

Recent Soil

New Zealand Soil Classification (NZSC) orders



Description

Recent soils, as their name suggests, are formed recently from deposited or eroded parent materials on which a new soil is formed. They can be highly productive soils but have a number of associated vulnerabilities and risks.

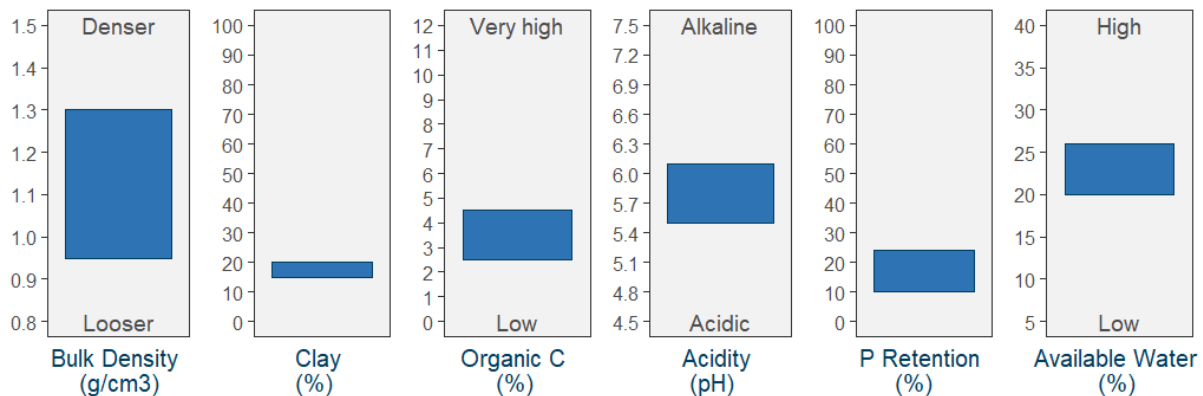
They make up 4% of soils in Otago.

Key characteristics

- ▶ **Parent material** Mostly schist rock, alluvium, and colluvium
- ▶ **Drainage** Moderate to well
- ▶ **Fertility** High
- ▶ **Rooting depth** Unlimited unless Rocky

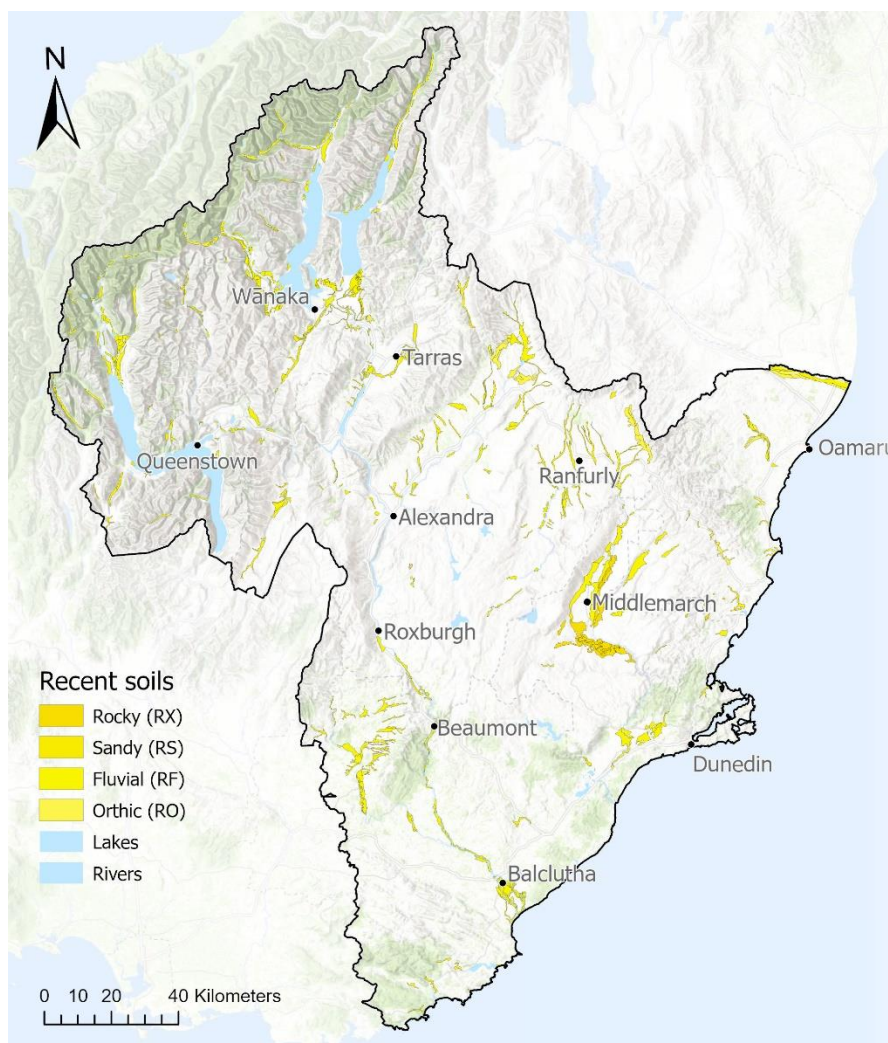


Expected ranges of Recent topsoil (0-10 cm) key properties². *C is carbon, P is phosphorus.*



Vulnerabilities

▶ Structural damage	High	The weakly developed structure of Recent soils makes them very vulnerable to structural damage from heavy machinery and pugging when the soil is wet.
▶ Nutrient loss	N	High Due to good drainage, N leaching risk can be significant.
	P	High P can easily be lost via bypass and surface flow due to low P retention and weak soil structure.
▶ Erosion	Medium	Low structural stability means they are erodible, but the majority are found at low slope angles thereby reducing risk.
▶ Waterlogging	Low	Owing to the moderate to high permeability, waterlogging risk is low. However, Fluvial soils are prone to flooding.



Occurrence

Recent soils are mostly found on the floodplains of the major river systems in Otago where thin layers of sediments are deposited during flooding events, gradually building a Recent soil. Some Recent soils occur in areas of eroded hill and mountain country.

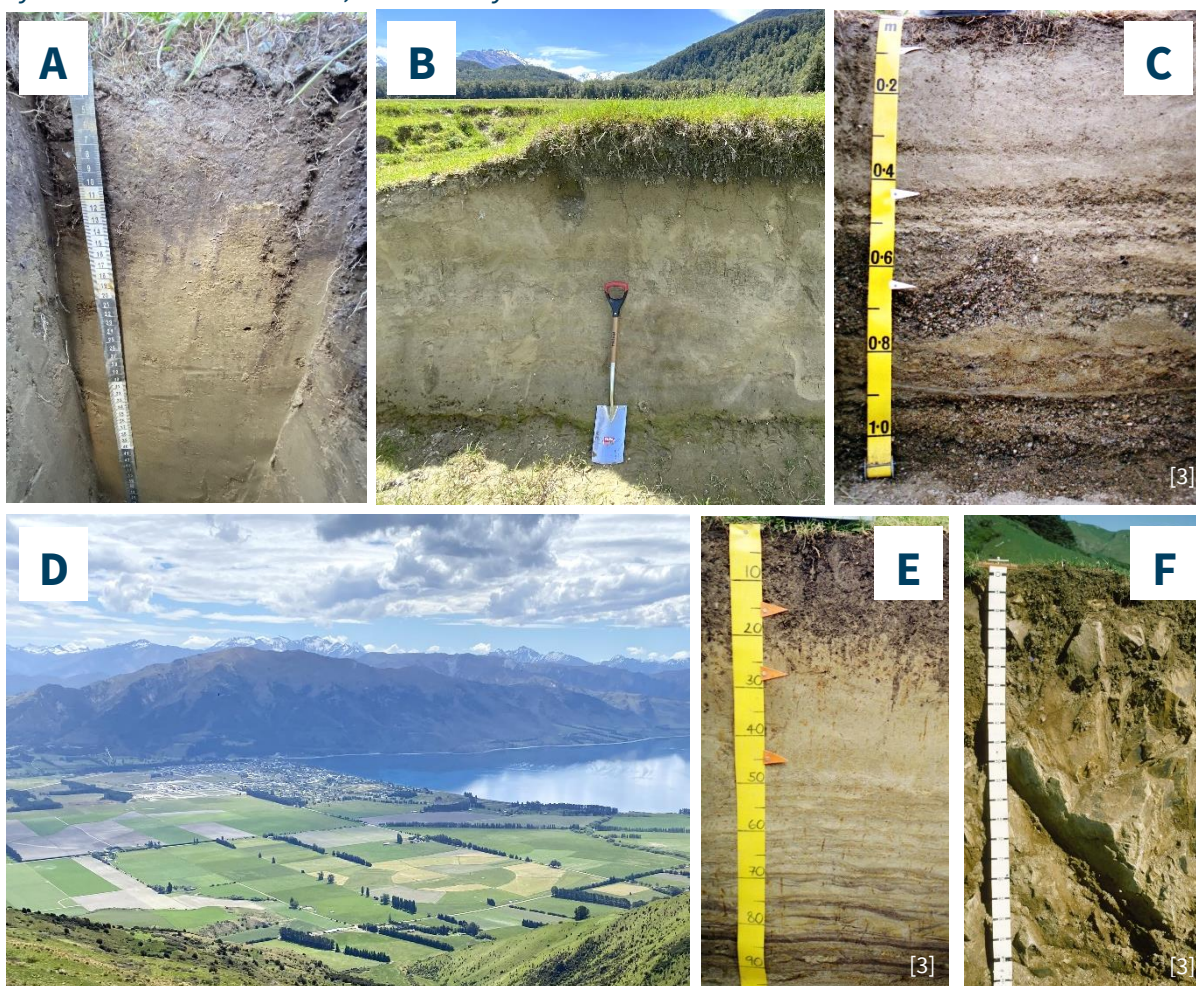
The map shows the regional extent of the different NZSC groups of Recent soil. For more detailed mapping see page 4.

NZSC group	%*	Description ²	Management considerations ²
Rocky	9	Hard (rock or dense) layer at shallow depth, often formed from erosion.	Due to the shallow topsoil depth, drainage is good but rooting and available water is limited. They are susceptible to drought. Irrigation must be carefully managed due to high N leaching potential and moderate structural stability.
Sandy	0.3	Dominated by sand or sandy textures.	Should not be ploughed and grazing animals, or forest harvesting, need to be managed carefully, as loss of ground cover may lead to wind erosion.
Fluvial	79	Formed in sediments deposited by flowing water.	Naturally fertile due to regular inputs of sediment with cations (Ca, Mg, and K) not yet leached. Deep rooting possible due to weak soil structure. Organic matter accumulates providing good storage of nutrients. Susceptible to flooding.
Orthic	11	Other Recent Soils, most commonly on eroded hillslopes.	Have moderate to low soil water holding capacity and very low vulnerability of water logging in non-irrigated conditions. These soils have no rooting limitation but very high structural and N leaching vulnerability.

*Extent of each group as a percentage relative to all Recent soils in the Otago region.

In the region

Fluvial Recent soils are the most extensive of the Recent soils in Otago and are common in proximity to the main river systems in Otago. These are often at risk of flooding and/or of liquefaction. Orthic Recent soils are found in pockets on the foot slopes of the Kakanui mountains and the colluvial fans and terrace slopes around Luggate, Hawea and the Waitaki and Kakanui rivers. Rocky Recent soils are found either side of the Taiari around Middlemarch where they are shallow and overly schist. Sandy Recent soils are only found in by the coast in the Catlins, where they are formed from sandstone alluvium.



A & B Deep uniform silty Fluvial Recent soils of the Dart floodplains. **C** Schist alluvium of a Fluvial Recent soil. **D** Productively used Fluvial Recent soils near Hāwea. **E** Imperfectly drained Recent soil profile showing lines of different sediment deposits over time. **F** Shallow Rocky Recent soil.

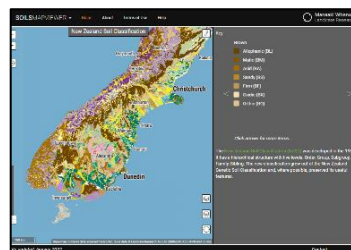
Sustainable management

<p>► Erosion & Structure</p>	<p>Maintain vegetation cover, no-till crop establishment and wind breaks can reduce erosion. Avoid working and grazing (or only lightly) when the soil is wet and build organic matter.</p>
<p>► Nutrients</p>	<p>It is recommended to always work with the 4Rs for fertiliser management: <i>right place, right time, right rate and right product</i>. Find out more information on fertiliser management here.</p>
<p>► General</p>	<p>For general guidelines on sustainable soil management you can find some useful links here.</p>

Soil maps

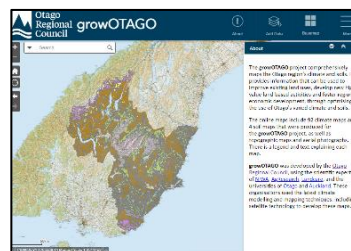
► Fundamental Soil Layer

Owner	Manaaki Whenua Landcare Research
Recommended use	Use at larger scales for general overview
Coverage	100%
Scale	1:50,000
Soil naming	NZSC
Development	Will be replaced by S-map
Link	soils-maps.landcareresearch.co.nz



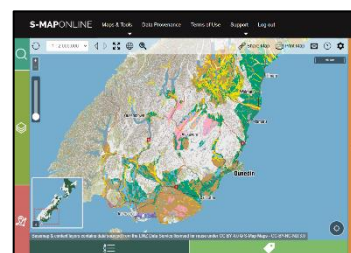
► growOTAGO

Owner	Otago Regional Council
Recommended use	Only use where S-map not available
Coverage	100% Otago (by lowland and upland)
Scale	1:50,000
Soil naming	Old regional soil series names
Development	Not planned
Link	maps.orc.govt.nz/OtagoMaps/



► S-map

Owner	Manaaki Whenua Landcare Research
Recommended use	Best available map. Use where present
Coverage	~30% of Otago
Scale	1:50,000
Soil naming	New S-map series names and NZSC
Development	Mapping ongoing
Link	smap.landcareresearch.co.nz/



For the te ao Māori of oneone (soil), including kaupapa Māori, history, and soil names, you can find more information [here](#).

Contact

For any questions you may have contact: science.enquiries@orc.govt.nz

Note - This Infosheet generalises typical average properties of the specified soil order and groups. It has been prepared in good faith by trained staff within time and budgetary limits. However, no responsibility or liability can be taken for the accuracy of the information and interpretations. Expert advice should be sought before making decisions on individual farms. The characteristics of the soil at a specific location may differ from those described here. The vulnerability ratings given in the table on page 1 are generalised and should not be taken as absolutes for this soil in all situations. The actual risk depends on the environmental and management conditions prevailing at a particular place and time.

References

- [1] Manaaki Whenua - Landcare Research 2023. The New Zealand SoilsMapViewer. https://doi.org/10.26060/9vfz_hw43. Photos reproduced with permission. Fluvial Recent
- [2] Hewitt, A.E., Balks, M. R., and Lowe, D.J., 2021. The Soils of Aotearoa New Zealand. Chapter 14 Recent Soils. Springer International Publishing.
- [3] New Zealand Society of Soil Science and Manaaki Whenua - Landcare Research photo library. Photos reproduced with permission.

