

Saline-loving plants of Central Otago

by Neville Peat



Lepidium matau, one of New Zealand's rarest plants, in full flower at the Galloway Station saline area near Alexandra. Photo: Neville Peat

Few people place salt pans in a New Zealand landscape. But in the semi-arid, range-and-basin topography of Central Otago, saline soils do occur, harbouring distinctive plant and invertebrate communities, as Neville Peat, of Dunedin, reports.

WHAT'S A RESPECTABLE COAST-DWELLING (saltmarsh) glasswort like *Sarcocornia quinqueflora* doing in the Maniototo Valley, 70km from the sea?

Savouring the salty soils, that's what.

Clumps of it spread out over ground that would otherwise be bare of vegetation, too salty certainly for the ryegrass and clover which the farmer would prefer to see growing there.

Central Otago once had extensive salt pans. Through cultivation, irrigation and oversowing, these areas are now much re-

duced in number and extent. But the most resilient of them survive, a few hectares or square metres here and there.

They show up as patches of dirt, sometimes silky white. You might mistake them for random examples of wind or water erosion. But the plants around them know differently – small, ground-hugging, specialised plants and very distinctive. They tend to thrive under the freezing winters but come again in spring.

Probably the most distinctive plant of Central Otago's saline areas is *Atriplex buehneri*, which spreads its small leaves and delicate stems across the most salty and arid-looking sites.

The rarest plant of these salt-tolerant communities, however, is a native cress, *Lepidium matau*, a relative of the coastal Cook's scurvy grass (*Lepidium oleraceum*). Only about 30 plants of the species have been found, and it is known from only one site – a sloping half-hectare on Galloway Station near Alexandra. Part of the site forms the shoulder of a road (Crawford Hills Road to Moa Creek). This plant's creamy flowers dominate the foliage in spring.

L. matau rates among New Zealand's most endangered plants.

Two related species, *L. sisymbrioides* and *L. kirkii*, less rare but nonetheless vulnerable, are also associated with the salty areas of Central Otago.

Botanists recognised last century that salt pans harbour distinctive plant communities, but the entomological values of the saline areas of Central Otago were virtually un-

known until a scientist with the Department of Conservation in Dunedin, Brian Patrick, undertook a systematic survey of the most prominent sites in 1987-88.

Mr Patrick, who is a moth specialist, rediscovered a species of moth which had been lost to entomology for 50 years – *Paranotoreas fulva*. A small day-flying moth with orange and grey wings, it is now considered by Mr Patrick to be the species most characteristic of Central Otago saline areas. Its larvae feed on *Atriplex buehneri*. Adults are often found "sunbathing" on the bare, slick earth.

Several other moth species associated with the saline areas are found only in Central Otago.

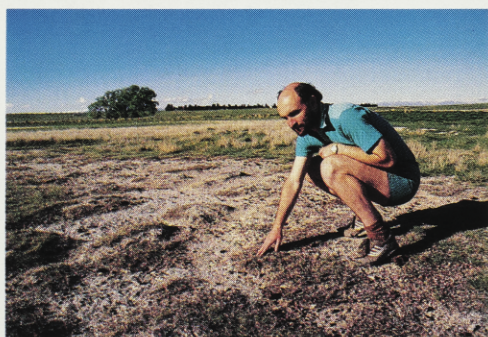
The study is fitting together the pieces of a distinctive ecology. Fauna linked to plants, plants linked to saline soils. But where did the salt come from in the first place?

DSIR soil scientist Gary Beecroft, of Dunedin, says the salinity derives from the crumbling and weathering of the ancient schist and greywacke rocks of Central Otago and the Upper Waitaki, which also bears a few salty patches.

The salts became concentrated and buried in the sediments of inland lakes which formed some 50 million years ago when the region was a peneplain.

Then, while still a peneplain, long before the block mountain ranges were hoisted up along fault lines, the region (or a good part of it) was flooded by the sea.

Mr Patrick and others believe the salt-tolerant plants endemic to Central Otago today



DoC scientist Brian Patrick examines outcrops of the glasswort, *Sarcocornia quinqueflora* at Belmont in the Maniototo Valley. Photo: Neville Peat