

(c.) *Senecio-Olearia Association.*

I have only had an opportunity of examining this association to the north and south of Mason Bay, at the Old Neck, Glory Cove, and Anglem Point, and have noted it on the Breaksea Islands, at a certain point on Pearl Island, and on some of the more northern islands.

(a.) *Mason Bay.*

The hills near the shore at the north end of Mason Bay are deeply cut by gullies, on the sides of which is abundance of *Olearia-Senecio* scrub, so tall it might almost be called low forest. The members of the association are: (Compositae) *Senecio rotundifolius*, puheritaiko; *Olearia Colensoi*, Colenso's daisy-tree; (Scrophulariaceae) *Veronica elliptica*, coastal veronica; (Cornaceae) *Griselinia littoralis*, broadleaf; (Araliaceae) *Stilbocarpa Lyallii*, punui; (Filices) *Polystichum vestitum*, *Asplenium lucidum*, *Blechnum durum*.

The general colour of the scrub as seen from without is sage-green, but relieved in places by a few green patches, especially at some distance from the sea, which mark the presence of the broadleaf (*G. littoralis*). In some places the roof is almost flat, in others more rounded, but in any case there is always a dense mass of foliage.

Inside the scrub, which is 12 ft. or more tall, little is to be seen save the bare twisted stems and prostrate trunks of the shrubs, or small trees as they should be called, and the floor is quite bare. But frequently, where the roof is not altogether so thick, great colonies of the punui (*Stilbocarpa Lyallii*) spread for many yards, the bright and shining green leaves, each more than a foot in diameter, rising to a height of 3 ft. and more. Here, too, will be a luxuriant growth of the ferns noted above. The broadleaf is specially noteworthy on account of the size of its leaves, which recall those of its more northerly relative, *Griselinia lucida*.

*Olearia angustifolia* (Photo No. 15) is not nearly so abundant as the other shrubs, and is chiefly to be found in the bottoms of gullies or near the shore.

At the southern end of Mason Bay, above the cliffs, *Olearia angustifolia* makes an almost pure association. Where examined the shrubs were close-growing, 4 ft. or 5 ft. tall, and the ground was either bare beneath or there were the usual fern colonies.

(β.) *The Neck, the Old Neck, Glory Cove.*

At the Neck and the Old Neck a *Senecio-Olearia* association occupies the slopes to the sea and the rocky ground above the actual shore. The photos give some idea of the general appearance of the scrub and of individual plants (Photos Nos. 15 and 4).

At Glory Cove the narrow neck between Paterson Inlet and the ocean is filled with scrub, which, besides *O. Colensoi* and *Senecio rotundifolius*, contains a number of low forest-trees or shrubs—e.g., *Carpodetus serratus*, *Coprosma foetidissima*, *C. areolata*, *C. lucida*, *Griselinia littoralis*, *Fuchsia excorticata*, *Olearia nitida*, also the liliaceous *Astelia nervosa* and the ferns *Polystichum vestitum* and *Blechnum discolor*.

The *Senecio* and *Olearia* trunks are 1 ft. or thereabouts in diameter, and often prostrate or nearly so, though some are erect. Their frequent branching leads to a close entangled mass, as in a typical subalpine scrub (See Photo No. 4). On the floor, when the two dominant species are present, is nothing but dead leaves and an occasional plant of the ferns *Blechnum durum* and *Polystichum diversifolium*.

## 4. SALT MEADOWS AND RELATED ASSOCIATIONS.

So far as my observations go, salt meadows and marshes do not play any extensive part in the vegetation of Stewart Island. The old Mason Bay—Paterson Inlet strait is occupied still in many places by the salt-meadow plants *Leptocarpus simplex* and even *Apium prostratum*,\* but except at the mouth of the Freshwater River and near the mud-flats there is no salt meadow. My notes as to this locality are quite meagre, merely mentioning the following plants: *Leptocarpus simplex*, *Selliera radicans*, *Apium prostratum*, *Schoenus nitens* var. *concinus*, *Triglochin striatum* var. *filifolium*, *Cotula Traillii*; also, but how much exposed to brackish water is not clear, *Hierochloa redolens* and *Deschampsia caespitosa*.

Near the small creek flowing into Half-moon Bay at the old sawmill is a typical New Zealand salt meadow, except that in place of the halophytic grass *Atropis stricta* is *A. novae-zelandiae*.

The ground is flat, full of crabs' holes, and liable to flooding with brackish water: where wettest (liable to most flooding) *Atropis novae-zelandiae*, forming glaucous green tufts 4–6 in. tall, and with it some *Scirpus filiformis*; where drier there is a turf of bright shining green *Apium filiforme*, brownish *Samolus repens*, very small bright-green *Selliera radicans* (at times the dominant plant), tufts of *Atropis*, a little *Cotula pulchella*; and here and there tussocks of *Scirpus nodosus*, in the shelter and shade of which the *Apium* is much larger. Also, but not everywhere over the formation, are *Ranunculus acaulis* and *Crassula moschata*.

At Port William there is some wetter ground than the last described, where water lies always and salt-marsh conditions exist. Here is *Leptocarpus simplex* dominant; *Carex litorosa*; a very small amount of *Plagianthus divaricatus*; *Calamagrostis Billardieri*; *Selliera radicans*; and near the margin some *Arundo conspicua* and a little *Phormium tenax*, though these last cannot be called halophytes.

At the south end of Mason Bay, facing the Earnest Islands, is a terrace of boulders. This, although not a salt meadow, nor even a coastal moor (see Cockayne, 20, p. 317), is closely related to the latter.

As for the plants, *Asplenium obtusatum* is abundant everywhere. Between the boulders are—*Scirpus aucklandicus*, *Crassula moschata*, *Apium prostratum*, abundance of *Tetragonia trigyna*, *Samolus*

\* This is interesting as showing for how long a time plants "adapted" to a specific station (in this case halophytes) can still occupy the ground when the conditions of life are markedly changed.