
TRELEASE 1897. . .	×	×	×	×	×		×	×	×
PALHINHA 1966. . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971. . .	×	—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). This sp. can hardly have been overlooked by DROUET on so many islands, so rapid recent extension of the distrib. is probable.

**Satureja nepeta (L.) Scheele**

EXS. — S. Miguel: Lag. do Congro, 420 m (Sjn 65: U).

HAB. — Ecological preference ill-defined.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×	×	×	—	×	×	×	—
TRELEASE 1897. . .	×		×	×		×	×	×	×
PALHINHA 1966. . .	×		×	×	×	×	×	×	×
SJÖGREN 1971. . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Already established 100 years ago in the vegetation of probably all the islands of the archipelago. In DROUET (1866) mentioned as *Melissa calamintha* L. var. *villosissima* and as *Calamintha nepeta* Link. var. *rotundifolia* Sol.

**Satureja vulgaris** (L.) Fritsch

VIDI — Pico : Mist. da Prainha, 400 m.

HAB. — Restricted to low altitudes, probably only below 500 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×			—			×	—
TRELEASE 1897 . .	×	×						×	
PALHINHA 1966 . .	×	×						×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — Mentioned by WATSON (1844). Cit. by DROUET from the E and W part of the archipelago. Rather stable distrib. since then.

**Origanum virens** Hoffgg. & Link

VIDI — S. Miguel : Ravine SW of Sete Cidades, 510 m.

HAB. — No distinct altitude preference. — In strongly exposed habitats, dry or moist.

SOC. — Diff. sp. of the *Anagallidetum tenellae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .		×			—			×	—
TRELEASE 1897 . .	×	×	×		×	×		×	
PALHINHA 1966 . .	×	×	×		×	×	×	×	
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Now frequent in nearly all the archipelago. Recent extension of distrib. If *O. vulgare* and *O. creticum* in DROUET are identical with *O. virens*, recordings from P (SEUBERT) and F should also be added.

**Thymus cespititius** Brot.

(Fig. 87 and 88)

EXS. — S. Miguel : W of Casal, ravine, 600 m (Sjn 65: U). Sete Cidades, 500 m (Sjn 65: U). Tronqueira (Cy 58: LISI). Bretanha (Car 1899: AZ). Faial da Terra (Car 08: AZ). — Terceira : Pico da Bagacina (Orm: COI). Biscoito da Fontinha, Curreal



das Ovelhas, 320 m (Ds 64: LISE). No loc. (Tr 1894: AZ). — S. Jorge: Rocha Pelada (Car 03: AZ). — Pico: Cima do Pico, 2300 m (Go 64: LISI). Mist. S. João (Go: HO). Mist. S. João, 80 m (Ds 64: LISE). — Faial: Cab. Fogo, 500 m (Go 62: LISI; LISFA). Horta, 5 m (Go 62: LISI). Capelo, 200 m (Go 61: LISI). — Flores: Rocha d. Bordões, 250 m (Go 63: LISI). — Corvo: 400 m (Go: LISI). — Vila do Corvo near Caldeirão on exterior slope, 400 m (Ds 64: LISE). No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: Rocha d. Bordões, 250 m. Alto da Fajãzinha, 460 m.

HAB. — One of the very few Azorean vascular plants which can be observed at all altitudes from the coast to the highest altitudes on Pico. — In strongly exposed habitats. Very high drought tolerance. On rough lava flows in the *Juniperion* on dry protruding parts between the deep crevices. Frequently on loose black gravel deposits. On strongly exposed fresh cuttings through sandy deposits.

SOC. — Diff. sp. of the *Ornithopo-Gaudinietum* and the *Erico-Myrsinetum*. Frequently in sparse open *Juniperion brevifolii* and in grassland originating from the *Erico-Myrsinetum*.

*Anthoxanthum odoratum*

*Calluna vulgaris*

*Holcus rigidus*

*Daboecia azorica*

*Hypericum humifusum*

*Rubus ulmifolius*

*Pteridium aquilinum*

*Calcitra macrocarpa*

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×	×		—	×	×	×	—
TRELEASE 1897 . . .	×	×	×			×	×	×	×
PALHINHA 1966 . . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . . .	×	—	×	—	—	×	×	×	×

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). No recent extension of distrib. Probably very old member of the vegetation of the archipelago.

### **Lycopodium europaeus L.**

EXS. — Faial: Bottom of Caldeira (Sjn 65: U).

VIDI — S. Miguel: Lag. do Congro, 440 m. Sete Cidades, 250 m.

HAB. — Around lakes at altitudes above 300 m. — In wet habitats, where permanent water supply is generally available.

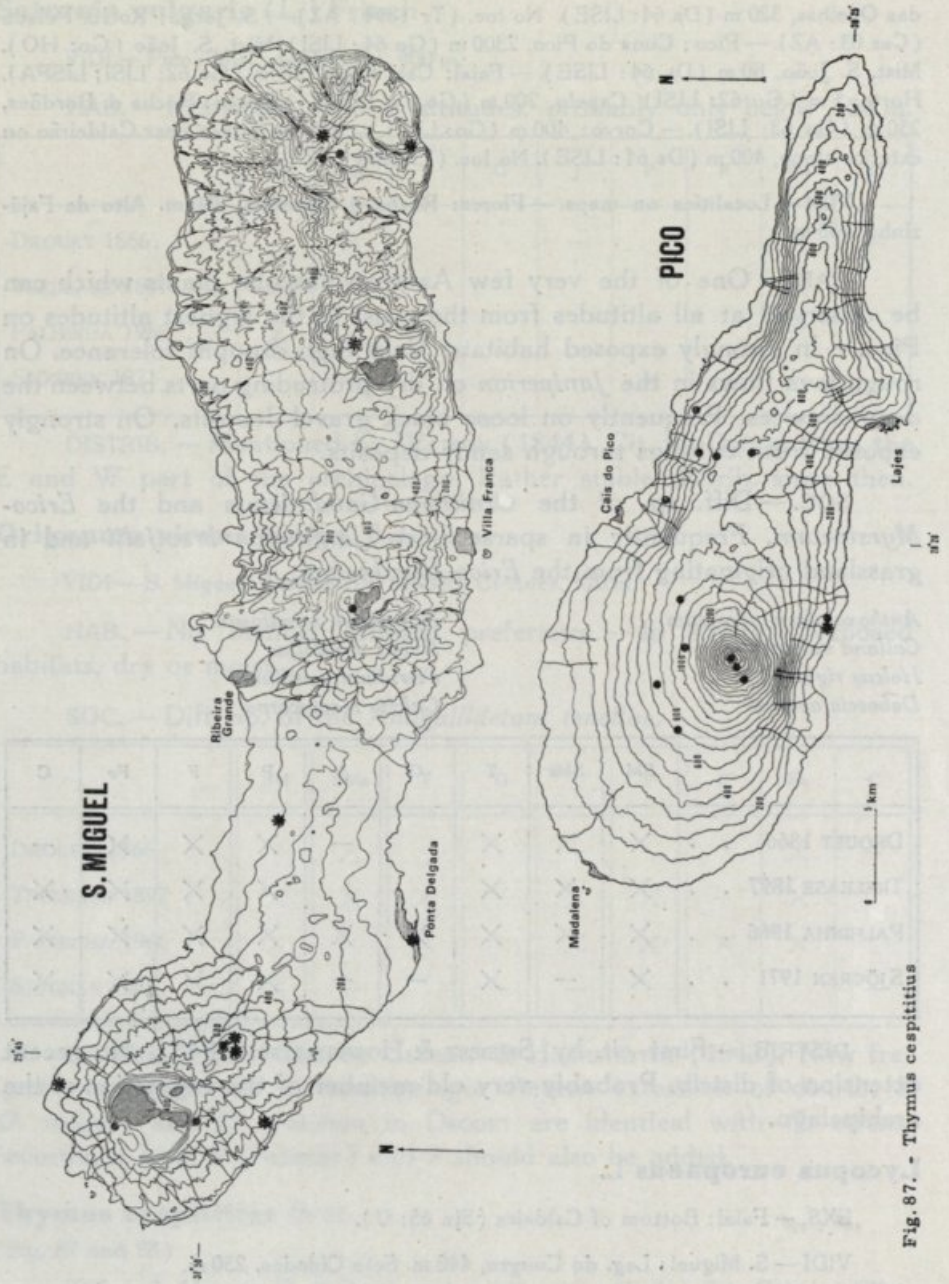


Fig. 87. - *Thymus cespitosus*



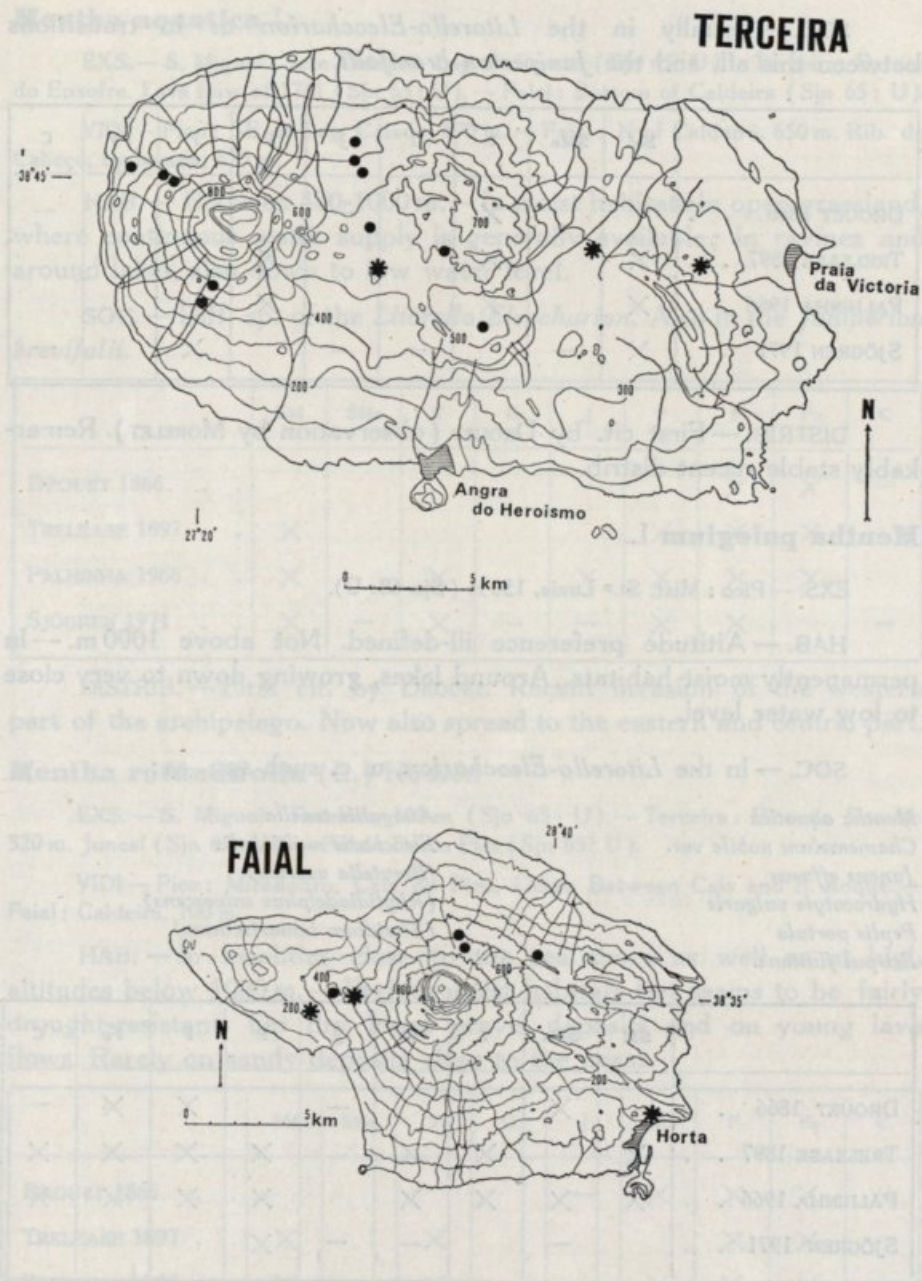


Fig. 88. - *Thymus cespititius*

SOC.— Usually in the *Litorello-Eleocharion* or in transitions between this all. and the *Juniperion brevifolii*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—				—
TRELEASE 1897 . .	×		×			×			
PALHINHA 1966 . .	×		×			×			
SJÖGREN 1971 . .	×	—		—	—		×		—

DISTRIB.— First cit. by DROUET (observation by MORELET). Remarkably stable recent distrib.

### *Mentha pulegium* L.

EXS.— Pico: Mist. St.<sup>a</sup> Luzia, 150 m (Sjn 68: U).

HAB.— Altitude preference ill-defined. Not above 1000 m.— In permanently moist habitats. Around lakes, growing down to very close to low water level.

SOC.— In the *Litorello-Eleocharion*, u. c. such spp. as:

*Mentha aquatica*  
*Chamemelum nobile* var.  
*Juncus effusus*  
*Hydrocotyle vulgaris*  
*Peplis portula*  
*Scirpus fluitans*

*Anagallis tenella*  
*Eleocharis multicaulis*  
 (*Breutelia azorica*)  
 (*Rhytidiadelphus calvescens*)  
 (*Thuidium tamariscinum*)

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .		×			—		×	×	—
TRELEASE 1897 . .	×		×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×		×	×	×	×
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB.— First cit. by FORSTER (1787). Old member of the Azorean vegetation. A recent extension of distrib. is, however, probable.



**Mentha aquatica** L.

EXS. — S, Miguel: Sete Cidades. Lag. d. Furnas (Sjn 65: U). — Terceira: Furnas do Enxofre. Lava flow of 1761 (Sjn 65: U). — Faial: Bottom of Caldeira (Sjn 65: U).

VIDI — Pico: SE of Lag. Caiado, 870 m. — Faial: N of Caldeira, 650 m. Rib. do Cabeço, by levada, 670 m.

HAB. — Between 400-1000 m. — In moist habitats in open grassland, where continuous water supply is generally available; in ravines and around lakes, also down to low water level.

SOC. — Diff. sp. of the *Litorello-Eleocharion*. Also in the *Juniperion brevifolii*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	—
TRELEASE 1897 . .	×					×	×	×	
PALHINHA 1966 . .	×	—	×		×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by DROUET. Recent invasion of the western part of the archipelago. Now also spread to the eastern and central part.

**Mentha rotundifolia** (L.) Hudson

EXS. — S, Miguel: Feteiras, 100 m (Sjn 65: U). — Terceira: Pico da Serreta 320 m. Juncal (Sjn 65: U). — Faial: Porto Pim (Sjn 65: U).

VIDI — Pico: Miradouro, Cais do Pico, 170 m. Between Cais and S. Roque. — Faial: Caldeira, 700 m.

HAB. — In localities close to the sea shore as well as at high altitudes below 1000 m. — Prefers moist habitats but seems to be fairly drought-resistant. On dry loose gravel deposits and on young lava flows. Rarely on sandy deposits close to the coast.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	—	×				×	×	
PALHINHA 1966 . .	×		×			×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by FORSTER (1787). This sp. might have been overlooked by DROUET on SM and T.

### SOLANACEAE

#### *Hyoscyamus albus* L.

EXS. — Pico: Cachorro (Sjn 68: U).

VIDI — Pico: Madalena. — Faial: Porto Pim.

HAB. — At altitudes below 400 m.

SOC. — In antropochorous associations.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .		×		×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×	×		×	×	×	
PALHINHA 1966 . .	×	×	×	×		×	×	×	
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Probably overlooked by DROUET on SM and T.

#### *Physalis peruviana* L.

HAB. — Probably escaped. Close to villages, below 400 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×			×	—				—
TRELEASE 1897 . .	×	×	×	×	×		×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by FORSTER (1787). Recently spread to all the archipelago.



**Solanum sodomium** L.

VIDI — Faial : Porto Pim.

HAB. — At low altitudes, preferentially close to the coast.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—				—
TRELEASE 1897 . . .									
PALHINHA 1966 . . .			×				×		
SJÖGREN 1971 . . .		—		—	—	×	×		—

DISTRIB. — First cit. by TUTIN & WARBURG (1932). Still no extension of distrib. Rare sp.

**Solanum nigrum** L.

VIDI — S. Miguel : Feteiras, 100 m. Faial da Terra. — Pico : Lava flow E of Cais do Pico, 290 m. Cais do Pico-S. Roque. — Faial : Porto Pim,

HAB. — Generally below 400 m. — On sand or gravel deposits, in strongly exposed habitats.

SOC. — Diff. sp. of the *Mercurialion annuae*. Also in the *Festucion petraeae*. Usually recorded u. c. :

*Sisymbrium officinale*  
*Trifolium angustifolium*  
*Polycarpon tetraphyllum*  
*Euphorbia peplus*  
*Urtica morifolia*  
*Lepidium virginicum*  
*Mercurialis annua*  
*Poa annua*

*Briza maxima*  
*Festuca petraea*  
*Bellis perennis*  
*Foeniculum vulgare* var.  
*Sonchus asper*  
*Reseda luteola*  
*Conyza canadensis*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—	×	×		—
TRELEASE 1897 . . .	×	×	×	×	×	×	×	×	×
PALHINHA 1966 . . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . . .	×	—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). After the records by DROUET, explosively extended distribution.

**Solanum pseudocapsicum L.**

EXS. — Faial: Farol da Ribeirinha (Sjn 68: U).

HAB. — Cultivated and escaped.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×		×		—	×	×		—
TRELEASE 1897 . .	×		×		×	×	×	×	
PALHINHA 1966 . .	×		×	×	×	×	×	×	
SJÖGREN 1971 . .		—		—	—		×		—

DISTRIB. — First cit. by FORSTER (1787). No marked extension of distrib.

**Solanum auriculatum Aiton.**

VIDI — S. Miguel: Feteiras, 100 m. — Terceira: Terra Chã, 100 m.

HAB. — Cultivated and escaped, around villages.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—				—
TRELEASE 1897 . .			×						
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .	×	—	×	—	—				—

DISTRIB. — First cit. by TRELEASE. Since then very stable distrib.

**Datura stramonium L.**

VIDI — Faial: Porto Pim.

HAB. — No distinct ecological preference.



	SM	S <sub>Ma</sub>	T	G	J	P	F	F <sub>o</sub>	C
DROUET 1866. . .	×				—		×		—
TRELEASE 1897 . .	×						×		
PALHINHA 1966 . .	×			×		×	×		
SJÖGREN 1971 . .	×	—		×	—		×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Since then unusually stable distrib., but not casual as supposed by WATSON (1870).

### SCROPHULARIACEAE

**Verbascum** × **virgatum** Stokes in With.

VIDI — Pico: Between Cais do Pico and S. Roque.

HAB. — At low altitudes, close to villages and fields, below 500 m.

	SM	S <sub>Ma</sub>	T	G	J	P	F	F <sub>o</sub>	C
DROUET 1866. . .			×		—				—
TRELEASE 1897 . .		×	×					×	
PALHINHA 1966 . .	×	×	×		×	×		×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by DROUET. Marked successive invasion of the islands of the archipelago. In WATSON (1870) already reported from SM, S<sub>Ma</sub>, T.

**Cymbalaria muralis** Gaertner, Mey. & Scherb.

VIDI — Pico: Cais do Pico-S. Roque. — Faial: S of Praia do Norte, 170 m.

HAB. — Cultivated and escaped, close to villages and roads. On coarse gravel, on stone walls.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .							×		
PALHINHA 1966 . .	×		×				×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB.—First cit. by TRELEASE. Now escaped on some islands, probably extending the distrib. further.

**Kickxia cirrhosa** (L.) Fritsch.

EXS.—Pico: Prainha, 250 m (Sjn 65: U).

HAB.—Ecological preference ill-defined.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .			×		×	×	×		
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Recently extended distrib.

**Kickxia spuria** (L.) Dumort.

VIDI—Pico: Lava flow E of Cais do Pico, 250 m.

HAB.—Observed only in dry habitats, on lava flows.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×			—		×		—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×			—



DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent invasion, now spread to all parts of the archipelago.

**Misopates orontium** (L.) Rafin.

VIDI — S. Miguel: Rib. Quente, coast. Faial da Terra.

HAB. — Antropochorous sp., below 500 m. — On sand or gravel.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×			—		×		—
TRELEASE 1897 . .	×	×	×		×	×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recently marked extension of distribution.

**Scrophularia aquatica** L.

EXS. — Flores: Rib. da Fazenda, 100 m (Sjn 65: U).

VIDI — S. Miguel: Lag. do Congro, 440 m. Sete Cidades, 250 m. Rib. Quente, coast. — Flores: By road, 160 m. Sapateira, 410 m.

HAB. — Generally below 500 m. — Close to lakes and rivers. Prefers permanently moist habitats, not necessarily where exposure is weak. On cuttings through sandy deposits and on cliffs, where a continuous water supply is available.

SOC. — Sociological preference can not be clearly defined. Often growing u. c.:

*Poa trivialis*

*Cardamine caldeirarum*

*Tolpis azorica*

*Centaurium scilloides* ssp.

*Osmunda regalis*

*Lotus uliginosus*

*Hedera helix* ssp.

*Hypericum foliosum*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—			×	—
TRELEASE 1897 . .	×							×	
PALHINHA 1966 . .	×							×	
SJÖGREN 1971 . .	×	—		—	—			×	—

DISTRIB. — First cit. by WATSON (1844). Recording in DROUET made by WATSON. Since then unusually stable distrib. although there are suitable habitat conditions available on all islands of the archipelago.

### **Scropularia scorodonia L.**

EXS. — S. Miguel: Sete Cidades (Sjn 65: U).

VIDI — S. Miguel: Fenais da Luz, coast.

HAB. — Ecological preference very similar to that of *Sc. aquatica*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×		×		—				—
TRELEASE 1897 . .	×		×						
PALHINHA 1966 . .	×		×		×	×			
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recently rather stable distrib. Localities with suitable habitat conditions on all islands.

### **Sibthorpia europaea L.**

(Fig. 89 and 90)

EXS. — S. Miguel: Lag. do Fogo, 750 m (Sjn 65: U). Bretnha (Car 1899: AZ). Lameiro (Car 1898: AZ). — Terceira: Cald. Guilh. Moniz, 460 m (Ds 64: LISE). — Pico: S. Roque, 200 m (Go 62: LISI). — Madalena, Serra de Madalena, 670 m (Ds 64: LISE). — Faial: Cedros, Rib. Funda, 700 m (Go 62: LISI, LISFA). Cabouco, 500 m (Go 62: HO). — Flores: Rocha dos Bordões, 250 m (Go 63: LISI). Lag. da Lomba, 700 m (Go 64: LISI). — Corvo: No loc., 500 m (Go 64: LISI). Vila do Corvo near Caldeirão in exterior slope, 400 m (Ds 64: LISE). No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: Lag. da Lomba, 620 m. Rochão do Junco, 540 m.

HAB. — Observed at altitudes between 50-1400 m. — In both dry and moist habitats. On thick humus layers in grassland and *Sphagnum*-covered slopes. On fresh cuttings through sand-gravel deposits in the primary stage of colonization by vascular plants. Around lakes, also below high water level.

SOC. — Frequently in the *Juniperion brevifolii*. Usually u. c.:



*Myrsine africana* var.  
*Luzula purpureo-splendens*  
*Centaurium scilloides* ssp.  
*Lysimachia nemorum* var.  
*Tolpis azorica*

*Blechnum spicant*  
*Hymenophyllum tunbridgense*  
*Cardamine caldeirarum*  
*Selaginella kraussiana*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×	×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	×

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). The sp. can hardly have been overlooked by DROUET on the eastern islands. Now widespread, after rapid recent extension of distrib. Frequent on all islands. Probably overlooked on G.—The world-wide distrib. of the species is peculiar: «Widespread in the oceanic parts of W and S Europe, in the Azores, and on high mountains in Tropical Africa» (l. c. HEDBERG 1955 p. 170).

### ***Veronica anagallis-aquatica* L.**

HAB. — Close to lakes and rivers. No clearly defined altitude preference.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEASE 1897 . .	×	×	×				×	×	
PALHINHA 1966 . .	×	×	×				×	×	
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by SEUBERT (1844). Recently extended distrib.

### ***Veronica catenata* Penell**

EXS. — S. Miguel; Lag. do Congro (Sjn 65: U). — Faial; Bottom of Caldeira (Sjn 68: U).

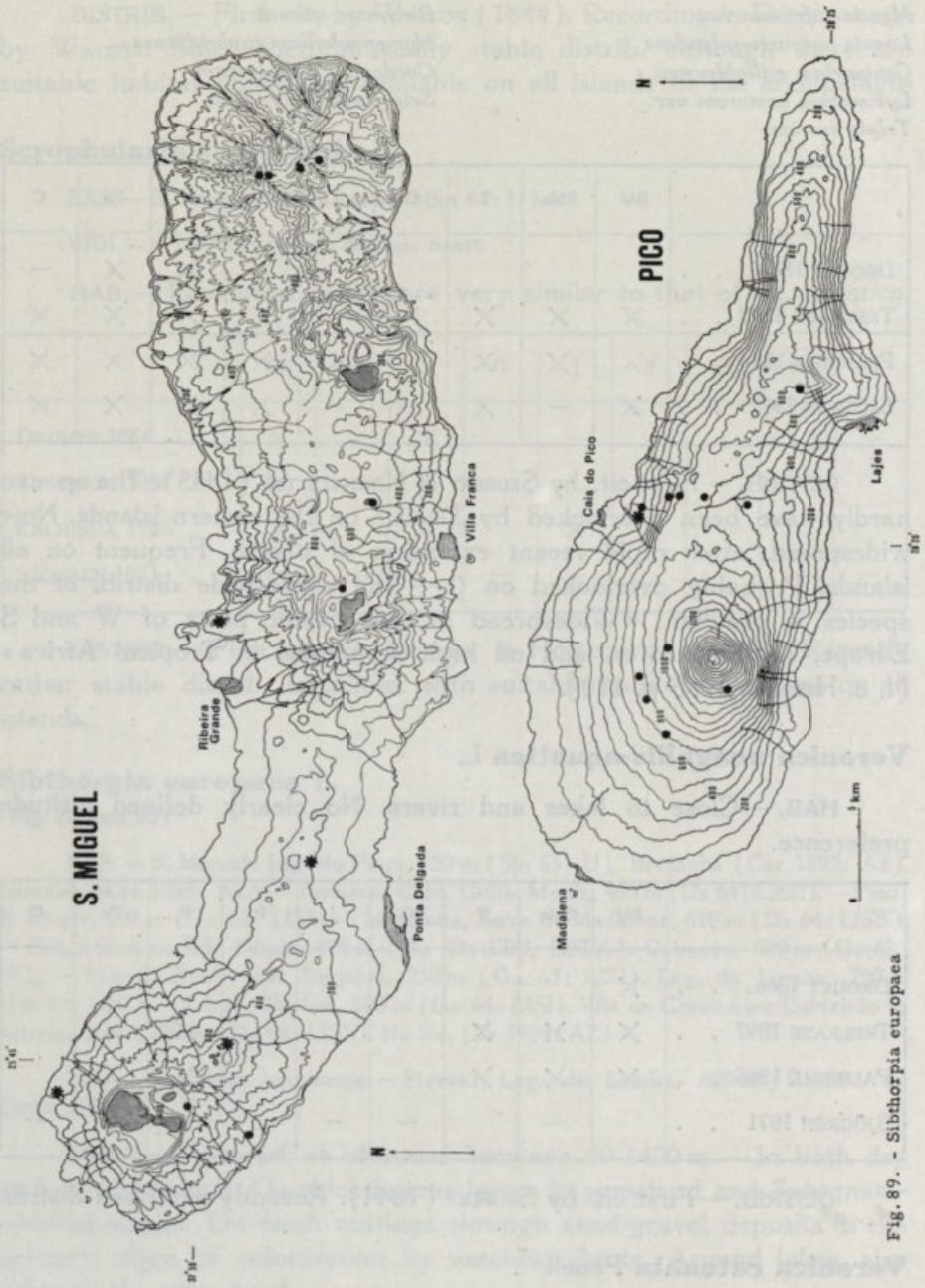


Fig. 89. - *Sibthorpia europaea*



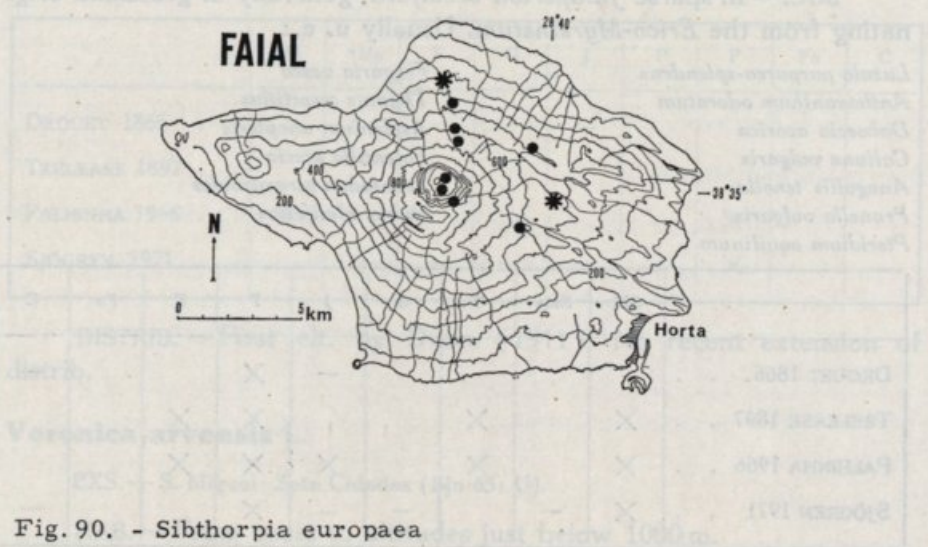
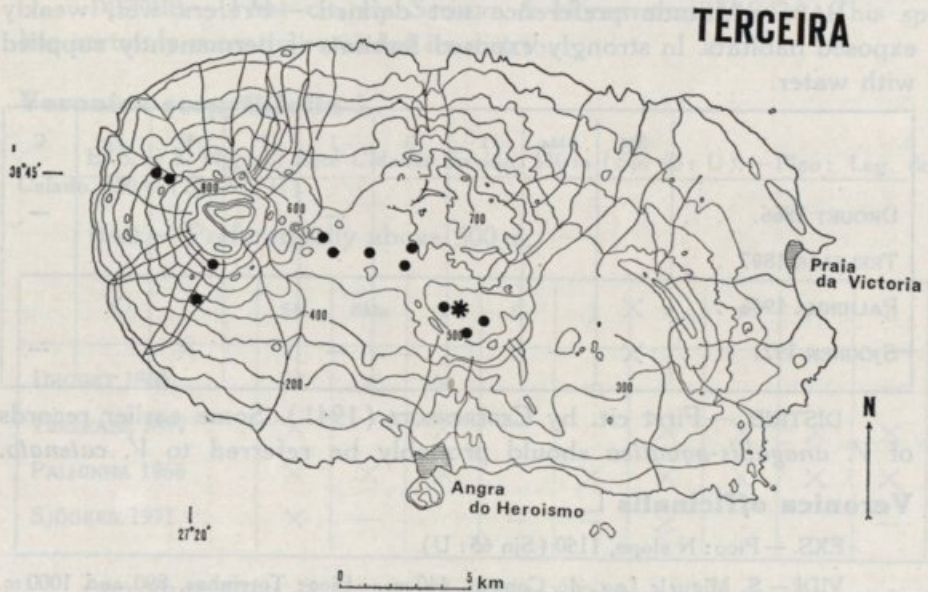


Fig. 90. - *Sibthorpia europaea*

HAB.—Altitude preference not defined.—Prefers wet, weakly exposed habitats. In strongly exposed habitats if permanently supplied with water.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .	×							×	
SJÖGREN 1971 . .	×	—		—	—		×		—

DISTRIB.—First cit. by CEDERCREUTZ (1941). Some earlier records of *V. anagallis-aquatica* should probably be referred to *V. catenata*.

### **Veronica officinalis L.**

EXS.—Pico: N slope, 1150 (Sjn 65: U).

VIDI—S. Miguel: Lag. do Congro, 440 m.—Pico: Torrinhas, 890 and 1000 m. W slope of Pico, 1060 m.

HAB.—In PALHINHA (1966) mentioned from altitudes between 300-900 m. Now observed up to 1060 m. Probably rarely below 500 m. In dry strongly exposed habitats, e. g. on protruding parts of rough lava flows.

SOC.—In sparse *Juniperion brevifolii*, generally in grassland originating from the *Erico-Myrsinetum*. Usually u. c.:

*Luzula purpureo-splendens*

*Anthoxanthum odoratum*

*Daboecia azorica*

*Calluna vulgaris*

*Anagallis tenella*

*Prunella vulgaris*

*Pteridium aquilinum*

*Fragaria vesca*

*Thymus cespititius*

*Asplenium onopteris*

*Potentilla erecta*

*Leontodon taraxacoides*

*Rubus ulmifolius*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×			—
TRELEASE 1897 . .	×		×			×	×		
PALHINHA 1966 . .	×		×		×	×	×		
SJÖGREN 1971 . .	×	—		—	—	×			—



DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). This sp. has certainly recently extended its distrib.

**Veronica serpyllifolia L.**

EXS.—S. Miguel: Sete Cidades, ravine, 510 m (Sjn 65: U).—Pico: Lag. do Caiado, 800 m (Sjn 68: U).

HAB.—Preferentially above 500 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×	×		—				—
TRELEASE 1897 . . .	×		×			×	×	×	×
PALHINHA 1966 . . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . . .	×	—		—	—	×			—

DISTRIB.—First cit. by WATSON (1844). Probably a recent extension of distrib.

**Veronica peregrina L.**

EXS.—Faial: Praia do Norte (Sjn 65: U).

HAB.—Altitude preference ill-defined.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—				—
TRELEASE 1897 . . .									
PALHINHA 1966 . . .	×						×		
SJÖGREN 1971 . . .		—		—	—		×		—

DISTRIB.—First cit. by DRUCE (1911). No recent extension of distrib.

**Veronica arvensis L.**

EXS.—S. Miguel: Sete Cidades (Sjn 65: U).

HAB.—From coast to altitudes just below 1000 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEASE 1897 . .	×		×				×	×	
PALHINHA 1966 . .	×		×		×		×	×	
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Mentioned by DROUET from SM «et les autres îles», which at that time was certainly only a guess. Recently extended distrib.

**Veronica persica** Poiret

VIDI—S. Miguel: S of Rib. Grande, Caldeiras, 250 m.

HAB. — Generally below 500 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .	×								
PALHINHA 1966 . .	×						×		
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by TRELEASE. Recent intrusion into the Azorean vegetation. Probably further colonization in the near future.

**Digitalis purpurea** L.

HAB. — Close to villages and fields.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—				—
TRELEASE 1897 . .			×						
PALHINHA 1966 . .	×		×			×		×	
SJÖGREN 1971 . .		—		—	—				—



DISTRIB.—First cit. by DROUET (observations by MORELET and HARTUNG). After recent introduction now spread to all parts of the archipelago.

**Euphrasia grandiflora** Hochst. ex Seub.

EXS.—Flores: Alto da Fajãzinha, 120 m (Sjn 65: U). Between Lagoas—road Fajãzinha, 450 m (Ds 64: LISE). Rocha dos Bordões, 400 m (Go 63: LISI).

VIDI—Pico: Torrinas, 1000 m.—Flores: Rochão do Junco, 540 m.

HAB.—On Flores down to 120 m, on other islands probably not below 600 m.—In wet, but not necessarily weakly exposed habitats. On thick humus layers with dense *Sphagnum*-cover in open grassland, in craters, and in the *Juniperion* on lava flows.

SOC.—Diff. sp. of the *Erico-Myrsinetum* and *Festucetum jubatae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .			×		—	×			—
TRELEASE 1897 . .			×			×	×	×	×
PALHINHA 1966 . .			×		×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×		×	—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Localities now more accessible from new roads. Probably no recent extension of distrib.

**Bellardia trixago** (L.) All.

EXS.—S. Miguel: Sete Cidades (Sjn 65: U). Santa Maria: Cré, near Casa do Miguel, 100 m (Ds 64: LISE). Vila do Porto near Figueiral, 50 m (Ds 64: LISE).—Terceira: By road Biscoitos to Angra, 300 m (Sjn 68: U).

HAB.—Altitude preference indistinct, probably not above 500 m.—Recorded from coarse gravel and sparsely colonized lava flows on dry or moist, strongly exposed habitats.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×			—	×			—
TRELEASE 1897 . .	×	×				×			
PALHINHA 1966 . .	×	×				×			
SJÖGREN 1971 . .	×	×	×	—	—				—

DISTRIB. — First cit. by SEUBERT (1844), only from P. Probably rather old member of the Azorean vegetation with recent extension of the distrib.

### PLANTAGINACEAE

#### *Plantago major* L.

VIDI — Faial: Porto Pim.

HAB. — Below 500 m.

SOC. — In antropochorous associations, e. g. together with:

*Coryza canadensis*  
*Foeniculum vulgare* var.  
*Hordeum murinum*  
*Solanum nigrum*  
*Anagallis arvensis*  
*Euphorbia peplus*

*Plantago coronopus*  
*Polygonum aviculare*  
*Daucus corota*  
*Hyoscyamus albidus*  
*Parietaria officinalis*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×		×	×			×	×	×
PALHINHA 1966 . .	×		×	×	×		×	×	×
SJÖGREN 1971 . .		—		—	—		×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Mentioned by DROUET from «tout l'archipel», certainly an exaggeration, quoted from SEUBERT (1844). Unusually stable recent distrib. for a fast spreading weed.



**Plantago lanceolata** L.incl. var. **timbali** (Jordan) Gaut.var. **eriphylla** (Barker) Webb & Berth.

VIDI. — S. Miguel: Sete Cidades. — Terceira: Several localities. — Pico: Lag. do Paul. Cab. do Afonso, 700 m. W of Lag. do Caiado, 820 m. Cais do Pico-S. Roque. N slope of Pico, 1060 m. — Flores: Porto São Pedro. — Faial: N of Caldeira, 670 m. Praia do Norte, coast.

HAB. — In PALHINHA (1966) mentioned only from altitudes below 600 m. Now observed up to 1060 m. Wide ecological amplitude. In open grassland at all altitudes. Around lakes, also below high water level. On fresh cuttings through sandy and gravelly deposits.

SOC. — In antropochorous associations as well as in open *Juniperion brevifolii* and in the *Litorello-Eleocharion*. In grassland u. c.:

*Pteridium aquilinum**Prunella vulgaris**Anthoxanthum odoratum**Leontodon taraxacoides**Luzula purpureo-splendens**Anagallis tenella**Potentilla erecta**Lysimachia nemorum* ssp.In the *Litorello-Eleocharion* u. c.:*Potentilla anglica**Deschampsia foliosa**Holcus rigidus**Peplis portula**Sibthorpia europaea**Prunella vulgaris**Litorella uniflora**Blechnum spicant*

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Old member of the Azorean vegetation.

**Plantago coronopus** L.

(Fig. 91 and 92)

EXS. — S. Miguel: Mosteiros (Sjn 65: U). Serra da Tronqueira, 600 and 900 m (Cy 58: LISE). Rego d'Água (Car 03: AZ). Praia (Canav 03: AZ). Rocha (Car 1895: AZ). Ilhéu de Vila Franca (Car 03: AZ). Faial da Terra (Car 08: AZ). — Terceira: Praia da Vitória (Cu, So 38: COI). Ginjal (Pa, So 37: LISU). No loc. (Samp. AZ). — Pico: Santo António, seacliffs, 10 m (Ds 64: LISE). Lag. do Peixinho, 890 m (Go 65: LISE). — Faial: Monte Queimado, 30 m (Go 62: LISE, LISFA). Varadouro, 10 m (Go 61: LISE, LISFA). Almoxarife, 2 m (Go 65: LISE, LISFA). Castelo Branco (Cu, So 38: LISU). Porto Pim, 15 m (Go 62: HO). — Flores: St. Cruz, 10 m (Go 63: LISE). Boca da Baleia, 250 m (Go 63: LISFA). Porto de Santa Cruz (Tr 1894: AZ). — Corvo: Vila do Corvo, 10 m (Ds 64: LISE).

VIDI — Localities on maps. — Flores: Porto de São Pedro.





Fig. 91. - *Plantago coronopus*



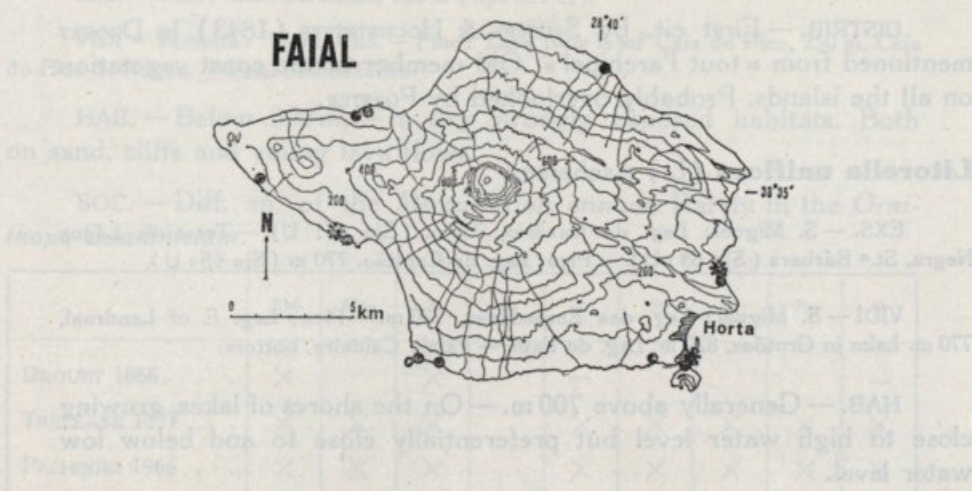
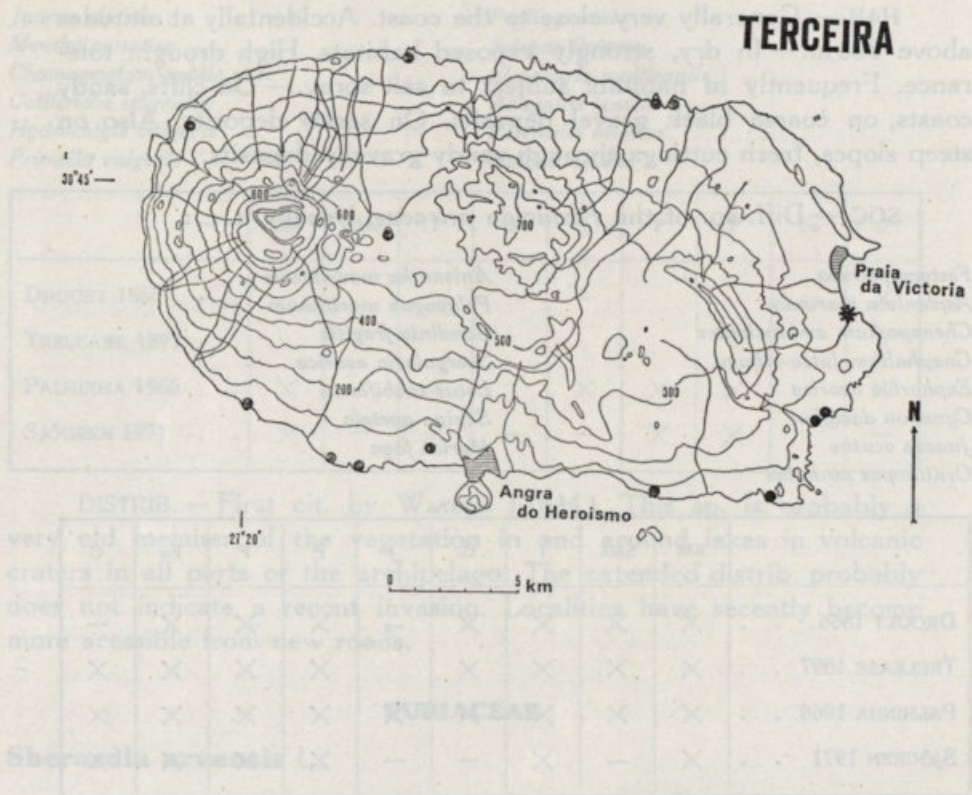


Fig. 92. - *Plantago coronopus*

HAB. — Generally very close to the coast. Accidentally at altitudes above 500 m. — In dry, strongly exposed habitats. High drought tolerance. Frequently in habitats subject to salt spray. — On cliffs, sandy coasts, on coarse black gravel deposits. On sandy deposits. Also on steep slopes, fresh cuttings through sandy-gravelly deposits.

SOC. — Diff. sp. of the *Festucion petraeae*. Usually u. c.:

<i>Festuca petraea</i>	<i>Anisantha madritensis</i>
<i>Asplenium marinum</i>	<i>Polypogon maritimum</i>
<i>Chenopodium ambrosioides</i>	<i>Gaudinia fragilis</i>
<i>Gnaphalium luteo-album</i>	<i>Spergularia azorica</i>
<i>Euphorbia azorica</i>	<i>Lotus subbiflorus</i>
<i>Cynodon dactylon</i>	<i>Sagina apetala</i>
<i>Juncus acutus</i>	<i>Myrica faya</i>
<i>Ornithopus pinnatus</i>	

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	×

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from « tout l'archipel ». Old member of the coast vegetation on all the islands. Probably overlooked by FORSTER.

### **Litorella uniflora** (L.) Ascherson

EXS. — S. Miguel: Lag. do Canário, 750 m (Sjn 65: U). — Terceira: Lagoa Negra, St.<sup>a</sup> Bárbara (Sjn 68: U). — Pico: Lag. do Capitão. 770 m (Sjn 68: U).

VIDI — S. Miguel: Lag. das Empedadas, 720 m. — Pico: Lag. E of Landroal, 770 m. Lake in Grotões, 820 m. Lag. do Paul. — Faial: Caldeira, bottom.

HAB. — Generally above 700 m. — On the shores of lakes, growing close to high water level but preferentially close to and below low water level.

SOC. — Diff. sp. of the *Litorello-Eleocharion*. Usually u. c.:



*Juncus effusus*  
*Mentha aquatica*  
*Chamaemelum nobile* var.  
*Callitriche stagnalis*  
*Hydrocotyle vulgaris*  
*Prunella vulgaris*

*Peplis portula*  
*Scirpus fluitans*  
*Eleocharis multicaulis*  
*Anagallis tenella*  
*Potentilla anglica*  
*Holcus rigidus*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—				×
TRELEASE 1897 . . .									×
PALHINHA 1966 . . .	×		×		×	×	×		×
SJÖGREN 1971 . . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by WATSON (1844). This sp. is probably a very old member of the vegetation in and around lakes in volcanic craters in all parts of the archipelago. The extended distrib. probably does not indicate a recent invasion. Localities have recently become more accessible from new roads.

#### RUBIACEAE

##### *Sherardia arvensis* L.

EXS. — Pico: Mist. St. Luzia, 100 m (Sjn 65: U).

VIDI — Terceira: Terra Chã. — Pico: Lava flow E of Cais do Pico, 250 m. Cais do Pico-S. Roque. — Faial: Almoxarife.

HAB. — Below 300 m. — In dry strongly exposed habitats. Both on sand, cliffs and young lava flows.

SOC. — Diff. sp. of the *Mercurialion annuae*. Rarely in the *Ornithopo-Gaudinietum*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×		×		—				—
TRELEASE 1897 . . .	×	×	×		×	×	×	×	×
PALHINHA 1966 . . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . . .		—	×	—	—	×	×		—

DISTRIB.—First cit. by FORSTER (1787). In the last decades of the 19th century, there was a rapid extension of the distrib.

### **Galium palustre L.**

EXS.—Pico: By road Cais do Pico-Lajes, 590 m (Sjn 68: U). Lag. do Caiado (Sjn 68: U).

HAB.—No distinct altitude preference.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	—
TRELEASE 1897 . .	×						×	×	
PALHINHA 1966 . .	×				×		×	×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB.—First cit. by SEUBERT (1844). First observed in the western part of the archipelago, now also recorded from the central and eastern. Possibly recent extension of distrib.

### **Galium parisiense L.**

EXS.—Terceira: Lava flow of 1761 (Sjn 65: U).—Pico: Mist. da Prainha, 250 m (Sjn 65: U). St. Amaro (Sjn 68: U).

VIDI—Pico: Mist. St. Luzia, 80 m. N of Cab. Redondo, 300 m. Lava flow E of Cais do Pico, 250 and 290 m. Cais do Pico-S. Roque.

HAB.—Generally below 500 m.—High drought tolerance. In strongly exposed habitats. On loose black gravel deposits, en young lava flows with sparse vegetation of vascular plants.

SOC.—In the *Ornithopo-Gaudinietum*, usually u. c.:

*Thymus cespititius*  
*Sagina procumbens*  
*Gaudinia fragilis*  
*Briza maxima*

*Aira praecox*  
*Polycarpon tetraphyllum*  
*Aira caryophyllea*  
*Anisantha madritensis*

Below the lower limit for completely developed *Juniperion brevifolii* in dry open vegetation e. g. on lava flows, u. c.:



*Rumex angiocarpus*  
*Thymus cespititius*  
*Asplenium onopteris*  
*Umbilicus rupestris*

*Hypericum humifusum*  
*Sagina apetala*  
*Calluna vulgaris*  
*Lysimachia nemorum* ssp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				×
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—	×	—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Mentioned by DROUET from C (observation by HARTUNG). Marked recent extension of distrib.

### **Galium aparine L.**

VIDI — S. Miguel: Sete Cidades. — Terceira: Terra Chã, 100 m. — Pico: Lava flow E of Cais do Pico, 290 m. NW Cab. do Silvado, 700 m. — Faial: Porto Pim, Almozarife.

HAB. — No distinct altitude preference. — Generally in dry, strongly exposed habitats. In dry habitats on lava flows, in open grassland.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×						×		
PALHINHA 1966 . .	×		×		×		×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel», which was at that time certainly an exaggeration (cf. records by TRELEASE). Probably recent extension of distrib.

**Rubia peregrina** L.var. **azorica** Tutin & Warb.

(Fig. 93 and 94)

EXS. — S. Miguel: Tronqueira, 800 m (Cy 59: LISI). Bretanha (Car 1899: AZ). Cabouco (Car 03: AZ). — Pico: Mist. St. Luzia, 80 m (Go 61: LISI, LISFA). Mist. S. João, 100 m (Go 62: HO). Mist. Silveira, 400 m (Go 63: HO). Corre Água, 700 m (Go). — Faial: Bottom of Caldeira (Sjn 65: U). Caldeira, 750 m (Go: HO). — Flores: Rocha dos Bordões, 250 m. (Go 63: LISI). — Corvo: No loc., 350 m (Go 64: LISI). Caldeira (Tr 1894: AZ).

VIDI — Localities on maps.

HAB. — In PALHINHA (1966) mentioned from altitudes between 300-600 m. Now observed from 50-1050 m. — High drought tolerance. In the *Juniperion* on rough lava flows, frequently on dry protruding parts (cf. *Thymus cespititius* and *Hypericum humifusum*). On coarse black gravel deposits, in sparse vegetation on lava flows at low altitudes. Also in wet shady habitats in *Juniperion* as well as in dense *Pittosporum* shrub.

SOC. — Diff. sp. of the *Erico-Myrsinetum*. Usually u. c.:

<i>Hedera helix</i> ssp.	<i>Holcus rigidus</i>
<i>Sanicula azorica</i>	<i>Hypericum foliosum</i>
<i>Frangula azorica</i>	<i>Picris filii</i>
<i>Ilex perado</i>	<i>Myrsine africana</i> var.
<i>Vaccinium cylindraceum</i>	<i>Hymenophyllum tunbridgense</i>
<i>Dryopteris borrieri</i>	<i>Rubus hochstetterorum</i>
<i>Erica azorica</i>	<i>Juniperus brevifolia</i>

Avoiding the following group of spp.:

<i>Agrostis castellana</i>	<i>Daboecia azorica</i>
<i>Juncus effusus</i>	<i>Anthoxanthum odoratum</i>
<i>Hypericum humifusum</i>	<i>Leontodon taraxacoides</i>
<i>Fragaria vesca</i>	<i>Lepidotis cernua</i>
<i>Prunella vulgaris</i>	<i>Potentilla erecta</i>
<i>Asplenium onopteris</i>	<i>Umbilicus rupestris</i>

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—	×	×		—
TRELEASE 1897 . . .	×	×				×	×	×	×
PALHINHA 1966 . . .	×	×			×	×	×	×	×
SJÖGREN 1971 . . .		—	×	—	—	×	×	×	×



DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Probably old member of the Azorean vegetation where it is now very frequent and has formed an endemic var. As this sp. can hardly have been overlooked by DROUET there has probably been a recent extension of the distrib.

### CAPRIFOLIACEAE

#### **Viburnum tinus** L.

ssp. **subcordatum** P. Silva in Palhinha

EXS. — S. Miguel: Sete Cidades, 600 m (Sjn 65: U). Lag. do Fogo, 550 m (Sjn 65: U). Pico da Cruz, Serra de Água de Pau, Vila Franca, 750 m (Cy 58: LISI). Planalto da Achada das Furnas, 800 m (Rego 25: LISI). Lombadas (Car 01: AZ). — Terceira: Juncal, NE exposed cliff (Sjn 68: U). — Pico: Mist. da Silveira, Cab. do Fogo, 400 m (Go 61: LISI, LISFA). — Flores: Rocha dos Bordões, 300 m (Go 63: LISI). No loc. (Tr 1894: AZ).

VIDI — S. Miguel: Lake between Lag. do Congro and Lag. do Fogo, 580 m. Pico da Vara, 700-800 m. — Terceira: Mata da Serreta, 200 m. — Pico: Ravine E of Grotões. N of Cab. Redondo, 300 and 500 m. NW Cab. do Silvado, 700 m. — Flores: Rocha dos Bordões, 300 m.

HAB. — In PALHINHA (1966) mentioned from altitudes between 300-600 m. Now known up to 800 m. — Generally in wet, weakly exposed habitats. In dense scrub vegetation, both in the *Juniperion* and in *Pittosporum-Myrica* scrub. In ravines and craters. Also in crevices in steep cliffs.

SOC. — Diff. sp. of the *Juniperion brevifolii*, also in the lower outposts of the all.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—		×		—
TRELEASE 1897 . .	×	×					×	×	×
PALHINHA 1966 . .	×	×	×			×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×		×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Probably recently extended distrib.

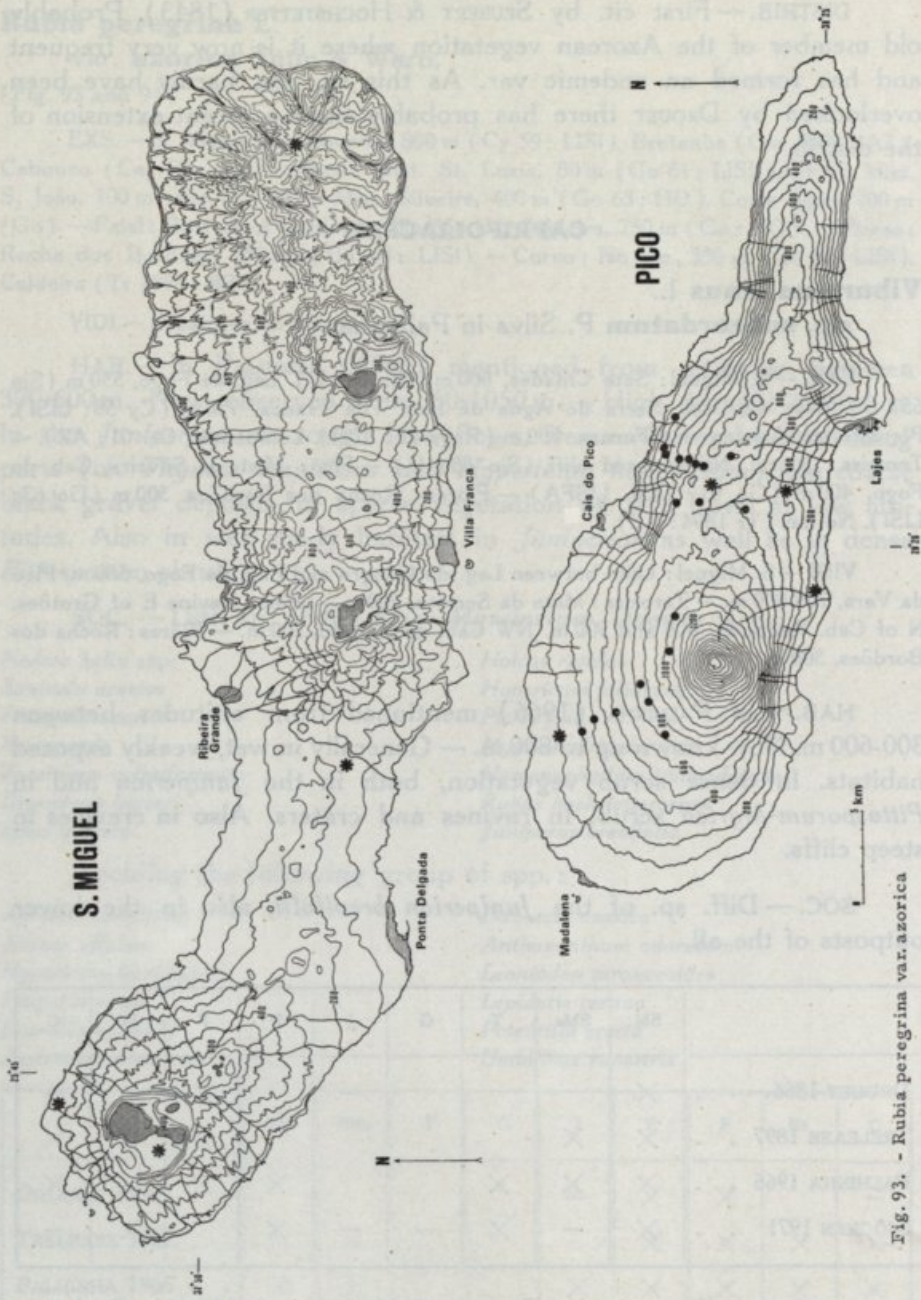


Fig. 93. - *Rubia peregrina* var. *azorica*



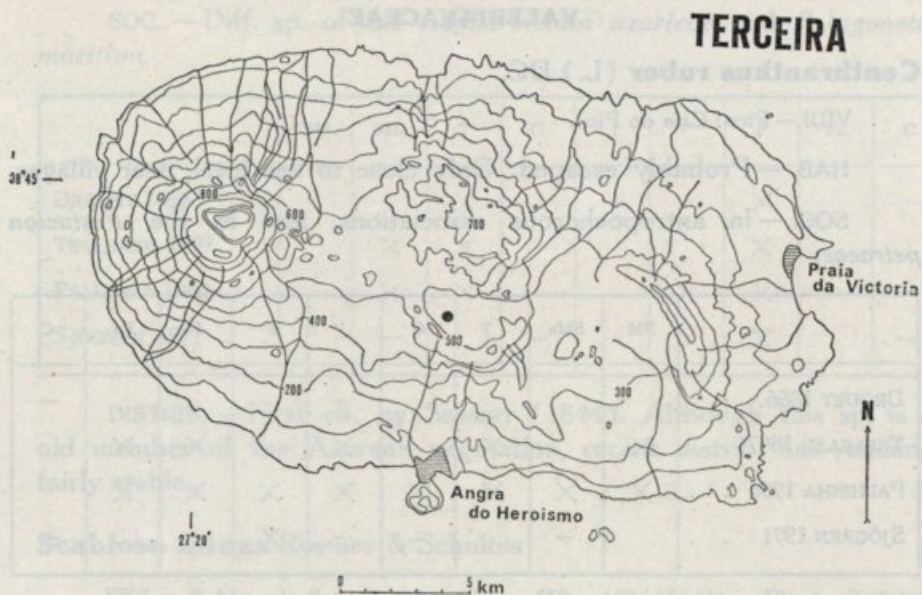


Fig. 94. - *Rubia peregrina* var. *azorica*

## VALERIANACEAE

***Centranthus ruber* (L.) DC.**

VIDI — Pico: Cais do Pico.

HAB. — Probably escaped. Only close to sea level, near villages.

SOC. — In antropochorous associations, also in the *Festucion petraeae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .	×		×		×		×	×	
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by TRELEASE. Recent colonization and establishment in the Azorean vegetation has been very rapid

***Centranthus calcitrapa* (L.) Dufr.**

EXS. — Pico: Cais do Pico (Sjn 65: U). Mist. St. Luzia, 100 m (Sjn 65: U).

HAB. — Only close to the coast, not observed above 100 m.

SOC. — In the *Festucion petraeae* and in antropochorous associations. — On coarse gravel deposits and on lava flows at low altitudes where vegetation is sparse.

DISTRIB. — First cit. by CEDERCREUTZ (1941). Recent invasion. The sp. was first mentioned by PALHINHA (1966) only from P and might spread to other islands of the archipelago in the near future.

## DIPSACACEAE

***Scabiosa atropurpurea* L.**

EXS. — Faial: Porto Pim (Sjn 65, 68, U).

VIDI — Pico: Cais do Pico.

HAB. — Only close to the coast. On loose sandy deposits and on rough coast cliffs.



SOC. — Diff. sp. of the *Euphorbietum azoricae* and *Polygonetum maritimi*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .			×		—		×		—
TRELEASE 1897 . . .		×	×				×		
PALHINHA 1966 . . .		×	×			×	×		
SJÖGREN 1971 . . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT (1844). Although this sp. is an old member of the Azorean vegetation, recent distrib. has remained fairly stable.

### **Scabiosa nitens** Roemer & Schultes

EXS. — S. Miguel: Sete Cidades, ravine, 550 m (Sjn 65: U). — Flores: Fajãzinha, by river, 120 m (Sjn 65: U).

VIDI — S. Miguel: Água d'Alto.

HAB. — Probably not above 600 m. — Ecological preference indistinct.

SOC. — No sociological preference has been observed.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					×		×	×	×
TRELEASE 1897 . . .	×				×			×	
PALHINHA 1966 . . .	×		×		×	×	×	×	
SJÖGREN 1971 . . .	×	—		—	—			×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). First cit. only from the western part of the archipelago. There might have been a recent small extension of the distrib. of this sp., which is easily observed and can thus hardly have been overlooked by DROUET on SM and other islands visited by him. In WATSON (1870) mentioned also from SM and T. *Sc. lucida* Ait. in DROUET (1866) is a synonym.

## CUCURBITACEAE

**Ecballium elaterium** (L.) A. Richard

HAB. — Sometimes escaped. Near villages.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEAVE 1897 . .		×	×						
PALHINHA 1966 . .	×	×	×		×				
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by DROUET (observation by WATSON). Probably recent extension of distrib.

## CAMPANULACEAE

**Campanula erinus** L.

EXS. — Pico: St. Caetano, 100 m (Sjn 65: U).

HAB. — Probably restricted to the coastal zone, below 300 m. High drought tolerance. On sandy soil, on cliffs and lava flows.

SOC. — Generally associated with antropochorous spp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEAVE 1897 . .	×		×				×	×	
PALHINHA 1966 . .	×		×				×	×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from « tout l'archipel », which was probably at that time an exaggeration, quoted from SEUBERT (1844). Records by TRELEAVE are probably correct. Thus unusually stable recent distrib.

**Campanula vidalii** Watson

EXS. — S. Miguel: Água d'Alto, 100 m (Sjn 65: U). — Pico: Cais do Pico (Sjn 65: U).

VIDI — Pico: St. Amaro. E of Cachorro. — Flores: Porto de São Pedro.



HAB. — Only close to the coast line. — Preferentially in crevices on coastal cliffs and coarse black gravel deposits. One of the few vascular plants growing in the zone nearest the coast on cliffs colonized by the *Festucion petraeae*.

SOC. — Diff. sp. of the *Euphorbietum azoricae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—			×	—
TRELEAS 1897 . .		×						×	
PALHINHA 1966 . .	×	×			×			×	×
SJÖGREN 1971 . .	×	—		—	—	×		×	—

DISTRIB. — First cit. by WATSON (1844). Remarkably, not cit. before DROUET, probably overlooked. Introduced deliberately from Fo to other islands during the 19th century. Then escaped to habitats on coastal cliffs.

### **Trachelium coeruleum L.**

EXS. — Faial: Pedro Miguel, 100 m (Sjn 68: U).

VIDI — Faial: N of Almoxarife.

HAB. — Generally close to villages and roads, at low altitudes, below 500 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—				—
TRELEAS 1897 . .			×				×		
PALHINHA 1966 . .	×		×				×		
SJÖGREN 1971 . .		—		—	—		×		—

DISTRIB. — First cit. by TRELEAS. Stable distrib.

## COMPOSITAE

### **Eupatorium adenophorum Sprengel**

EXS. — Terceira: Canada da Luz, 100 m (Sjn 65: U).

VIDI — Pico: Cais do Pico-S. Roque. — Faial: Several localities.

HAB. — No distinct altitude preference, though generally below 500 m. — Hygrophilous but not restricted to weakly exposed habitats.

SOC. — Associated with antropochorous spp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .			×						
PALHINHA 1966 . .	×		×		×				
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by TRELEASE. This plant might have been introduced and cultivated in gardens during the 19th century, as it was on Madeira. On Madeira it has become a most dangerous threat to endemic Macaronesian vegetation. In many valleys it has now almost completely outcompeted the natural vegetation. In the Azores, its intrusion into the vegetation has recently reached nearly all parts of the archipelago. The habitat conditions for *Eupatorium* are as suitable in the Azores as on Madeira and any further spread of the sp. should be carefully followed and as far as possible prevented (cf. *Hedychium gardnerianum*). *Eupatorium* originates from Central America, where it grows in moist mountain forests.

### ***Solidago sempervirens* L.**

EXS. — Pico: Largo da Areia, Madalena (Sjn 68: U). — Faial: Coast, Varadouro (Sjn 65: U).

VIDI — Pico: E of Cachorro. Cais do Pico-S. Roque. — Faial: Cab. do Fogo. Praia do Norte. — Flores: Porto São Pedro.

HAB. — Restricted to coastal localities, only occasionally, as on Faial, at 450 m. — On Flores up to 350 m (cf. SEUBERT 1844). On coarse gravel, and on rough cliffs by the coast.

SOC. — Diff. sp. of the *Festucion petraeae*. Rarely in the *Polygonetum maritimi*. Usually u. c.:

*Festuca petraea*  
*Umbilicus rupestris*  
*Euphorbia azorica*  
*Plantago coronopus*

*Asplenium marinum*  
*Atriplex hastata* var.  
*Ornithopus pinnatus*  
*Spergularia azorica*



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×		×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×	×	×	—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Probably very old member of the Azorean coast vegetation. In DROUET mentioned from «tout l'archipel», which in this case was certainly not an exaggeration. Probably deliberately introduced from America (cf. CEDERCREUTZ 1941).

### **Bellis perennis** L.

× VIDI — Terceira : St.ª Bárbara, 450-600 m.

× HAB. — Altitude limits mentioned by PALHINHA (1966), 300-600 m are probably correct. — In strongly exposed moist habitats. Both in dense grassland vegetation and in sparse vegetation on fresh cuttings through sandy deposits.

SOC. — No distinct sociological preference. Usually u. c.:

*Foeniculum vulgare* var.

*Solanum nigrum*

*Urtica morifolia*

*Sonchus asper*

*Poa annua*

*Lepidium virginicum*

*Reseda luteola*

*Mercurialis annua*

*Conyza canadensis*

In grassland originating from the *Erico-Myrsinetum*.

DISTRIB.—First cit. by WATSON (1870) from T. Since then no extension of distrib.

### **Bellis azorica** Hochst. ex Seub.

EXS. — Terceira : No loc. (Samp: AZ). — S. Jorge: Rib. da Areia (Car 08: AZ), — Pico: S of Cais do Pico, ravine, 750 m (Sjn 65: U). Lag. do Capitão, 740 m (Sjn 68: U). Loc. idem., 750 m (Go 62: LISI). Furna Frei Matias, 700 m (Go 64: LISI, LISFA). — Faial: Bottom of Caldeira (Sjn 65: U). — Flores: No loc. (Chaves 02: AZ).

VIDI — S. Miguel: Sete Cidades. — Pico: Torrinhãs, 1000 m. SE of Lag. do Caiado, 870 m. Furna Frei Matias. N slope of Pico, 1150 m. W slope of Pico, 1020 m.

HAB. — Probably not below 600 m. Observed up to 1150 m. — In wet, strongly as well as weakly exposed habitats. In ravines, craters, in open grassland; around lakes, above high water level.

SOC. — Most frequently in sociologically completely developed *Juniperion brevifolii*. Diff. sp. of the all Usually u. c.:

*Ranunculus cortusifolius*

*Sanicula azorica*

*Euphorbia stygiana*

*Phyllitis scolopendrium*

*Luzula purpureo-splendens*

*Hymenophyllum tunbridgense*

*Lactuca watsoniana*

*Erica azorica*

*Ilex perado*

*Hypericum foliosum*

*Picris filii*

*Cardamine caldeirarum*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×			—
TRELEAS 1897 . .	×		×			×	×	×	×
PALHINHA 1966 . .	×		×		×	×	×	×	×
SJÖGREN 1971 . .	×	—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). The localities are now more accessible from new roads, so a recent extension of the distrib. is improbable.

### ***Conyza canadensis* (L.) Cronq.**

EXS. — Terceira: S. Mateus (Sjn 68: U).

VIDI — S. Miguel: Feteiras, 100 m. Fenais da Luz, coast. — Faial: Porto Pim. S of Praia do Norte, 170 m. Almoxarife. N of Caldeira, 650 m. — Flores: Rochão do Junco, 540 m.

HAB. — Not above 700 m — High drought tolerance.

SOC. — Diff. sp. of the *Mercurialion annuae*. Often u. c.:

*Plantago lanceolata*

*Parietaria officinalis*

*Sisymbrium officinale*

*Lepidium virginicum*

*Pteridium aquilinum*

*Urtica morifolia*

*Mercurialis annua*

*Poa annua*

*Oxalis pes-caprae*

*Stachys arvensis*



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×			—
TRELEASE 1897 . .	×		×	×		×	×	×	×
PALHINHA 1966 . .	×		×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—		×	×	—

DISTRIB. — First cit. by WATSON (1844) from F, Fo, C. Recent extension of distrib. Already 1870 recorded by WATSON from five islands.

**Erigeron karwinskianus** DC.

VIDI — S. Miguel: Feteiras, 100 m. — Terceira: Terra Chã, 100 m. — Pico: Cais do Pico-S. Roque. — Faial: Porto Pim.

HAB. — Antropochorous sp., close to villages, roads and fields. Very wide ecological amplitude.

SOC. — Diff. sp. of the *Mercurialion annuae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .	×								
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by TRELEASE. Now spreading rapidly to all parts of the archipelago. Might in the near future be as frequent a weed as it is on Madeira. Origin of the plant is Central America.

**Oglifa gallica** (L.) Chrték & Holub

HAB. — Altitude limits indistinct. Probably not above 500 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×		—
TRELEASE 1897 . .	×		×				×		
PALHINHA 1966 . .	×		×	×		×	×	×	
SJÖGREN 1971 . .		—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent extension of distrib.

**Gifola germanica** (L.) Dumort.

EXS. — S. Miguel: Feteiras, 150 m, by road (Sjn 65: U). — Faial: Pedro Miguel, coast (Sjn 68: U). Salão, coast (Sjn 68: U).

HAB. — Below 300 m.

SOC. — Generally in antropochorous associations. Rarely in the *Festucion petraeae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	—
TRELEASE 1897 . .	×		×				×	×	×
PALHINHA 1966 . .	×		×			×	×	×	×
SJÖGREN 1971 . .	×	—		—	—		×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). First in the western part of the archipelago, now spread to the central and eastern.

**Gnaphalium luteo-album** L.

(Fig. 95 and 96)

EXS. — S. Miguel: Fenais da Luz (Sjn 65: U). — Terceira: Biscoitos, na Calheta (Orm: COI). Biscoitos, near Cais dos Biscoitos, 5 m (Ds 64: LISE). S. Mateus, Canada de São Diogo (Orm: COI). — Pico: Piedade, Cab. da Hera, 150 m (Go 63: LISI). Mist. de St.<sup>a</sup> Luzia, 550 m (Go 62: LISI, LISFA). Idem, 200 m (Go 63: HO). — Faial: Pedro Miguel, 250 m (Go 64: LISI). Horta, St. Amaro, 100 m (Go 63: LISI). Varadouro on shore, 10 m (Ds 64: LISE). — Flores: Alto da Fajãzinha, 460 m (Sjn 65: U). Lajes, Boca da Baleia, 250 m (Go 63: LISI). — Corvo: No loc., 200 m (Go 64: LISI). Near the village, 10 m (Ds 64: LISE).

VIDI — Localities on maps. — Flores: Alto da Fajãzinha, 460 m.

HAB. — Generally very close to the coast, only occasionally above 200 m. Observed up to 550 m. — In dry, strongly exposed habitats, on loose or densely packed sand, on rough lava cliffs. On horizontal or vertical surfaces, on cuttings through sand-gravel deposits.

SOC. — Diff. sp. of the *Euphorbietum azoricae* and *Ornithopogaudinetum*, Usually u. c.:



*Chenopodium ambrosioides*  
*Festuca petraea*  
*Euphorbia azorica*  
*Plantago coronopus*  
*Asplenium marinum*  
*Juncus acutus*

*Ornithopus pinnatus*  
*Polypogon maritimus*  
*Gaudinia fragilis*  
*Hordeum murinum*  
*Lotus subbiflorus*  
*Spergularia azorica*

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .	×		×	×	—	×	×	×	—
TRELEASE 1897 . .	×		×	×		×	×	×	×
PALHINHA 1966 . .	×		×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	×

DISTRIB. — First cit. by FORSTER (1787). Probably very old member of the Azorean coast vegetation. Probably overlooked on SMA.

### **Gnaphalium purpureum L.**

EXS. — Terceira: N of St.<sup>a</sup> Bárbara, 400 m (Sjn 68: U). — Faial: Caldeira, 600 m (Sjn 68: U). — Pico: St. Amaro, 100 m (Go: LISFA). Pedro Miguel, 250 m (Go: HO).

VIDI — Faial: N of Caldeira, by levada, 680 m.

HAB. — Reaching higher altitudes than *G. luteo-album*. Not recorded above 700 m.

SOC. — Sociological preference indistinct.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—		×		—
TRELEASE 1897 . .	×		×				×		
PALHINHA 1966 . .	×		×		×	×	×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent invasion of nearly all islands of the archipelago. Introduced from North America.

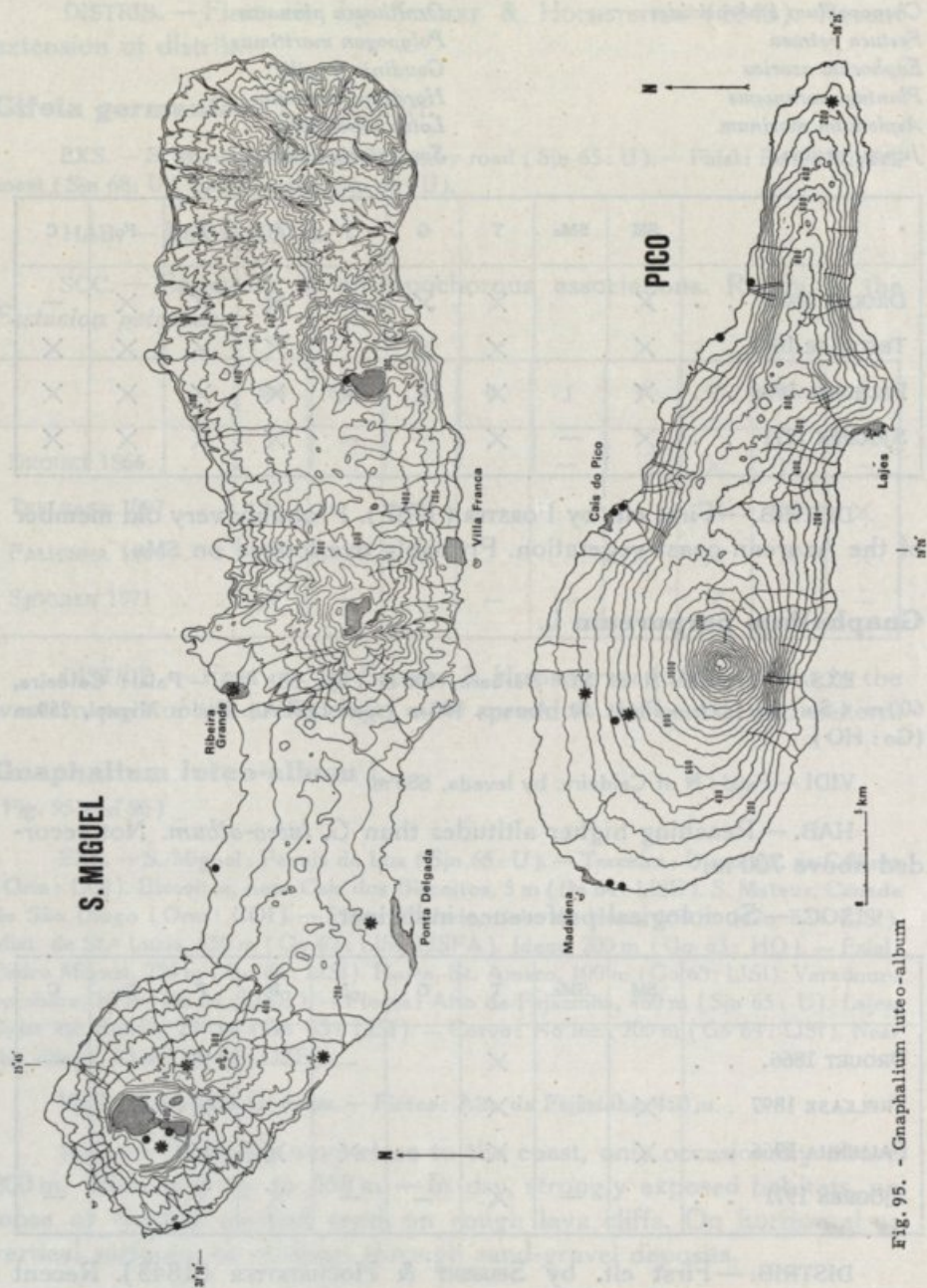


Fig. 95. - *Gnaphalium luteo-album*



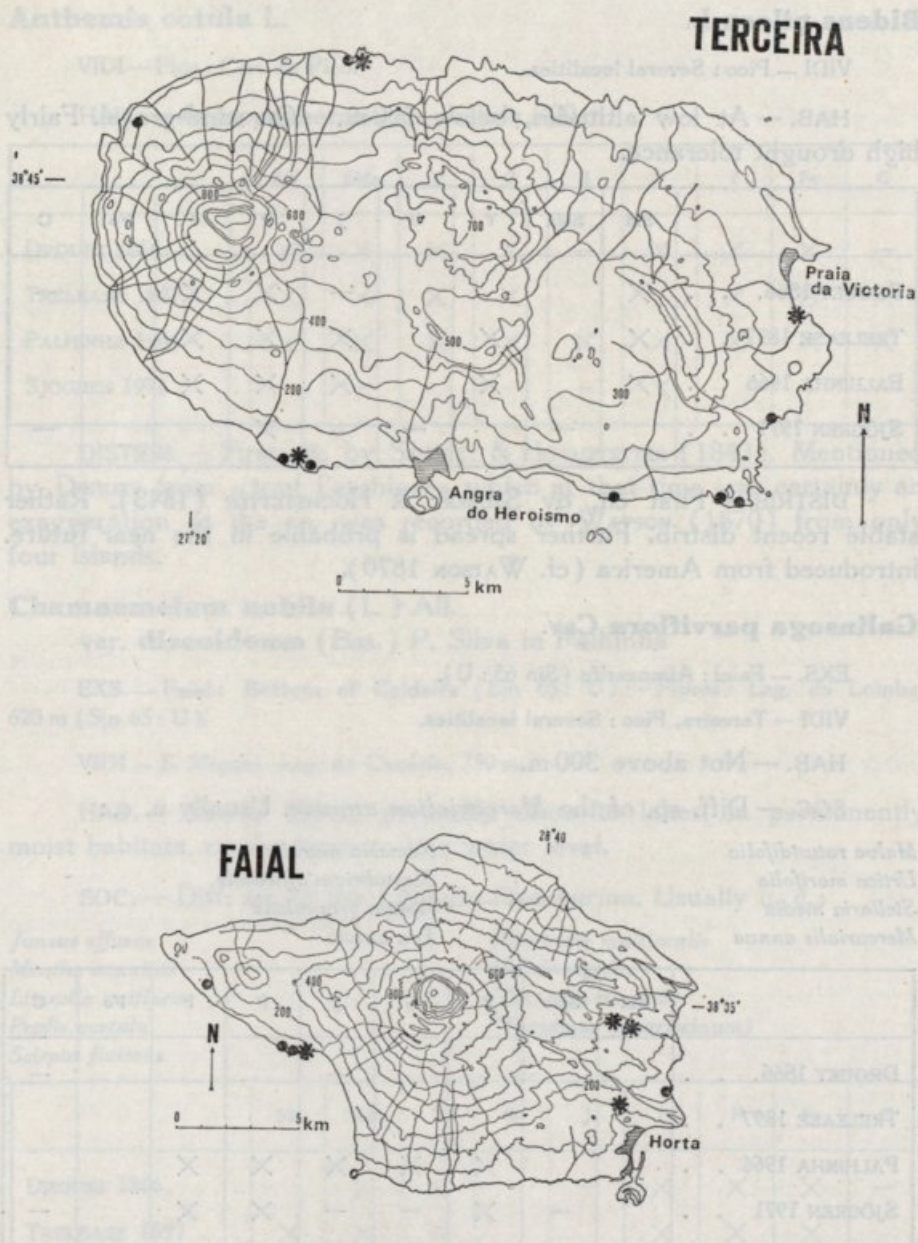


Fig. 96. - *Gnaphalium luteo-album*

**Bidens pilosa** L.

VIDI — Pico : Several localities.

HAB. — At low altitudes, below 500 m. — On sand-gravel. Fairly high drought tolerance.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—	×	×		—
TRELEASE 1897 . .	×		×		×	×	×		
PALHINHA 1966 . .	×		×		×	×	×		
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Rather stable recent distrib. Further spread is probable in the near future. Introduced from America (cf. WATSON 1870).

**Galinsoga parviflora** Cav.

EXS. — Faial : Almozarife (Sjn 65 : U).

VIDI — Terceira, Pico : Several localities.

HAB. — Not above 300 m.

SOC. — Diff. sp. of the *Mercurialion annuae*. Usually u. c. :

*Malva rotundifolia*  
*Urtica morifolia*  
*Stellaria media*  
*Mercurialis annua*

*Fumaria muralis*  
*Sisymbrium officinale*  
*Apium graveolens*  
*Poa annua*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .			×	×	×	×	×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by TUTIN & WARBURG (1932). The recent invasion of the archipelago by this sp. probably reached the central parts first. It has not yet reached the eastern and western parts.



**Anthemis cotula L.**

VIDI—Pico: Cais do Pico.

HAB.—Antropochorous sp., below 300 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×	×			×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Mentioned by DROUET from «tout l'archipel» which at that time was certainly an exaggeration as the sp. was recorded by WATSON (1870) from only four islands.

**Chamaemelum nobile (L.) All.**var. **discoideum** (Bss.) P. Silva in Palhinha

EXS.—Faial: Bottom of Caldeira (Sjn 65: U).—Flores: Lag. da Lomba, 620 m (Sjn 65: U).

VIDI—S. Miguel: Lag. do Canário, 750 m.

HAB.—Above 400 m, generally close to lakes. In permanently moist habitats, rarely down to low water level.

SOC.—Diff. sp. of the *Litorello-Eleocharion*. Usually u. c.:

*Juncus effusus*  
*Mentha aquatica*  
*Litorella uniflora*  
*Peplis portula*  
*Scirpus fluitans*

*Eleocharis multicaulis*  
*Holcus rigidus*  
*(Breutelia azorica)*  
*(Thuidium tamariscinum)*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×	×		—	×	×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	
PALHINHA 1966 . .	×	×	×		×	×	×	×	
SJÖGREN 1971 . .	×	—		—	—		×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). No recent extension of distrib. Probably overlooked by DROUET on SM.

### **Chrysanthemum coronarium L.**

EXS. — S. Miguel: Fenais da Luz, coast (Sjn 65: U). — Terceira: Praia da Vitória (Sjn 65: U).

HAB. — Probably escaped (PALHINHA 1966), at altitudes below 300 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×		×		—		×		—
TRELEASE 1897 . .	×		×				×		
PALHINHA 1966 . .	×		×		×		×		
SJÖGREN 1971 . .	×	—	×	—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Unusually stable recent distrib.

### **Chrysanthemum segetum L.**

EXS. — S. Miguel: Mosteiros, coast (Sjn 65: U).

VIDI — Pico: Cais do Pico to S. Roque.

HAB. — Close to villages and fields, at altitudes below 300 m. — Both on sand and gravel deposits.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×			—	×	×	×	—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent extension of distrib.



**Senecio malvifolius** DC.

EXS. — S. Miguel: Ponta da Pontinha, ravine (Sjn 65: U). — Santa Maria: Near Casa do Miguel, 100 m (Ds 64: LISE). — Pico: St. Amaro, 400 m (Ds 64: LISE). — Faial: Alto do Cabouco, 850 m (Go: HO).

VIDI — S. Miguel: Ravine SW Sete Cidades, 510 m. Sete Cidades. — Pico: SE Lag. do Caiado, 870 m. — Faial: Caldeira, 700 m.

HAB. — Indistinct altitude preference, not observed above 900 m. Seems to prefer wet shady habitats, in crevices on cliffs, in ravines and craters.

SOC. — Growing with the highest frequency within the *Juniperion brevifolii*. Weak diff. val. for the all.

	SM	SM <sub>a</sub>	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×			—		×		—
TRELEASE 1897 . .	×	×	×				×		
PALHINHA 1966 . .	×	×	×		×	×	×		
SJÖGREN 1971 . .	×	×		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT (1844). There has probably not been a recent extension of distrib. The absence of the sp. from Fo and C is difficult to explain, as these islands have many localities with suitable habitat conditions.

**Senecio mikanioides** Otto ex Walpers in Otto & Dietr.

VIDI — Terceira: Terra Chã, 100 m. — Pico: Cais do Pico-S. Roque. — Faial: Almoxarife.

HAB. — Introduced and escaped, not observed above 300 m.

SOC. — Among antropochorous spp. such as:

*Urtica morifolia*  
*Rubus ulmifolius*  
*Mercurialis annua*  
*Poa annua*

*Sherardia arvensis*  
*Oxalis purpurea*  
*Galium aparine*  
*Sisymbrium officinale*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .			×				×		
PALHINHA 1966 . .	×		×				×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by TRELEASE. The recent extension of distrib. has been slow.

### **Senecio vulgaris L.**

VIDI — S. Miguel: Fenais da Luz.

HAB. — Not observed above 300 m.

SOC. — Diff. sp. of the *Mercurialion annuae*, rarely within the *Festucion petraeae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—		×		—
TRELEASE 1897 . .	×		×				×		
PALHINHA 1966 . .	×		×				×		
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Mentioned by DROUET but observation made by WATSON (1844). The recent distrib. has remained unusually stable for this almost cosmopolitan weed.

### **Calendula arvensis L.**

HAB. — Weed in fields and around villages.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×		—
TRELEASE 1897 . .	×		×	×			×		
PALHINHA 1966 . .	×	×	×	×	×		×		
SJÖGREN 1971 . .		—		—	—				—

DISTRIB.—First cit. by DROUET (observation by WATSON). Since then spread to all parts of the archipelago, although not frequent on any island.

**Carduus pycnocephalus L.**

ssp. **tenuiflorus** (Curtis) Arènes

HAB.—Indistinct ecological preference.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEASE 1897 . .	×	×		×	×	×			
PALHINHA 1966 . .	×	×	×	×	×	×			
SJÖGREN 1971 . .		—		—	—				—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Recent invasion of the Azorean vegetation. Distrib. recently extended from the eastern to the middle part of the archipelago.

**Cirsium vulgare** (Savi) Ten.

HAB.—Antropochorous sp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×			—
TRELEASE 1897 . .				×		×	×		
PALHINHA 1966 . .	×		×		×	×	×		
SJÖGREN 1971 . .		—		—	—				—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Recent extension of distrib. Rare weed.

**Galactites tomentosa** Moench.

EXS.—Terceira: Porto Judeu (Sjn 68; U).

VIDI—Pico: Cais do Pico.

HAB.—Antropochorous sp., at low altitudes, close to villages and fields.

SOC.—Diff. sp. of the *Mercurialion annuae*, also in the *Anagallidetum tenellae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×				—				—
TRELEASE 1897 . .	×	×	×	×		×	×		
PALHINHA 1966 . .	×	×	×	×	×	×	×		
SJÖGREN 1971 . .		—	×	—	—	×			—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from SM and «la plupart des îles», which was certainly an exaggeration at that time, quoted from SEUBERT (1844). Probably recent extension of distrib.

**Cichorium intybus** L.

VIDI—Terceira: S. Mateus.—Faial: Porto Pim.

HAB.—Antropochorous sp. only at low altitudes.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×						×	×	
PALHINHA 1966 . .	×	×		×	×		×	×	×
SJÖGREN 1971 . .		—	×	—	—		×		—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel» which was probably not more than a



guess. Recorded by WATSON (1870) from only three islands. The sp. has recently extended its distrib. to all parts of the archipelago.

**Tolpis barbata** (L.) Gaertner

EXS. — Pico: Cais do Pico, close to the east (Sjn 65: U), — Faial: N of Almo-xarife, coast (Sjn 68: U).

HAB. — Probably not above 300 m.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×			—			×	—
TRELEASE 1897 . .		×	×					×	
PALHINHA 1966 . .		×	×		×			×	
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT (1844). Mentioned by DROUET but observations by WATSON. Now spreading to all parts of the archipelago.

**Tolpis fruticosa** Schrank

syn. *Tolpis succulenta* (Ait.) Lowe ssp. *fruticosa* (Schrank) Menezes

EXS. — S. Miguel: Coast, Faial da Terra (Sjn 65: U).

HAB. — Observed only close to the coast. In dry, strongly exposed habitats, in crevices on coast cliffs.

SOC. — Diff. sp. of the *Euphorbietum azoricae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	—
TRELEASE 1897 . .		×	×				×	×	×
PALHINHA 1966 . .	×	×	×		×		×	×	×
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Spread from the western islands to the middle and eastern part of the archipelago.

**Tolpis azorica** (Nutt.) P. Silva in Palhinha

(Fig. 97 and 98)

EXS. — S. Miguel: Pico da Vara, 850 m (Sjn 65: U). Pico da Cruz, Serra de Água de Pau, Vila Franca, 750 m (Cy 58: LISI). Praia (Car 03: COI). Tronqueira do Nordeste (Cu, So 38: LISU). Lag. do Fogo, Caminho da Praia (Car 03: AZ). Lombadas (Car 1897: AZ). Sete-Cidades (Car 1900: AZ). Termo da Lagoa, Matas (Car 04: AZ). Termo, Espigão dos Barreiros (Car 05: AZ). Furnas, Salto do Cavalo (Car 05: AZ). Grota do Lanço (Car 05: AZ). — Santa Maria: Almagreira above Ponte dos Agriões, 350 m (Ds 64: LISE). — Pico: Lag. do Rosado (Sjn 65: U). Baldio das Fontainhas, 800 m (Go 62: LISI, LISFA). — Faial: Bottom of Caldeira (Sjn 68: U). — Flores: Rib. do Cascalho, 120 m (Go 65: LISI). No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: Sapateira, 410 m. Alto da Fajãzinha, 460 m.

HAB. — Generally above 600 m. Occasionally down to 100 m. Not observed above 1250 m. On Flores much more common below 600 m than on the other islands. — Low drought tolerance but also growing on strongly exposed habitats in open grassland. On cuttings through sandy-gravelly deposits, colonizing vertical N exposed slopes after about 5 years. Around lakes, only rarely below high water level.

SOC. — Diff. sp. of the *Juniperion brevifolii*. Frequently in grassland originating from the *Erico-Myrsinetum* and in transitions towards the *Litorello-Eleocharion*. Usually u. c.:

*Picris filii**Culcita macrocarpa**Huperzia selago* ssp.*Euphorbia stygiana**Osmunda regalis**Hypericum foliosum**Vaccinium cylindraceum**Ilex perado**Ranunculus cortusifolius**Festuca jubata**Erica azorica**Luzula purpureo-splendens**Lysimachia nemorum* ssp.*Cardamine caldeirarum*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .		×	×		—			×	—
TRELEASE 1897 . .	×		×			×	×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÖGREN 1971 . .	×	×	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). It is probable that this sp. was overlooked by DROUET on some islands, where localities are now more accessible from new roads. The absence from G is significant, as for many other diff. spp. of the *Juniperion brevifolii*.



**Picris echioides L.**

EXS. — Faial: Porto Pim (Sjn 68: U). Lombega, 250 m (Go: HO). — Flores: Ponta da Fajãzinha, 120 m (Sjn 65: U). Alto da Rib. da Cruz, 250 m (Go: HO). Rocha dos Bordões, 300 m (Go: HO).

HAB. — Observed only below 300 m.

SOC. — Preferentially in antropochorous associations.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—			×	—
TRELEASE 1897 . .	×	×	×	×			×	×	
PALHINHA 1966 . .	×	×	×	×		×	×	×	
SJÖGREN 1971 . .		—		—	—		×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). There has been a very rapid recent intrusion of this sp. into the Azorean vegetation.

**Picris filii (Hochst.) B. D. Jackson**

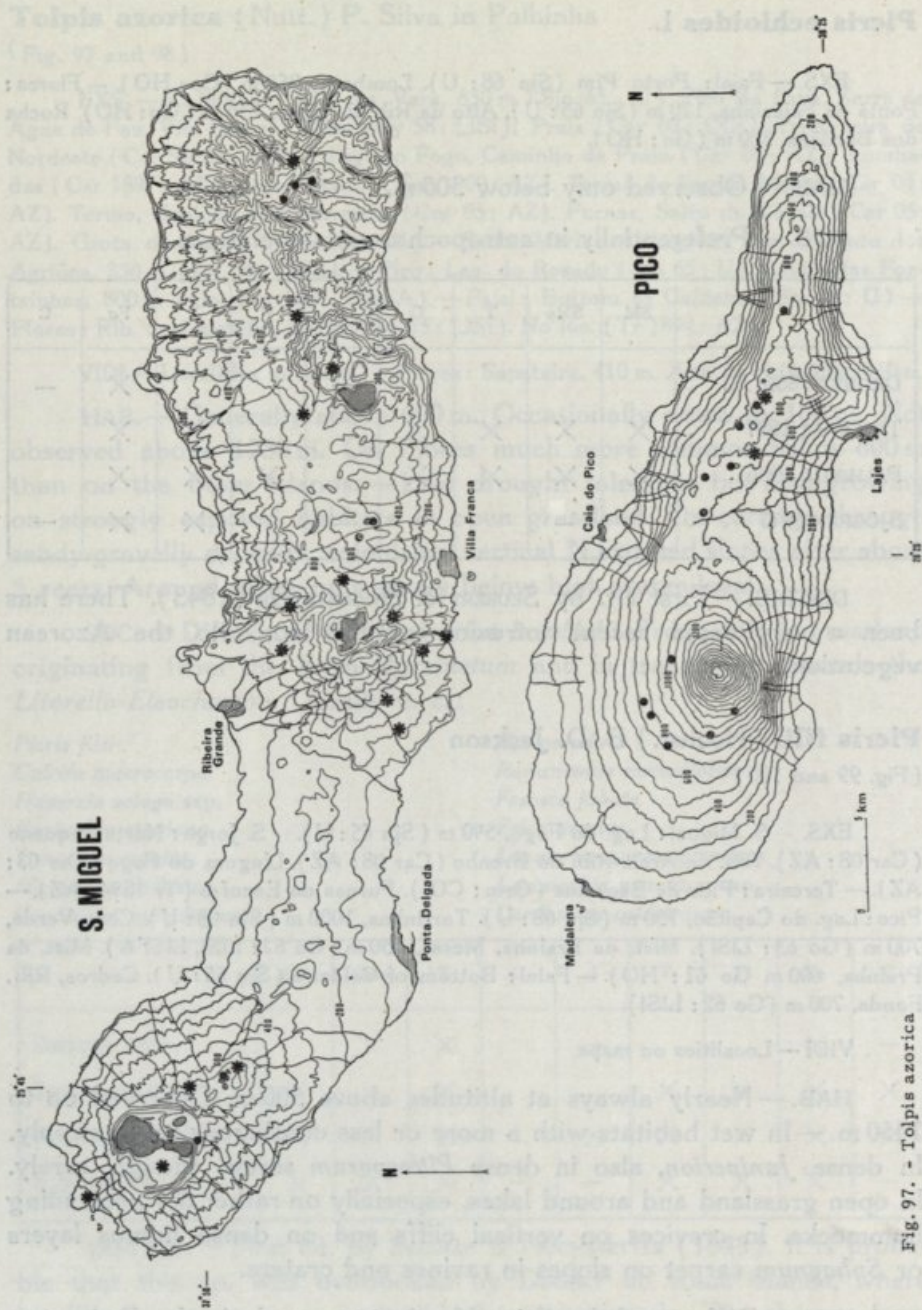
(Fig. 99 and 100)

EXS. — S. Miguel: Lag. do Fogo, 590 m (Sjn 65: U). — S. Jorge: Norte Pequeno (Car 08: AZ). Rib. da Areia-Rib. do Brenho (Car 08: AZ). Línguas do Fogo (Car 03: AZ). — Terceira: Pico da Bagacina (Orm: COI). Furnas do Enxofre (Tr 1894: AZ). — Pico: Lag. do Capitão, 750 m (Sjn 68: U). Torrinhãs, 1000 m (Sjn 68: U). Chão Verde, 700 m (Go 63: LISI). Mist. da Prainha, Mesas, 750 m (Go 62: LISI, LISFA). Mist. da Prainha, 600 m (Go 61: HO). — Faial: Bottom of Caldeira (Sjn 65: U). Cedros, Rib. Funda, 700 m (Go 62: LISI).

VIDI — Localities on maps.

HAB. — Nearly always at altitudes above 500 m. Observed up to 1450 m. — In wet habitats with a more or less continuous water supply. In dense *Juniperion*, also in dense *Pittosporum* scrub, though rarely. In open grassland and around lakes, especially on rather dry protruding hummocks. In crevices on vertical cliffs and on dense humus layers or *Sphagnum* carpet on slopes in ravines and craters.

SOC. — Diff. sp. of the *Erico-Myrsinetum*, rarely in the *Festucetum jubatae*.

Fig. 97. - *Tolpis azorica*



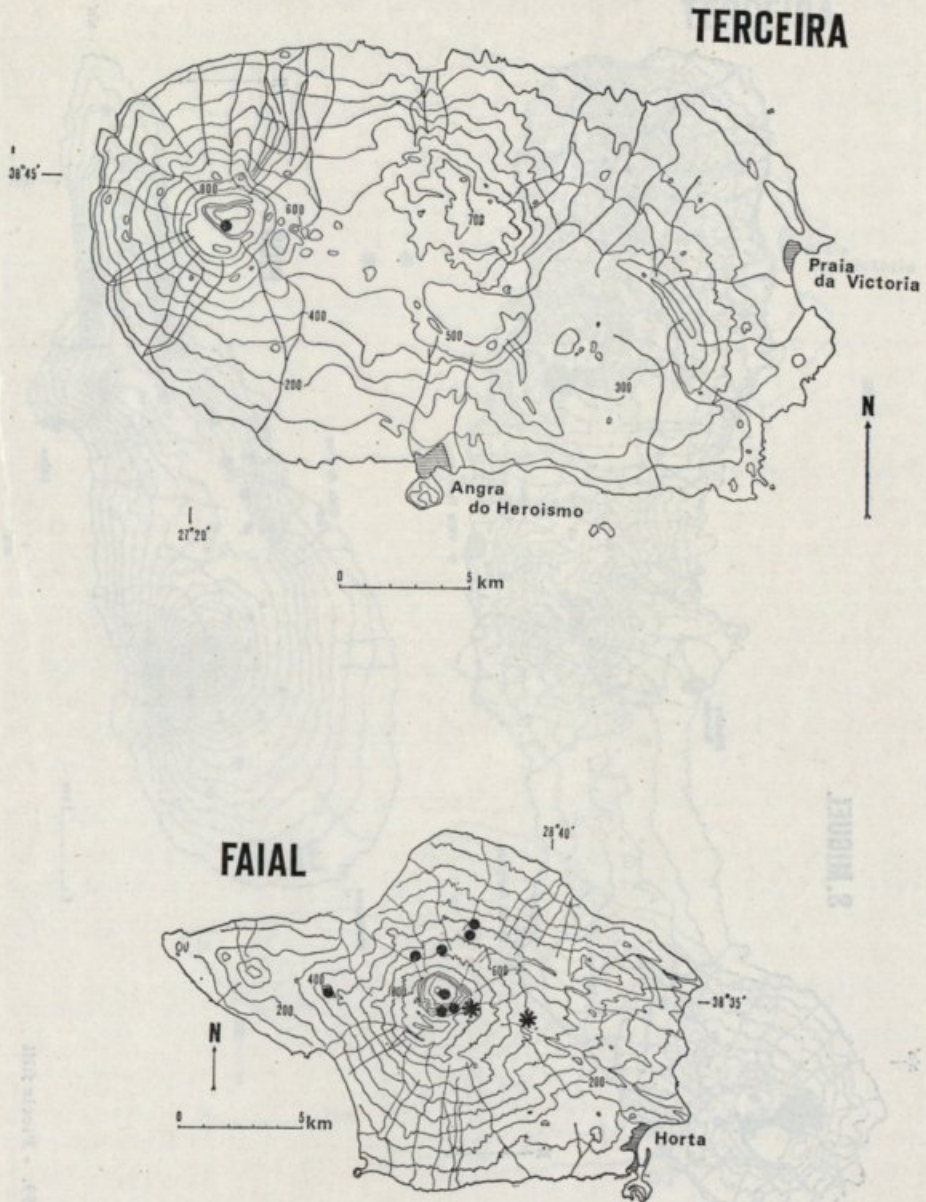


Fig. 98. - *Tolpis azorica*

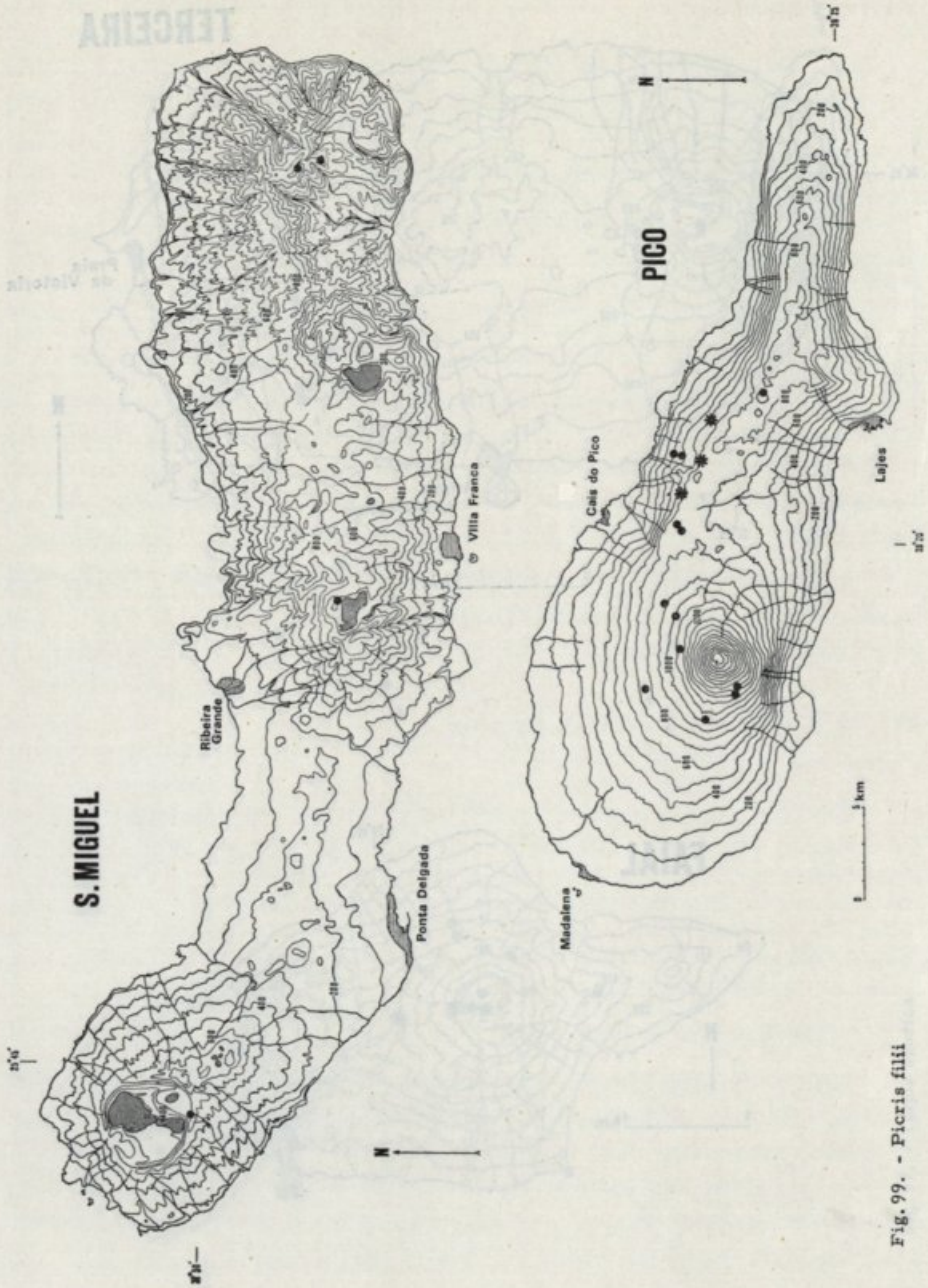


Fig. 99. - Picris filii



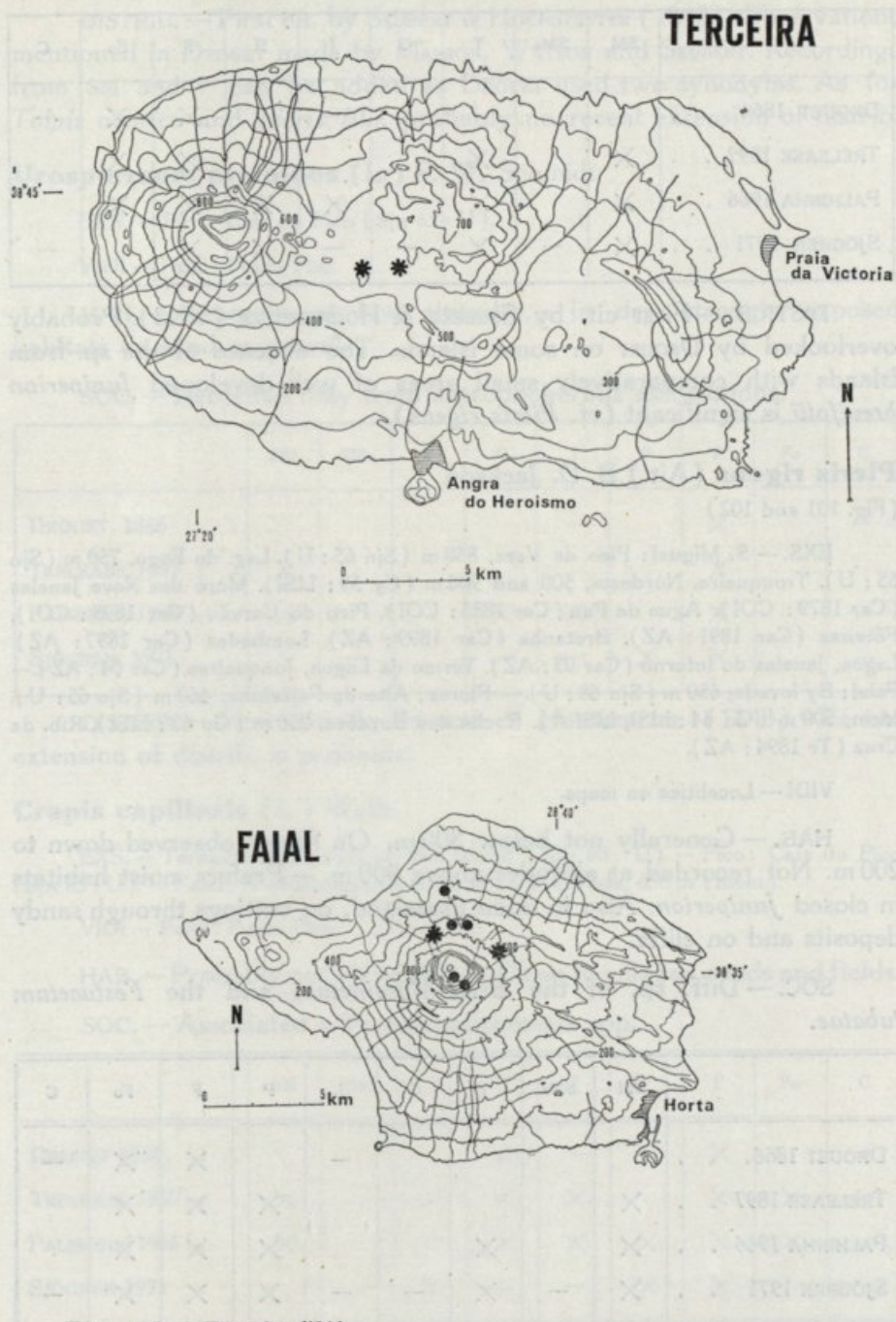


Fig. 100.- *Picris filii*

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . .					—		×	×	—
TRELEASE 1897 . .	×		×				×	×	
PALHINHA 1966 . .	×		×		×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Probably overlooked by DROUET on some islands. The absence of the sp. from islands with comparatively small areas of well developed *Juniperion brevifolii* is significant (cf. *Picris rigens*).

***Picris rigens* (Ait.) B. D. Jackson**

(Fig. 101 and 102)

EXS.—S. Miguel: Pico da Vara, 850 m (Sjn 65: U). Lag. do Fogo, 750 m (Sjn 65: U). Tronqueira, Nordeste, 500 and 900 m (Cy 59: LISI). Muro das Nove Janelas (Car 1879: COI). Água de Pau (Car 1885: COI). Pico do Carvão (Car 1898: COI). Fêteiras (Car 1891: AZ). Bretanha (Car 1899: AZ). Lombadas (Car 1897: AZ). Lagoa, Janelas do Inferno (Car 03: AZ). Termo da Lagoa, Junqueiras (Car 04: AZ).—Faial: By levada, 650 m (Sjn 68: U).—Flores: Alto da Fajázinha, 460 m (Sjn 65: U). Idem, 500 m (Go 64: LISI, LISFA). Rocha dos Bordões, 250 m (Go 63: LISI), Rib. da Cruz (Tr 1894: AZ).

VIDI—Localities on maps.

HAB.—Generally not below 300 m. On Flores observed down to 200 m. Not recorded at altitudes above 900 m.—Prefers moist habitats in closed *Juniperion*. Also in open grassland, on cuttings through sandy deposits and on cliffs.

SOC.—Diff. sp. of the *Erico-Myrsinetum* and the *Festucetum jubatae*.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	—
TRELEASE 1897 . .	×					×	×	×	
PALHINHA 1966 . .	×		×			×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—



DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Observations mentioned in DROUET made by MASSON, WATSON and SEUBERT. Recordings from SM and P can be added as DROUET used two synonyms. As for *Tolpis azorica* and *Picris filii*, probably no recent extension of distrib.

**Urospermum picroides (L.) F. W. Schmidt**

EXS. — Pico: Cais do Pico (Sjn 65: U).

VIDI — Faial: Porto Pim.

HAB. — Generally at low altitudes. — In dry, strongly exposed habitats on sand or gravel.

SOC. — Recorded only from antropochorous associations.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—		×		—
TRELEASE 1897 . .	×						×		
PALHINHA 1966 . .	×			×	×		×		
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recent extension of distrib. is probable.

**Crepis capillaris (L.) Wallr.**

EXS. — Terceira: SE point of the island (Sjn 68: U). — Pico: Cais do Pico (Sjn 65: U). — Faial: N of Almojarife (Sjn 68: U). Levada, 650 m (idem).

VIDI — Faial: Porto Pim.

HAB. — Probably not above 700 m. Close to villages, roads and fields.

SOC. — Associated with antropochorous spp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .				×	—		×		—
TRELEASE 1897 . .	×		×	×	×		×	×	
PALHINHA 1966 . .	×		×	×	×	×	×	×	
SJÖGREN 1971 . .		—	×	—	—	×	×		—



Fig. 101. - *Pictris rigens*



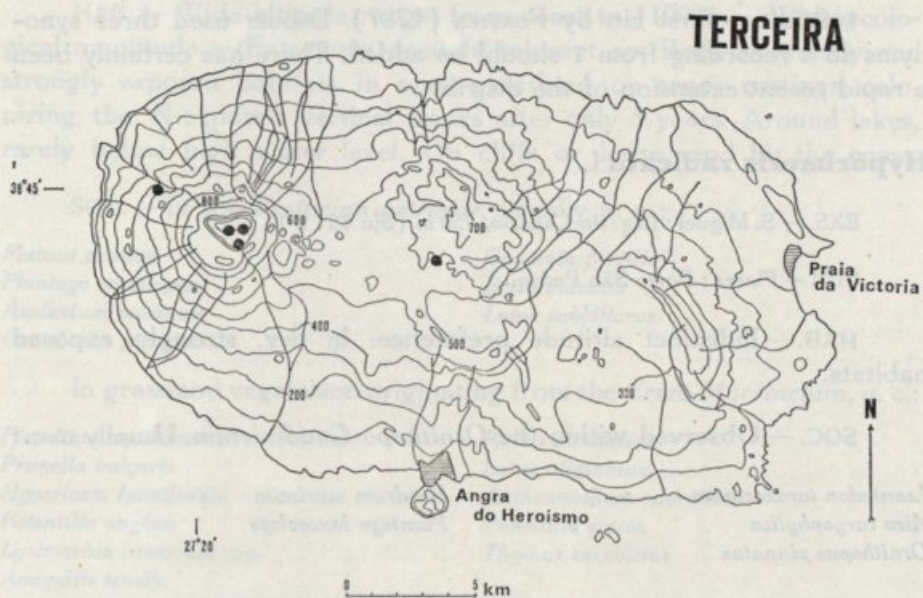


Fig. 102. - *Picris rigens*

DISTRIB. — First cit. by FORSTER (1787). DROUET used three synonyms so a recording from T should be added. There has certainly been a rapid recent extension of the distrib.

### **Hypochaeris radicata** L.

EXS. — S. Miguel: Lag. do Canário, 750 m (Sjn 65: U).

VIDI — Flores: Porto São Pedro.

HAB. — Indistinct altitude preference. In dry, strongly exposed habitats.

SOC. — Observed within the *Ornithopo-Gaudinietum*. Usually u. c.:

*Leontodon taraxacoides*  
*Aira caryophyllea*  
*Ornithopus pinnatus*

*Hordeum murinum*  
*Plantago lanceolata*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .									
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .	×	—		—	—			×	—

DISTRIB. — First mentioned by PALHINHA (1966). There will probably be a spread within the archipelago.

### **Leontodon taraxacoides** (Vill.) Mérat

EXS. — S. Miguel: Lag. do Fogo (Sjn 65: U). Sete Cidades (idem). — Terceira: Lava flow of year 1761 (Sjn 65: U). Juncal (Sjn 68: U). — Faial: Castelo Branco (Sjn 65: U).

VIDI — S. Miguel: Sete Cidades, 250 m. Lag. do Canário, 750 m. Lag. das Empadadas, 720 m. Ginetes, Faial da Terra. Pico da Vara, 1000-1100 m. — Pico: Torrinhãs, 890 m. E of Lag. do Caiado, 820 m. Cab. de Afonso, 700 m. St. Amaro. Lag. de Landroal. Cais do Pico-S. Roque. — Faial: Castelo Branco. Bottom of Caldeira. N of Caldeira, 670 m. Caldeira, 900 m. Porto Pim. Praia do Norte. Almoxarife. — Flores: By road, 160 m.



HAB. — Wide altitude range, from coast to 1100 m. — Wide ecological amplitude. — Extremely drought-tolerant sp. Both on weakly and strongly exposed habitats, in open grassland, on sandy cuttings, colonizing the N-exposed vertical slopes after only 5 years. Around lakes, rarely below high water level. On cliffs or loose sand by the coast.

SOC. — In the *Festucion petraeae*, usually u. c.:

<i>Festuca petraea</i>	<i>Gaudinia fragilis</i>
<i>Plantago coronopus</i>	<i>Briza maxima</i>
<i>Asplenium marinum</i>	<i>Lotus subbiflorus</i>
<i>Ornithopus pinnatus</i>	

In grassland vegetation originating from the *Erico-Myrsinetum*, u. c.:

<i>Pteridium aquilinum</i>	<i>Rubus ulmifolius</i>
<i>Prunella vulgaris</i>	<i>Lotus uliginosus</i>
<i>Hypericum humifusum</i>	<i>Anthoxanthum odoratum</i>
<i>Potentilla anglica</i>	<i>Potentilla erecta</i>
<i>Lysimachia nemorum</i> ssp.	<i>Thymus cespititius</i>
<i>Anagallis tenella</i>	

Also in transitions from the *Juniperion brevifolii* towards the *Litorello-Eleocharion*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .				×	—		×		—
TRELEASE 1897 . .	×	×	×	×	×		×	×	
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recorded by DROUET also from T. In WATSON (1870) also recorded from Fo and SM. Recent extension of distrib.

### **Lactuca watsoniana** Trelease

EXS. — S. Miguel: Termo da Lagoa, Junqueiras (Car 04: AZ). — Terceira: Juncal (Sjn 68: U). — Pico: Ravine S of Cais do Pico, 670 m (Sjn 65: U). Grotões, 870 m (Go 65: HO). — Faial: Bottom of Caldeira, ravine (Sjn 65: U). Fundo Caldeira, 520 m (Go 64: LISI). Alto do Cabouco, 850 m (Go 63: LISI, LISFA). Caldeira, valley to the NW of Pedra do Altar, 500 m (Go 64: LISI).

VIDI — Terceira: Juncal, 570 m. — Pico: SE Lag. do Caiado, 870 m. — Faial: Caldeira, 500 and 870 m. N of Caldeira, Rib. do Cabeço, 670 m.

HAB. — In PALHINHA (1966) mentioned from altitudes above 500 m. Now observed between 500-870 m. Probably not above 1000 m. — Prefers habitats with permanent water supply or permanently moist ground in combination with high RH, in deep narrow ravines and craters.

SOC. — Diff. sp. of the *Festucetum jubatae*, growing u. c.:

*Ranunculus cortusifolius*

*Woodwardia radicans*

*Saniculla azorica*

*Phyllitis scolopendrium*

*Trichomanes speciosum*

*Hymenophyllum tunbridgense*

*Euphorbia stygiana*

*Bellis azorica*

*Vaccinium cylindraceum*

*Hypericum foliosum*

*Myrsine africana* var.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . .					—		×		—
TRELEASE 1897 . .						×	×		
PALHINHA 1966 . .	×				×	×	×		
SJÖGREN 1971 . .		—	×	—	—	×	×		—

DISTRIB. — First cit. by DROUET. Described under the name above in 1897. Probably no extension of distrib. Localities now more accessible. Significant absence from SMA, G and C as for many other diff. spp. of the ass.

### **Sonchus asper** (L.) Hill

VIDI — S. Miguel: Féteiras, 100 m. Fenais da Luz. — Pico: Cais do Pico-S. Roque. — Flores: By road, 150 m.

HAB. — Below 300 m.

SOC. — In antropochorous associations, usually u. c.:

*Pteridium aquilinum*

*Urtica morifolia*

*Mercurialis annua*

*Oxalis pes-caprae*

*Conyza canadensis*

*Stachys arvensis*

*Poa annua*



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—				—
TRELEASE 1897 . .	×					×	×		×
PALHINHA 1966 . .	×				×	×	×	×	×
SJÖGREN 1971 . .	×	—		—	—	×		×	—

DISTRIB.—First cit. by SEUBERT (1844). This weed has now also spread to the middle and westernmost parts of the archipelago.

### **Sonchus oleraceus L.**

EXS.—Faial: Varadouro (Sjn 65: U).

VIDI—S. Miguel: Feteiras, 100 m. — Terceira: Terra Chã, 100 m. — Faial: Castelo Branco.

HAB.—Antropochorous sp., not above 300 m.

SOC.—Idem *S. asper*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—		×		—
TRELEASE 1897 . .	×	×	×	×		×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—		×		—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). The intrusion into the Azorean vegetation was probably parallel with that of *S. asper* but the recent extension of distrib. was more rapidly successful.

### **Sonchus tenerrimus L.**

EXS.—S. Miguel: Mosteiros (Sjn 65: U).

VIDI—Pico: Cais do Pico-S. Roque. — Faial: Almoxarife. N of Caldeira, 650 m. — Flores: Porto São Pedro.

HAB. — Only occasionally above 300 m. — In dry, strongly exposed habitats, on cliffs, on sandy deposits by the coast.

SOC. — Usually in antropochorous associations or where the *Festucion petraeae* occurs mixed with weeds.

	SM	SM <sub>a</sub>	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEAVE 1897 . .									
PALHINHA 1966 . .	×			×					
SJÖGREN 1971 . .	×	—		—	—	×	×	×	—

DISTRIB. — First cit. by PALHINHA (1966). Now spreading to all parts of the archipelago.

#### POTAMOGETONACEAE

##### *Potamogeton polygonifolius* Pourret

EXS. — Terceira: Cald. Guilh. Moniz (Sjn 65: U). Algar do Carvão (idem). —  
— Faial: Caldeira (Sjn 68: U).

VIDI — S. Miguel: Lag. do Fogo, 500 m. Lag. do Canário, 750 m. Lagoa das Empadadas, 720 m. — Terceira: Pico da Pedreira, 520 m. — Pico: Lag. do Capitão, 740 m. Lag. do Caiado. Lake in Grotões, 820 m. Cab. do Afonso, 700 m. Lag. E of Landroal, 770 m. — Faial: Caldeira. — Flores: Rib. da Fazenda, 100 m. Sapateira, 510. Lag. da Lomba, 620 m.

HAB. — Usually in lakes and on shores of lakes above 500 m. Only observed below 500 m on Flores. — Growing below and just above the low water level. Rarely also in habitats with a permanent water supply, by rivers and small streams.

SOC. — Diff. sp. of the *Litorello-Eleocharion*, usually u. c.:

*Juncus effusus*

*Scirpus fluitans*

*Callitriche stagnalis*

*Littorella uniflora*

*Hydrocotyle vulgaris*

*Peplis portula*

*Eleocharis multicaulis*

*Anagallis tenella*



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—			×	—
TRELEASE 1897 . .	×		×			×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Record mentioned by DROUET from Fo was made by WATSON (1844). Uncertain recent extension of distrib. Localities now more accessible than in DROUET's time. The species is now spreading very fast over the water surface of many lakes.

### **Potamogeton pusillus L.**

EXS. — S. Miguel: Sete Cidades (Sjn 65; U).

HAB. — Indistinct ecological preference. In lakes.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—			×	—
TRELEASE 1897 . .	×	×						×	
PALHINHA 1966 . .	×	×			×			×	
SJÖGREN 1971 . .	×	—		—	—				—

DISTRIB. — First cit. by WATSON (1844). As with *P. polygonifolius* it is very uncertain whether there has been a recent extension of distrib. Rare in lakes, where it seems to be easily outcompeted by *P. polygonifolius*.

## **SMILACACEAE**

### **Ruscus aculeatus L.**

EXS. — Pico: Mist. da Prainha, 400 m (Sjn 68; U). Piedade, Cab. da Hera, 150 m (Go: HO). Madalena, Quinta das Rosas, 150 m (Go: HO).

VIDI — Miradouro Amér. Tomaz, 410 m.

HAB. — Observed only at altitudes below 450 m. Suitable habitat conditions are also available above this level. — Recorded only from weakly exposed habitats below *Pittosporum-Myrica* scrub.

SOC. — Sociological preference indistinct.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×		×		—				—
TRELEASE 1897 . .	×		×			×		×	
PALHINHA 1966 . .	×		×		×	×		×	
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by DROUET (observation on SM by HARTUNG, on T by MORELET). Extended distrib. recently.

### **Smilax excelsa L.**

EXS. — S. Miguel: Lag. do Fogo, 590 m (Sjn 65: U). Pico: Mist. da Prainha, 500 m (Go: HO). Miradouro do Cais, 180 m (Sjn 65: U).

VIDI — Ravine S of Cais do Pico, 670 m.

HAB. — Generally above 500 m, occasionally also at lower altitudes. — Prefers weakly exposed habitats.

SOC. — Diff. sp. of the *Festucetum jubatae*, rarely in the *Erico-Myrsinetum*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×			—
TRELEASE 1897 . .	×					×			
PALHINHA 1966 . .	×		×		×	×			
SJÖGREN 1971 . .	×	—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). No evidence of a recent extension of the distrib. of this species.



## JUNCACEAE

**Juncus tenuis** Willd.

EXS. — S. Miguel: Sete Cidades (Sjn 65: U). — Terceira: Bottom of Caldeira de St.<sup>a</sup> Bárbara (Sjn 68: U). — Faial: Caldeira, 700 and 600 m Sjn 65 and 68: U).

HAB. — At altitudes above 300 m. — Observed only in strongly exposed moist habitats in open grassland.

SOC. — In grassland vegetation originating from the *Erico-Myrsinetum*, also in the *Festucetum jubatae*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .					—	×	×		—
TRELEASE 1897 . .	×		×			×	×		×
PALHINHA 1966 . .	×		×		×	×	×		×
SJÓGREN 1971 . .	×	—	×	—	—		×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). There has probably been a recent extension of distrib.

**Juncus bufonius** L.

EXS. — Pico: Praínha, 250 m (Sjn 65: U). Lag. do Capitão, 770 (Sjn 68: U).

VIDI — S. Miguel: Sete Cidades, by Lag. Azul. — Pico: Lava flow E of Cais do Pico, 290 m.

HAB. — Rather wide altitude range. Observed from the coast up to 800 m. — Wide ecological amplitude, rather high drought tolerance. Both in dry habitats on lava flows and in moist habitats in open grassland and around lakes.

SOC. — Usually u. c. weeds, favoured in competition by high tolerance of trampling. No distinct diff. val.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×	×	×				×	×	×
PALHINHA 1966 . .	×	×	×		×	×	×	×	×
SJÓGREN 1971 . .	×	—		—	—	×			—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from «tout l'archipel», but probably not observed on G. Old member of the Azorean vegetation.

### **Juncus effusus** L.

EXS.—S. Miguel: Lag. do Fogo, 550 m (Sjn 65: U).

VIDI—S. Miguel: Sete Cidades, 460 m. Lag. das Furnas, 250 m. Lake between Lag. do Congro and Lag. do Fogo, 580 m. Ravine SW of Sete Cidades, 510 m. Lag. do Congro, 440 m. Lag. do Canário, 750 m. Lag. das Empadadas, 720 m. Pico da Vara, 700-1100 m.—Terceira: St.ª Bárbara, 450-990 m. Lag. do Vimieiro, 350 m. Lag. N of Furnas do Enxofre, 540 m. Cald. Guilh. Moniz, 420 m. Salga. Macieira, 400 m, Furnas do Enxofre, 500 m.—Pico: Torrinhas, 1000 m. Lag. do Caiado, Cab. do Afonso, 700 m. W of Lag. do Caiado, 820 m. Landroal. N slope of Pico, 1060 m.—Faial: Caldeira, 870 m and bottom N slope of Caldeira, 670 m. Rib. do Cabeço, 650 m.—Flores: Sapateira, 510 m. Lag. da Lomba, 620 m. By road, 160 m.

HAB.—The altitude range is wide, extending from the coast up to 1100 m.—In wet, strongly exposed habitats, in open grassland, in old eroded lava flows where a thick humus layer has accumulated in crevices. Around hot springs and where hot steam evaporates. Around lakes, just below high water level, sparsely also down to low water level.

SOC.—Rarely in the *Festucion petraeae*, frequently in grassland originating from the *Erico-Myrsinetum*. Usually u. c.:

*Rubus ulmifolius*

*Holcus rigidus*

*Potentilla erecta*

*Calcitra macrocarpa*

*Luzula purpureo-splendens*

*Lysimachia nemorum* var.

*Blechnum spicant*

Frequently in the *Litorello-Eleocharion*, u. c.:

*Mentha aquatica*

*Chamaemelum nobile* var.

*Litorella uniflora*

*Hydrocotyle vulgaris*

*Potamogeton polygonifolius*

*Peplis portula*

*Scirpus fluitans*

*Eleocharis multicaulis*

*Anagallis tenella*

(*Breutelia azorica*)

(*Thuidium tamariscinum*)

(*Polytrichum formosum*)



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . .	×		×		—		×	×	—
TRELEASE 1897 . .	×	×	×				×	×	×
PALHINHA 1966 . .	×	×	×		×		×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by WATSON (1844). This sp. is now frequent on all islands of the archipelago (probably overlooked on G). It is certainly an old member of the Azorean vegetation though it was not recorded by botanists before WATSON. Now becoming more and more frequent because of the increasing areas of newly cleared grassland for grazing at high altitudes, which provide suitable habitat conditions.

### **Juncus acutus L.**

EXS. — Terceira: Praia da Vitória, 5 m (Ds 64: LISE). — Pico: S. Roque, 5 m (Go 62: LISI, LISFA). — Faial: Rochas da Rosta, 8 m (Go: HO). Varadouro, 8 m (Go 61: LISI).

VIDI — S. Miguel: Água d'Alto. — Terceira: Negrito. Ponta das Ribeiras. E of Porto Judeu. — Pico: Cais do Pico — S. Roque. E of Cachorro. Prainha de Baixo. St. Amaro. Cachorro. Largo da Areia, Madalena. — Faial: Coast E of Horta. Varadouro. Porto Pim. Almoxarife.

HAB. — Only very close to the coast. — On coast cliffs in crevices, where a thin layer of sand and humus has been accumulated. Also in habitats with loose sand and on loose black gravel deposits. In the zone nearest the sea, colonized by the *Festucion petraeae*.

SOC. — Diff. sp. of the *Euphorbietum azoricae*. Also in transitions towards the *Ornithopo-Gaudinietum*. Usually u. c.:

*Chenopodium ambrosioides*

*Gnaphalium luteo-album*

*Festuca petraea*

*Euphorbia azorica*

*Gaudinia fragilis*

*Plantago coronopus*

*Lotus subbiflorus*

*Asplenium marinum*

*Ornithopus pinnatus*

*Atriplex hastata* var.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				×		×	×	—
TRELEASE 1897. . .	×	×	×				×	×	
PALHINHA 1966. . .	×	×	×		×	×	×	×	
SJÖGREN 1971. . .	×	—	×	—	—	×	×		—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Recent extension of distrib.

### **Juncus bulbosus L.**

EXS.—Terceira: St.<sup>a</sup> Bárbara, 900 m (Sjn 65: U).—Flores: Lag. da Lomba, 620 m (Sjn 65: U).

HAB.—Indistinct altitude preference, probably not below 500 m.—Hygrophilous sp., in open grassland.

SOC.—Indistinct sociological preference.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×				—			×	—
TRELEASE 1897. . .	×							×	×
PALHINHA 1966. . .	×		×					×	×
SJÖGREN 1971. . .		—	×	—	—			×	—

DISTRIB.—First cit. by SEUBERT (1844). Since then rather stable distrib.

### **Juncus articulatus L.**

EXS.—Terceira: St.<sup>a</sup> Bárbara, 900 m (Sjn 68: U).

HAB.—At high altitudes, probably not below 300 m. In moist open grassland.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .	×		×						
PALHINHA 1966 . .	×		×						
SJÖGREN 1971 . .		—	×	—	—				—

DISTRIB. — First cit. by WATSON (1870). Stable distrib.

### **Juncus capitatus** Weigel

EXS. — Pico: Mist. da Prainha, 250 m (Sjn 65: U).

VIDI — Pico: Lava flow, E of Cais do Pico, 290 m.

HAB. — Below 500 m. — High drought tolerance. Observed on coastal cliffs and on lava flows near the coast with a sparse vegetation of vascular plants.

SOC. — Indistinct sociological preference. Observed u. c.:

*Juncus bufonius*

*Hypericum humifusum*

*Galium parisiense*

*Thymus cespitiatus*

*Sagina procumbens*

*Polycarpon tetraphyllum*

*Anisantha madritensis*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×		×		—		×	×	×
TRELEASE 1897 . .	×		×				×	×	×
PALHINHA 1966 . .	×		×		×		×	×	×
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Recorded by SEUBERT (1844) only from SM and T, so there might have been a recent extension of distrib.

### **Luzula purpureo-splendens** Seub.

(Fig. 103 and 104)

EXS. — S. Miguel: Sete Cidades, rim of cald. (Sjn 65: U). Lag. do Fogo, rim of cald. (idem). Pico da Lapinha, Conc. Vila Franca, 600 m (Cy 58: LISI). Achada das Furnas,

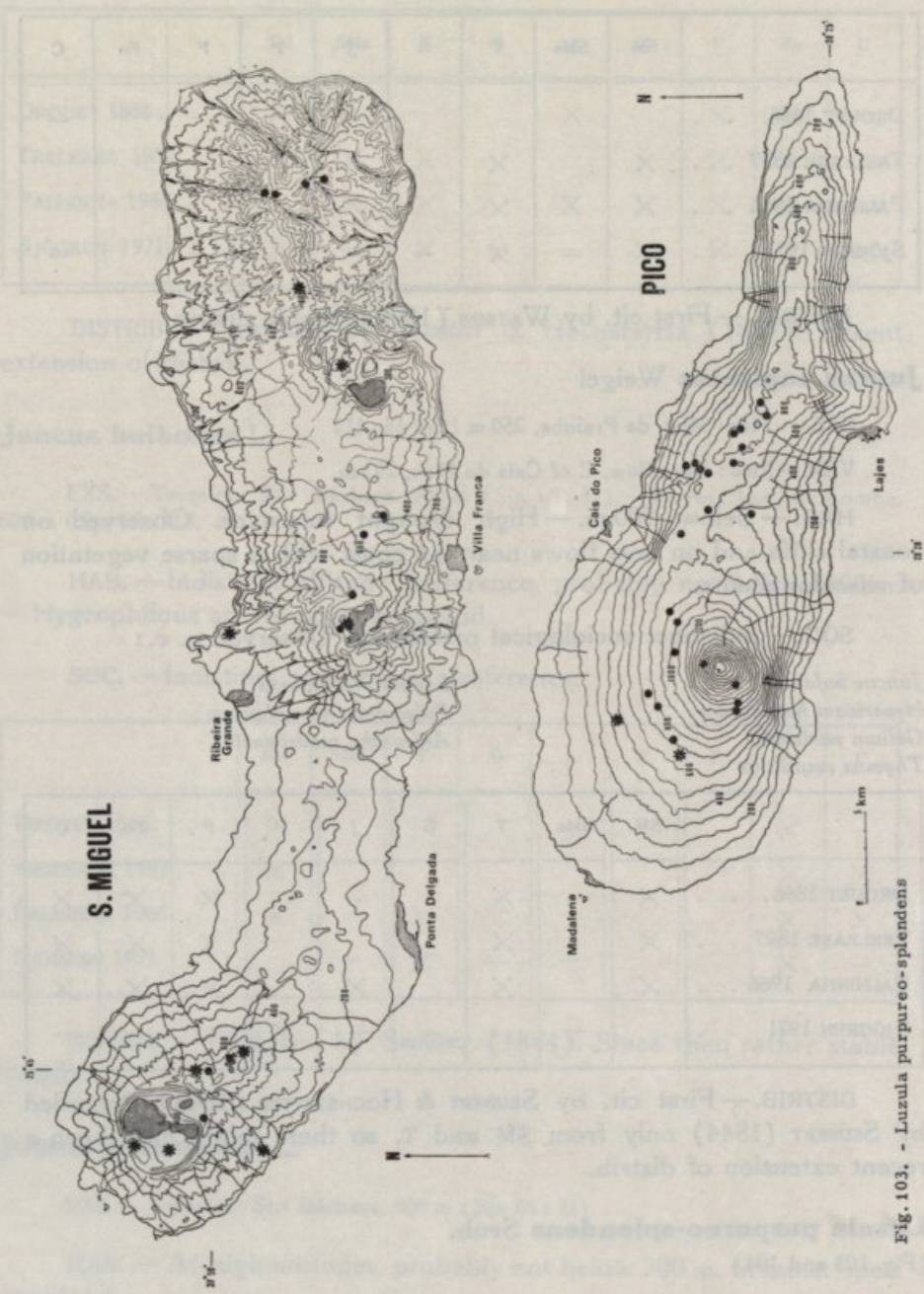


Fig. 103. - *Luzula purpureo-splendens*



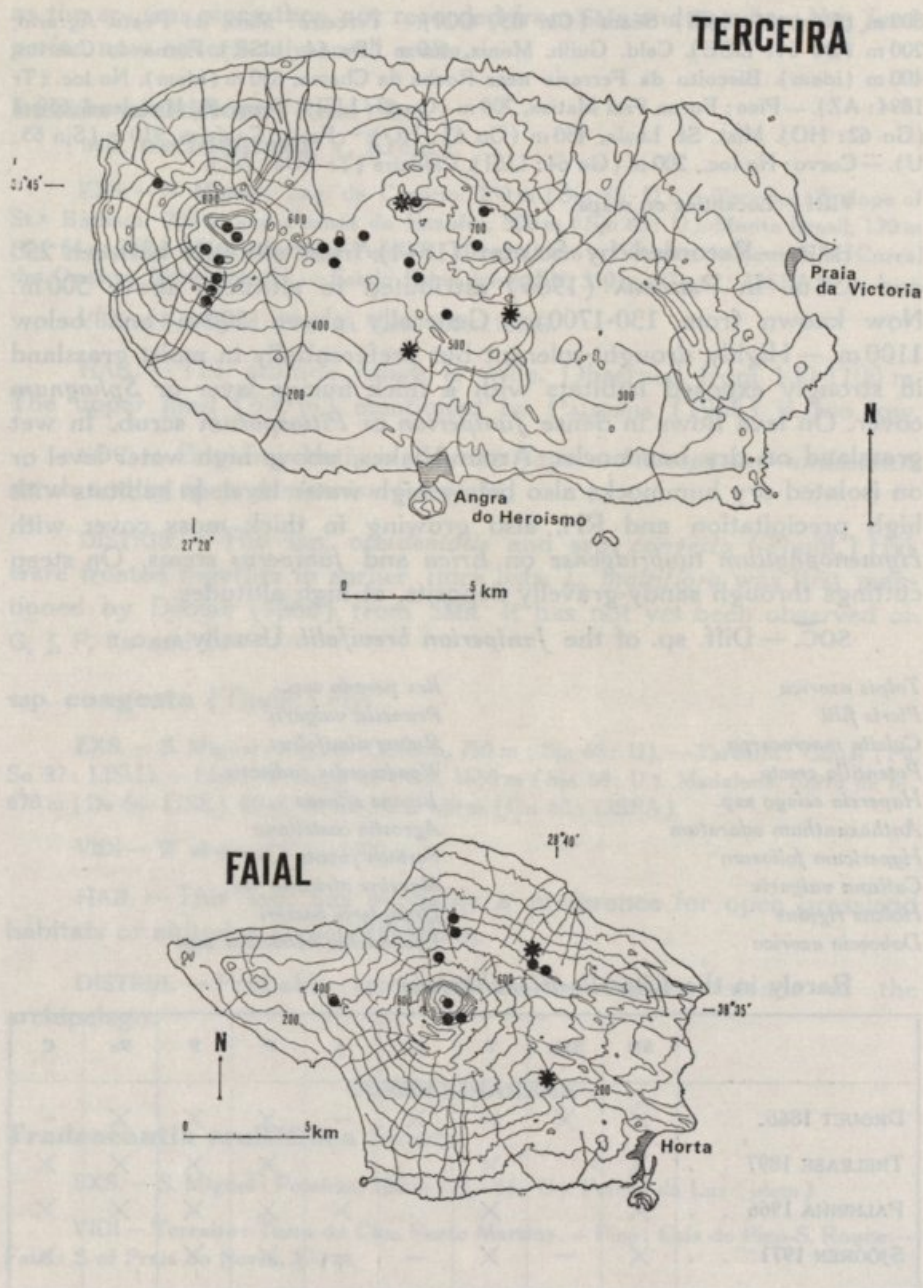


Fig. 104. - *Luzula purpureo-splendens*

800 m (Rego 25: LISI). Séara (Car 03: COI). — Terceira: Mata do Posto Agrário, 200 m (Ds 64: LISE). Cald. Guilh. Moniz, 460 m (Ds 64: LISE). Furna do Cabrito, 400 m (idem). Biscoito da Ferraria near Rocha da Chama, 650 m (idem). No loc. (Tr 1894: AZ). — Pico: Furna Frei Matias, 700 m (Go 63: LISI). Serra da Madalena, 650 m (Go 62: HO). Mist. St. Luzia, 450 m (Go 63: HO). — Faial: Caldeira, 910 m (Sjn 65: U). — Corvo: No loc., 200 m (Go 64: LISI). Caldeira (Tr 1894: AZ).

VIDI — Localities on maps.

HAB. — Recorded by SEUBERT (1844) from altitudes between 250 and 650 m. In PALHINHA (1966) attributed to altitudes above 500 m. Now known from 130-1700 m. Generally above 500 m and below 1100 m. — Highly drought-tolerant but preferentially in moist grassland in strongly exposed habitats with a thick humus layer or *Sphagnum* cover. On lava flows in dense *Juniperion* or *Pittosporum* scrub. In wet grassland on dry hummocks. Around lakes, above high water level or on isolated dry hummocks also below high water level. In habitats with high precipitation and RH, also growing in thick moss cover with *Hymenophyllum tunbridgense* on *Erica* and *Juniperus* stems. On steep cuttings through sandy-gravelly deposits, at high altitudes.

SOC. — Diff. sp. of the *Juniperion brevifolii*. Usually u. c.:

<i>Tolpis azorica</i>	<i>Ilex perado</i> ssp.
<i>Picris filii</i>	<i>Prunella vulgaris</i>
<i>Calcita macrocarpa</i>	<i>Rubus ulmifolius</i>
<i>Potentilla erecta</i>	<i>Woodwardia radicans</i>
<i>Huperzia selago</i> ssp.	<i>Juncus effusus</i>
<i>Anthoxanthum odoratum</i>	<i>Agrostis castellana</i>
<i>Hypericum foliosum</i>	<i>Festuca jubata</i>
<i>Calluna vulgaris</i>	<i>Myrsine africana</i> var.
<i>Holcus rigidus</i>	<i>Dryopteris borrieri</i>
<i>Daboecia azorica</i>	<i>Lysimachia nemorum</i> ssp.

Rarely in the *Litorello-Eleocharion*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .	×	×	×	×	—	×	×	×	—
TRELEASE 1897 . .	×		×			×	×	×	×
PALHINHA 1966 . .	×		×		×	×	×	×	×
SJÖGREN 1971 . .	×	—	×	—	—	×	×		×

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). In DROUET mentioned from « tout l'archipel », which was certainly an exaggeration,



as the sp. was since then not recorded from SMA and G, where the *Juniperion* now covers only small areas.

**Luzula multiflora** (Retz.) Lej.

ssp. **occidentalis** V. Kreuz.

EXS. — S. Miguel: Lag. do Canário, 750 m (Sjn 65: U). — Terceira: S slope of St.<sup>a</sup> Bárbara, 700 m and Furnas do Enxofre, 500 m (Sjn 65: U). Monte Brasil, 120 m (Ds 64: LISE). Mata do Posto Agrário, 200 m (idem). Biscoito da Fontainha, Curral das Ovelhas, 320 m (idem). — Faial: Falca, junta EN, 350 m (Go 62: LISFA).

VIDI — S. Miguel: Pico da Vara, 1000-1100 m.

HAB. — The altitude range is wide. Observed from 100-1100 m. The upper limit (600 m) mentioned by PALHINHA (1966) is too low.

SOC. — Growing both in *Myrica faya* — *Pittosporum undulatum* scrub and in open *Juniperion brevifolii*.

DISTRIB. — The ssp. *occidentalis* and ssp. *congesta* (Thuill.) Hyl. were treated together in earlier flora lists. *L. multiflora* was first mentioned by DROUET (1866) from SMA. It has not yet been observed on G, J, F, Fo and C.

ssp. **congesta** (Thuill.) Hyl.

EXS. — S. Miguel: Lag. do Canário, 750 m (Sjn 65: U). — Terceira: Ginjal (Pa, So 37: LISU). — Pico: W slope of Pico, 1650 m (Sjn 68: U). Madalena, Serra de M., 670 m (Ds 64: LISE). Mist. da Prainha, 450 m (Go 63: LISFA).

VIDI — W slope of Pico, 1500 m.

HAB. — This ssp. has probably a preference for open grassland habitats of altitudes above 600-700 m.

DISTRIB. — Probably restricted to the highest islands of the archipelago.

### COMMELINACEAE

**Tradescantia multiflora** Swartz

EXS. — S. Miguel: Feteiras, 100 m (Sjn 65: U). Fenais da Luz (idem).

VIDI — Terceira: Terra de Chã, Porto Martins. — Pico: Cais do Pico-S. Roque. — Faial: S of Praia do Norte, 170 m.

HAB. — Cultivated and escaped, only at low altitudes. Often on lava flows and on stone walls.

SOC. — Associated only with antropochorous spp. such as:

*Urtica morifolia*  
*Mercurialis annua*  
*Oxalis pes-caprae*  
*Umbilicus rupestris*

*Euphorbia peplus*  
*Geranium robertianum*  
*Sherardia arvensis*  
*Conyza canadensis*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—				—
TRELEASE 1897 . .							×	×	
PALHINHA 1966 . .			×				×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB. — First cit. by TRELEASE. Since then spread to all parts of the archipelago.

#### CYPERACEAE

##### *Eleocharis multicaulis* (Sm.) Sm.

(Fig. 105 and 106)

EXS. — S. Miguel: Lag. do Congro, 500 m (Sjn 65: U). Lag. do Fogo, 550 m (idem). Planalto dos Graminhais, Sebastião Alves, 900 m (Ds 64: LISE). Pico do Brenho (Car 08: AZ). Fajã (Car 1880: AZ) — Santa Maria: No loc. (Tr 1896: AZ). — Terceira: St.<sup>a</sup> Bárbara, 960 m (Sjn 68: U). Cald. Guilh. Moniz, 460 m (Ds 64: LISE). Terra Brava facing Boi, 630 m (Ds 64: LISE). Lag. da Falca (Orm: COI). No loc. (Tr 1894: AZ). — Pico: Lag. Sêca (Sjn 68: U). Serra da Madalena, 700 m (Go 64: LISI, LISFA). — Faial: Caldeira, 500 m (Go 68: HO). — Flores: Lag. Rasa (Tr 1894: AZ).

VIDI — Localities on maps.

HAB. — In PALHINHA (1966) attributed to localities above 600 m. Now known from 300-1100 m. Preferentially between 500-900 m. — Frequent in wet, strongly exposed habitats, in open grassland. Around lakes, also growing close to low water level. In grassland vegetation often dominant in areas between dryer humocks of *Polytrichum* and *Luzula purpureo-splendens*.

SOC. — Diff. sp. of the *Litorello-Eleocharion* and the *Anagallidetum tenellae*. Rarely in the *Festucetum jubatae*. Usually u. c.:



*Carex peregrina*  
*Huperzia selago* ssp.  
*Holcus rigidus*  
*Prunella vulgaris*  
*Lotus uliginosus*  
*Rubus ulmifolius*

*Anthoxanthum odoratum*  
*Luzula purpureo-splendens*  
*Lysimachia nemorum* ssp.  
*Calluna vulgaris*  
*Centaurium scilloides* ssp.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×	×		—
TRELEASE 1897 . .	×	×	×			×	×	×	
PALHINHA 1966 . .	×	×	×		×	×	×	×	
SJÖGREN 1971 . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Probably overlooked by DROUET and SEUBERT on some islands. Suitable habitat conditions on G are available within comparatively small areas.

### ***Eleocharis palustris* (L.) Roemer & Schultes**

EXS. — Pico: Serra da Madalena, 700 m (Go: HO). — Faial: Bottom of Caldeira (Sjn 68: U).

VIDI — Pico: Cab. do Afonso, 700 m. Lag. do Capitão, 750 m.

HAB. — Not observed below 700 m (except Caldeira de Faial). — More hygrophilous than *E. multicaulis*. Around lakes, just above and also below low water level.

SOC. — Diff. sp. of the *Litorello-Eleocharion*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—			×	×
TRELEASE 1897 . .								×	×
PALHINHA 1966 . .					×			×	×
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT (1844). Possible recent extension of distrib. within the western part of the archipelago, as cit. by SEUBERT (1844) only from C.

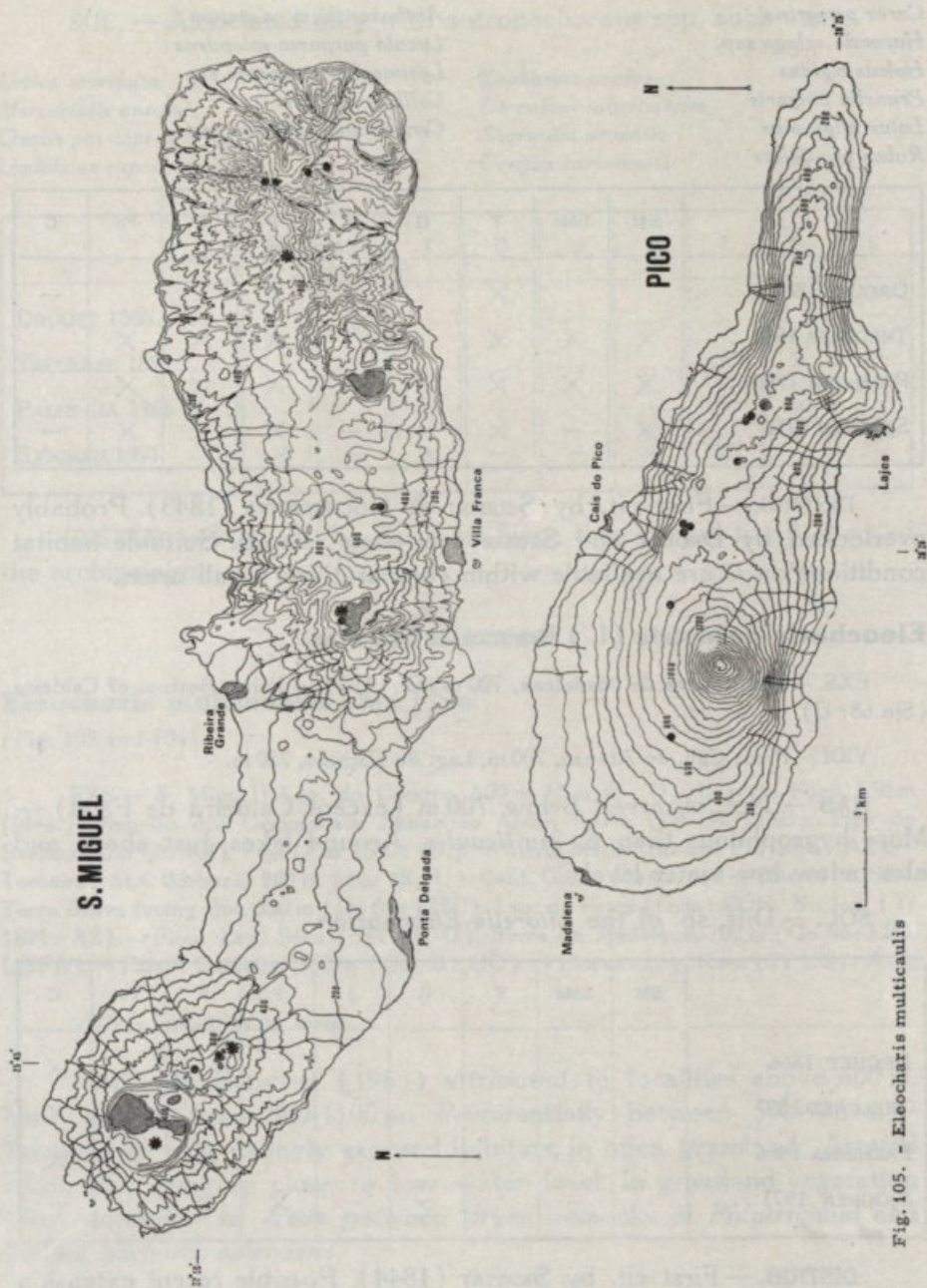


Fig. 105. - *Eleocharis multicaulis*



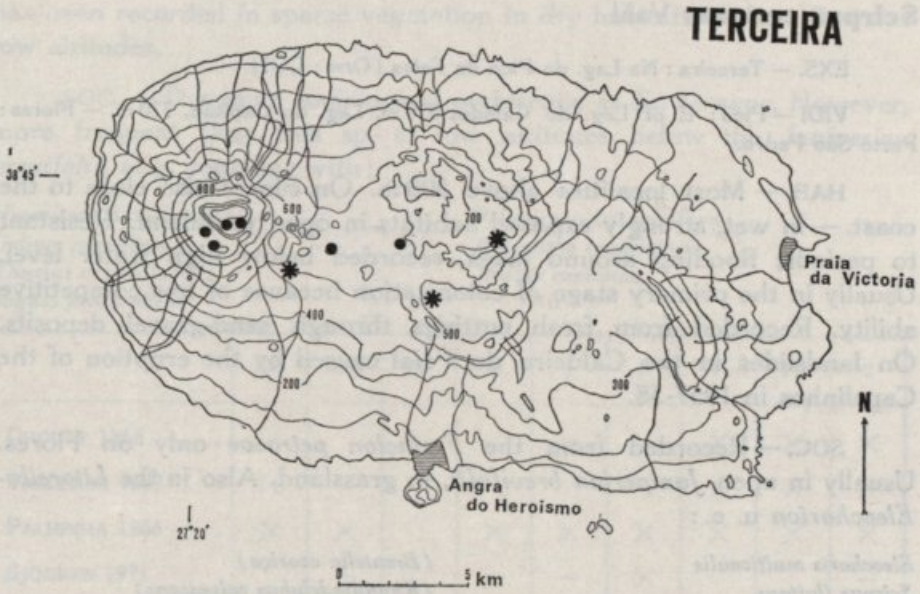


Fig. 106. - *Eleocharis multicaulis*

**Scirpus cernuus** Vahl

EXS. — Terceira : Na Lag. do Pico da Falsa (Orm : COI).

VIDI — Pico : E of Lag. do Caiado, 820 m. Lag. do Capitão, 770 m — Flores : Porto São Pedro.

HAB. — Most localities above 500 m. On Flores also close to the coast. — In wet, strongly exposed habitats in open grassland. Resistant to periodic flooding around lakes, recorded below high water level. Usually in the primary stage of colonization because of low competitive ability. Recorded from fresh cuttings through sand-gravel deposits. On landslides in the Caldeira do Faial caused by the eruption of the Capelinhos in 1957-58.

SOC. — Recorded from the *Festucion petraeae* only on Flores. Usually in open *Juniperion brevifolii*, in grassland. Also in the *Litorello-Eleocharion* u. c. :

*Eleocharis multicaulis*

*Scirpus fluitans*

*Peplis portula*

*Litorella uniflora*

*Chamaemelum nobile* var.

(*Breutelia azorica*)

(*Rhytidiadelphus calvescens*)

(*Thuidium tamariscinum*)

(*Scleropodium illecebrum*)

(*Philonotis rigida*)

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×			—
TRELEASE 1897 . .	×	×	×			×	×	×	×
PALHINHA 1966 . .	×	×	×	×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×	×	×	—

DISTRIB. — First cit. SEUBERT & HOCHSTETTER (1843). Recent extension of distrib. has been very rapid.

**Scirpus setaceus** L.

EXS. — Pico : Lag. do Capitão, 750 m (Sjn 65 : U). Prainha, 250 m (idem). Lag. do Caiado (Sjn 68 : U).

VIDI — Pico : Lava flow, E of Cais do Pico, 290 m.

HAB. — Generally at altitudes above 400 m. — In similar habitats to *Sc. cernuus*. Drought tolerance higher than that of *Sc. cernuus*, as it



has been recorded in sparse vegetation in dry habitats on lava flows at low altitudes.

SOC. — The same sociological preference as *Sc. cernuus*. However, more frequent than this sp. at low altitudes below the *Juniperion brevifolii*, e. g. together with:

*Hypericum humifusum*  
*Galium parisiense*  
*Thymus cespititius*  
*Sagina procumbens*

*Polycarpon tetraphyllum*  
*Anisantha madritensis*  
*Juncus capitatus*

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—		×	×	×
TRELEASE 1897 . .	×						×	×	×
PALHINHA 1966 . .	×	×		×	×	×	×	×	×
SJÖGREN 1971 . .		—		—	—	×			—

DISTRIB. — First cit. by WATSON (1844). First restricted to the westernmost islands of the archipelago, now spread to all parts.

### **Scirpus fluitans L.**

EXS. — S. Miguel: Lag. das Furnas (Tr 1894: AZ). — Terceira: Água do Carvão. St.<sup>a</sup> Bárbara, 700 and 800 m (Sjn 65: U). Bottom of Cald. da St.<sup>a</sup> Bárbara (Sjn 68: U). Cald. Guilh. Moniz, 400 m. Biscoito da Ferraria near Criação da Rocha, 530 m (Ds 64: LISE). — S. Jorge: Pico do Brenho Car 08: AZ). — Pico: Lag. do Capitão, 770 m (Sjn 68: U). Serra da Madalena, 670 m (Ds 64: LISE). Capitão, 700 m (Go 64: LISI). Serra da Madalena, 750 m (Go 63: LISI, LISFA). — Faial: Bottom of Caldeira, 500 m (Go 68: HO).

VIDI — S. Miguel: Lag. do Canário, 750 m. Lag. das Empadadas, 720 m. — Pico Lag. do Capitão, 740 m. Torrinhãs, 1000 m. Lag. do Caiado. Lag. Sêca. E of Lag. do Caiado, 820 m. Lake in Grotões, 820 m. Cab. do Afonso, 700 m. Landroal, 770 m. Lake E of Landroal, 770 m. Lag. Landroal, 800 m. — Faial: Bottom of Caldeira and on 900 m, S slope.

HAB. — Observed from 400-1000 m. Preferentially between 600-900 m. — Highest frequency recorded around lakes, also growing close to low water level. Also in permanently moist habitats in open grassland and on cuttings through sandy deposits.

SOC. — Diff. sp. of the *Litorello-Eleocharion* and the *Anagallidetum tenellae*. Usually u. c.:

*Juncus effusus*  
*Callitriche stagnalis*  
*Litorella uniflora*  
*Anagallis tenella*  
*Potentilla anglica*  
*Hydrocotyle vulgaris*

*Prunella vulgaris*  
*Peplis portula*  
*Eleocharis multicaulis*  
*Luzula purpureo-splendens*  
 (*Breutelia azorica*)

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×			—
TRELEASE 1897 . .	×		×			×			
PALHINHA 1966 . .	×		×		×	×			
SJÖGREN 1971 . .	×	—	×	—	—	×	×		—

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Cit. by SEUBERT (1844) only from T. The recent distrib. has been maintained unusually stable. Further extension of distrib. is probably to be expected as suitable habitat conditions are available on all the islands. New localities are available in new cleared grassland at high altitudes.

### **Scirpus maritimus** L.

VIDI — Faial: Biscoitos, coast.

HAB. — Only very close to the coast.

SOC. — Recorded only from the *Festucion petraeae*.

DISTRIB.—First cit. by SEUBERT & HOCHSTETTER (1843). Remarkably, the distrib. has since then been restricted to Terceira, where the sp. is rare.

### **Cyperus badius** Desf.

EXS. — Pico: St. Amaro, coast (Sjn 65: U).

VIDI — Flores: Rib. da Fazenda, 100 m.

HAB. — At low altitudes, below 300 m. — Growing on coast cliffs, in crevices with accumulated sand and gravel.



	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .	×	×	×		—		×	×	—
TRELEASE 1897 . . .	×	×	×	×			×	×	
PALHINHA 1966 . . .	×	×	×	×	×		×	×	
SJÖGREN 1971 . . .		—		—	—	×		×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Cit. by SEUBERT (1844) only from SM, T and F. Probably old member of the Azorean vegetation. Slight recent extension of distrib.

### *Kyllinga brevifolia* Rottb.

EXS. — Faial: SE outside slope of Caldeira, by road, 500 m (Sjn 68: U). — Flores: Rib. da Fazenda, 100 m (Sjn 65: U).

HAB. — Antropochorous sp. close to roads, paths, villages. Probably not above 600 m.

SOC. — Sociological preference ill-defined.

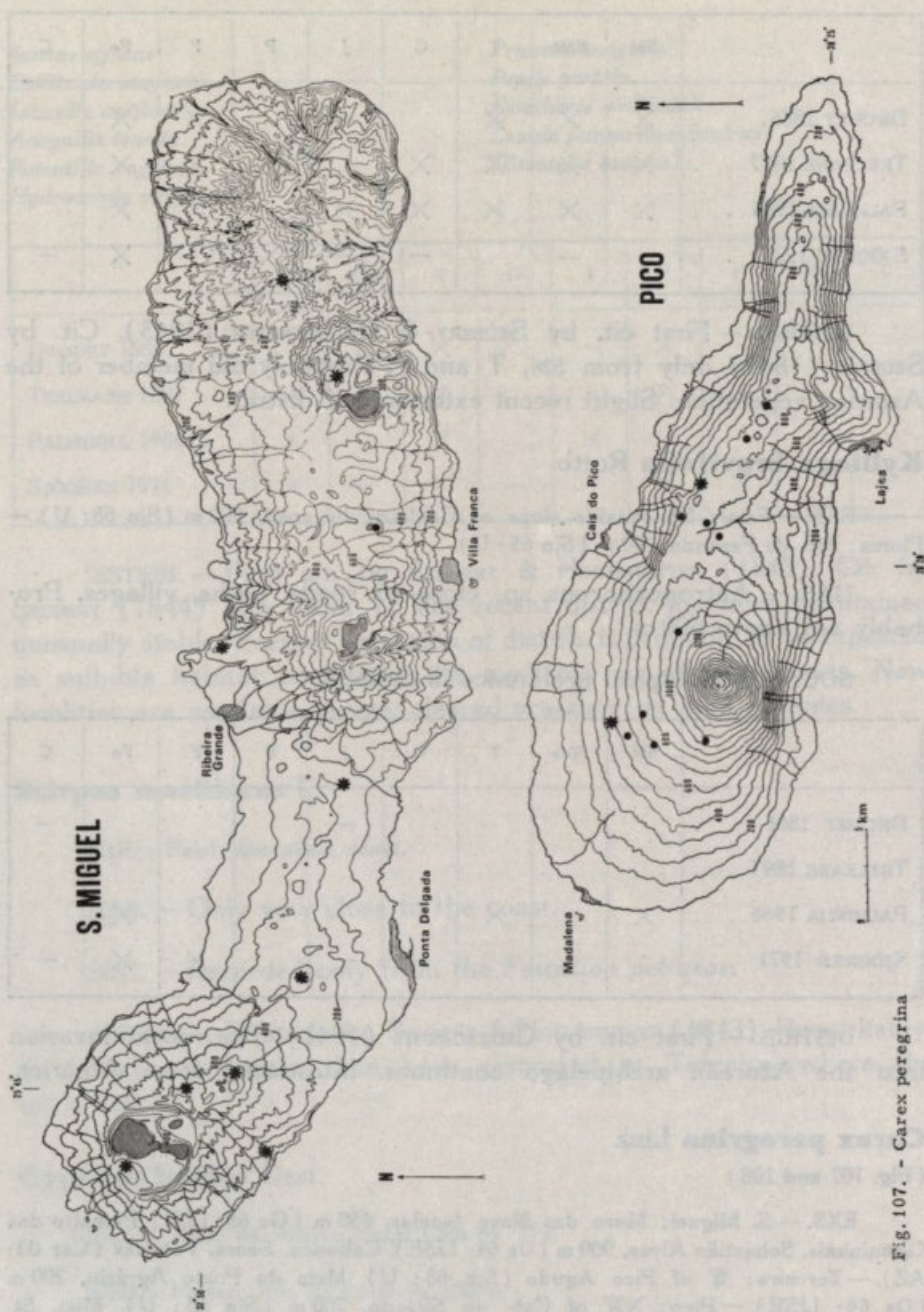
	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866 . . .					—				—
TRELEASE 1897 . . .									
PALHINHA 1966 . . .	×		×					×	
SJÖGREN 1971 . . .		—		—	—		×	×	—

DISTRIB. — First cit. by CEDERCREUTZ (1941). The recent invasion into the Azorean archipelago continues. Introduced from América.

### *Carex peregrina* Link

(Fig. 107 and 108)

EXS. — S. Miguel: Muro das Nove Janelas, 650 m (Go 68: LISI). Planalto dos Graminhais, Sebastião Alves, 900 m (Ds 64: LISE). Cabouco. Seara. Feteiras (Car 03: AZ). — Terceira: W of Pico Agudo (Sjn 68: U). Mata do Posto Agrário, 200 m (Ds 64: LISE). — Pico: NW of Cab. do Silvado, 700 m (Sjn 65: U). Mist. St. Luzia, 450 m (Go 62: LISI). S. Roque do Pico E of Junqueira, 700 m (Ds 64: LISE). — Faial: Bottom Caldeira and on its inner slope, 700 m (Sjn 65: U). Caldeira, 600 m

Fig. 107. - *Carex peregrina*



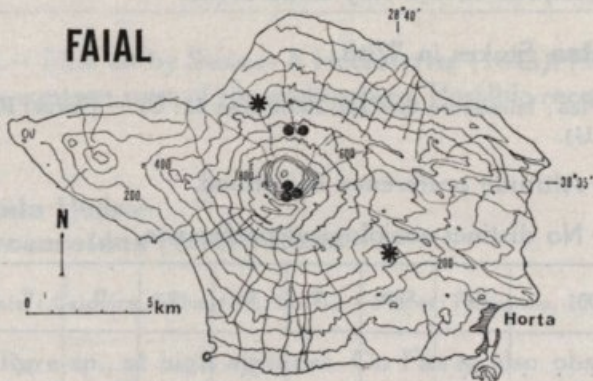
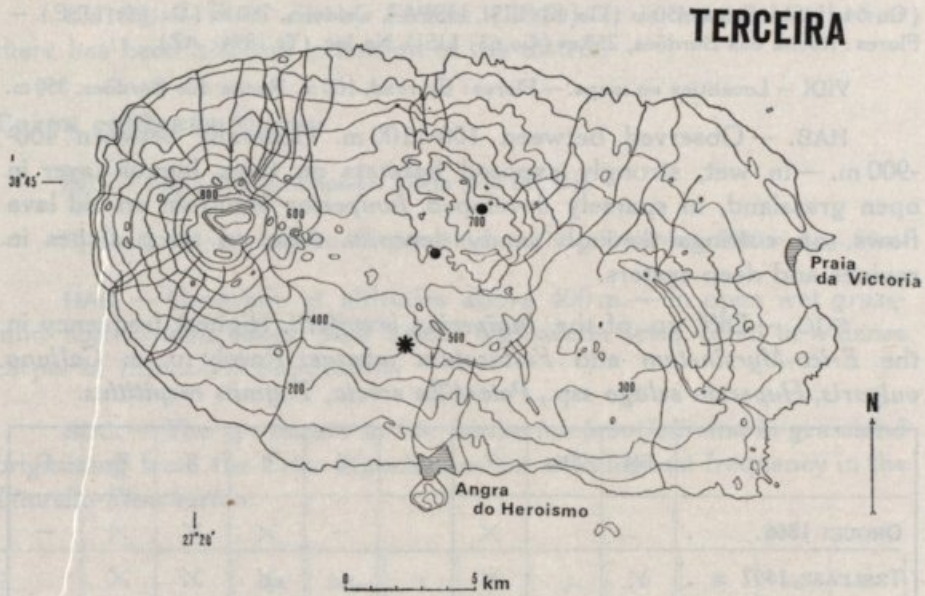


Fig. 108. - *Carex peregrina*

(Go 64: LISI). Falsa, 450 m (Go 62: LISI, LISFA). Caldeira, 780 m (Ds 64: LISE). — Flores: Rocha dos Bordões, 250 m (Go 63: LISI). No loc. (Tr 1894: AZ).

VIDI — Localities on maps. — Flores: By road, 160 m. Rocha dos Bordões, 250 m.

HAB. — Observed between 100-1100 m. Generally between 400-900 m. — In wet, strongly exposed habitats on thick humus layer in open grassland, in sparsely developed *Juniperion brevifolii* on old lava flows, on cuttings through sandy deposits. Also on steep slopes in ravines and deep craters.

SOC. — Diff. sp. of the *Juniperion brevifolii*. Highest frequency in the *Erico-Myrsinetum* and *Festucetum jubatae*. Rarely u. c. *Calluna vulgaris*, *Huperzia selago* ssp., *Potentilla erecta*, *Thymus cespititius*.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .			×		—	×	×	×	—
TRELEASE 1897. . .	×		×			×	×	×	
PALHINHA 1966. . .	×		×		×	×	×	×	
SJÖGREN 1971. . .	×	—	×	—	—	×	×	×	—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). No recent extension of distrib. Significant absence from SMA, G and C, where the *Juniperion brevifolii* covers only small areas.

### **Carex divulsa** Stokes in With.

EXS. — Pico: Miradouro do Cais, 200 m (Sjn 65: U). — Flores: Rib. da Fazenda, 100 m (Sjn 65: U).

HAB. — Altitude preference ill-defined.

SOC. — No distinct sociological preference.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .	×			×	—		×		—
TRELEASE 1897. . .	×	×	×	×	×		×	×	
PALHINHA 1966. . .	×	×	×	×	×	×	×	×	
SJÖGREN 1971. . .		—		—	—	×		×	—



DISTRIB. — First cit. by SEUBERT (1844). It is uncertain whether there has been a recent extension of the distrib.

### **Carex echinata** Murray

EXS. — Pico: Lag. do Capitão, 770 m (Sjn 68: U).

VIDI — S. Miguel: Lag. do Congro, 440 m. — Pico: Torrinhãs, 1000 m. Lag. Sêca.

HAB. — Generally at altitudes above 400 m. — In open wet grassland and around lakes, also below high water level, often in a dense carpet of *Eleocharis multicaulis*.

SOC. — The sp. occurs in the *Juniperion brevifolii* and in grassland originating from the *Erico-Myrsinetum* but with highest frequency in the *Litorello-Eleocharion*.

	SM	SMa	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×	×	×	—
TRELEASE 1897 . .	×					×	×	×	
PALHINHA 1966 . .	×		×			×	×	×	
SJÖGREN 1971 . .	×	—		—	—	×			—

DISTRIB. — First cit by SEUBERT & HOCHSTETTER (1843). First recorded only from the western part of the archipelago. Possible recent extension of distrib.

### **Carex pendula** Hudson

var. **myosuroides** (Lowe) Boott

EXS. — Faial: Caldeira, 500 m (Sjn 65: U). — Flores: Fajãzinha, 100 m (Go: HO).

HAB. — Rare sp., at high altitudes. On Flores also observed fairly close to sea level. — Seems to prefer permanently moist habitats e. g. close to small streams, at bases of steep permanently water supplied cliffs or in the bottom of deep narrow ravines.

SOC. — Recorded only from the *Juniperion brevifolii*.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866 . .					—			×	—
TRELEASE 1897 . .	×						×	×	
PALHINHA 1966 . .	×					×	×	×	
SJÖGREN 1971 . .		—		—	—		×	×	—

DISTRIB — First cit. by SEUBERT & HOCHSTETTER (1843). Easily recognized and observed sp. Probably recent extension of distrib.

**Carex pilulifera** L.

var. **azorica** (Gay) Christ

EXS. — Pico: W slope, 1300 m (Sjn 68: U). Grotões (Sjn 68: U). — Faial: Bottom of Caldeira (Sjn 68: U).

HAB. — Only at high altitudes above 600 m (cf. PALHINHA 1966).

SOC. — Diff. sp. of the grassland ass. *Anagallidetum tenellae*.

	SM	SMA	T	G	J	P	F	Fo	C
DROUET 1866. . .					—	×	×		—
TRELEASE 1897 . .	×					×	×	×	
PALHINHA 1966 . .	×		×		×	×	×	×	
SJÖGREN 1971 . .		—		—	—	×	×		—

DISTRIB. — First cit. by SEUBERT & HOCHSTETTER (1843). Possibly overlooked by DROUET on some islands. Significant absence from SMA, G and C (cf. *Carex peregrina*).

**Carex vulcani** Hochst. ex Seub.

EXS. — S. Miguel: Mata dos Remédios, Lagoa, 300 m (Beliz 53: COI). — Pico: Landroal, 700 m (Go: HO).

HAB. — Generally at altitudes above 300 m. — Wide ecological amplitude.

SOC. — No sociological preference observed.