Return to previous file: Sfc166.pdf

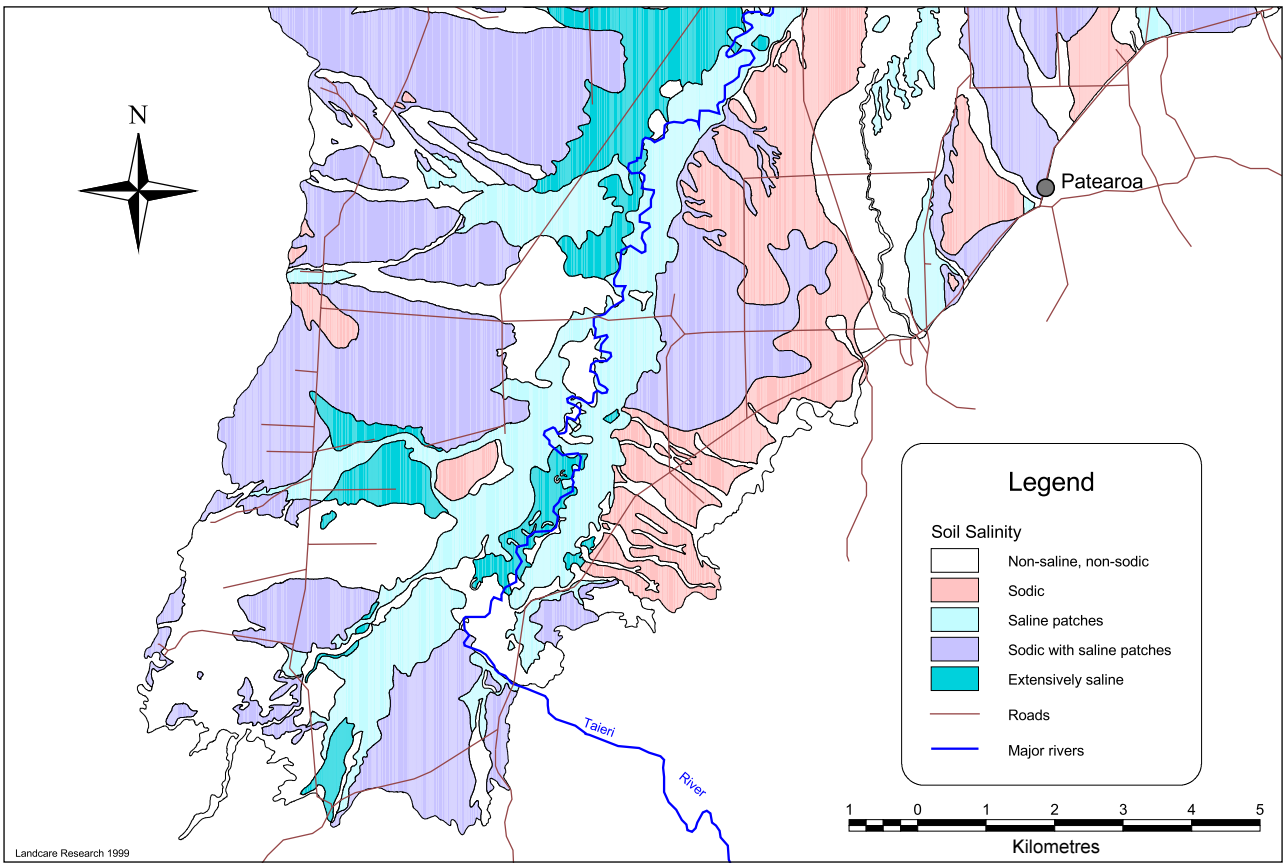

Figure 5. Saline and sodic soils of the south-western Maniototo Plain, an interpretation of soil information from Raeside et al. (1966).

substrate impermeability and the concentration of surface salt. Although our additional survey is restricted to observation from roads, our impression confirms the inventory results of McIntosh et al. (1990, 1992) that virtually no Maniototo-upper Taieri salt pans remain with ecosystem processes worthy of conservation. Those not completely obliterated by land cultivation have floors variously choked with pasture and weed species or flooded with irrigation water. Native halophytic plants have virtually disappeared. A small number of highly modified pans, probably underlain by Tertiary sediments, remain at Top Galloway and Rockdale in the lower Manuherikia Valley.

At 15 species and just one strict endemic, the inland halophytic flora is quite depauperate. This is probably consistent with depauperate floras worldwide that grow in the extreme geochemistry and drought-proneness of inland saline systems. Nevertheless, we suggest either a recent geomorphic and pedological origin or a discontinuous presence of saline patches during the Quaternary as plausible explanations for the depauperate flora. Central Otago's semi-arid climate which fosters the accumulation of salty soils in intermontane basins, probably arose with emergence of the folded and block-faulted mountains in the comparatively recent Kaikoura Orogeny. We have seen no inferential support for the proposition that Otago's salty soils derive from estuarine or sea-water sources in the mid Tertiary when a marine transgression flooded some of inland Otago (Peat & Patrick 1999). We subscribe to the more parsimonious explanation that the salt is derived from the weathering of predominantly schist bedrock in a semi-arid climate. Salt accumulation in the Tertiary sediments as well as in stratigraphically younger sediments (Fig. 1) is the product of erosion and redistribution from catchment bedrock sources.

Continue to next file: Sfc166b.pdf