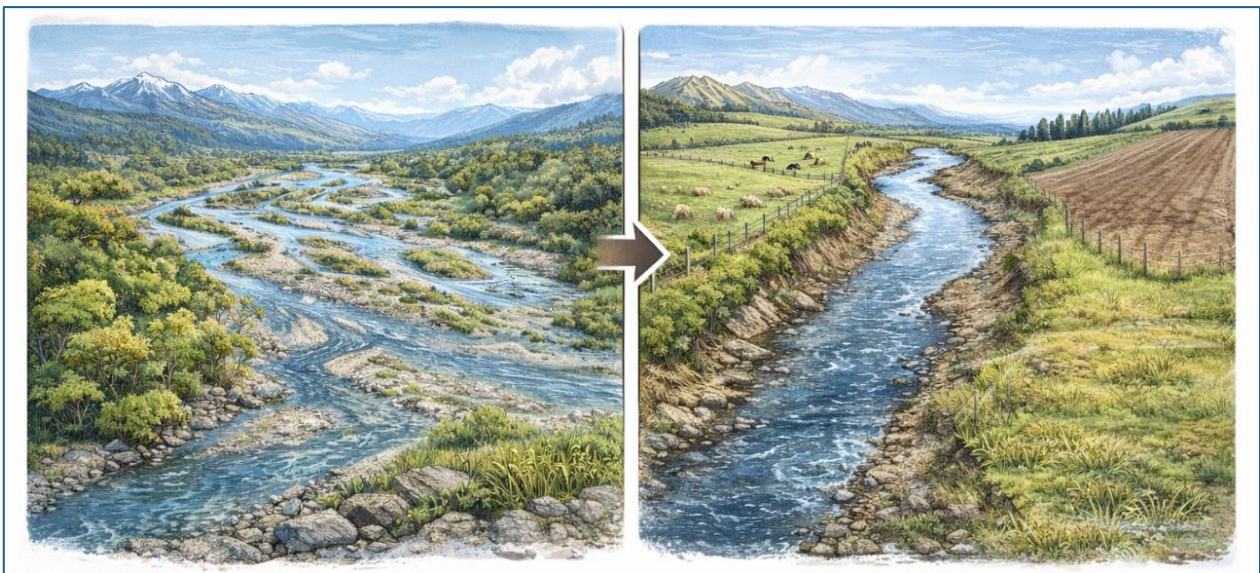


## Braided Rivers in Aotearoa–New Zealand

**Braided rivers are considered one of the most dynamic and complex freshwater ecosystems in the world.**

- ◆ These systems are characterised by wide gravel beds, numerous channels, highly variable flow regimes and limited riparian vegetation. There are over 150 braided rivers in Aotearoa–New Zealand, and they [span more than 250,000 hectares](#) largely across Canterbury (64%), the West Coast (15%) and Otago (7%).
- ◆ Braided rivers have naturally developed to transport [high sediment supplies from mountain landscapes downstream](#) to floodplains and the coast. Alpine braided rivers include the Hurunui, Waimakariri, Rakaia, Rangitata and Waitaki, and hill-fed braided rivers include the Rakahuri, Waikirikiri and Hakatere.
- ◆ These ecosystems support a rich biodiversity across a mosaic of habitat types that is often rare and endemic to the region. Many species have adapted specifically to live in these braided rivers environments.
- ◆ Our braided rivers [support over 80 bird species](#), including the tarāpuka–black-billed gull, kakī–black stilt and tarapirohe–black-fronted tern. In addition, they support numerous [freshwater fish and lizards](#).
- ◆ Despite their importance, braided rivers are increasingly threatened by [multiple natural and human pressures](#), such as extreme events, unnatural flow regimes, land-use changes, engineering and erosion-control works, invasive weed and algae growth and [weak legal protections](#).



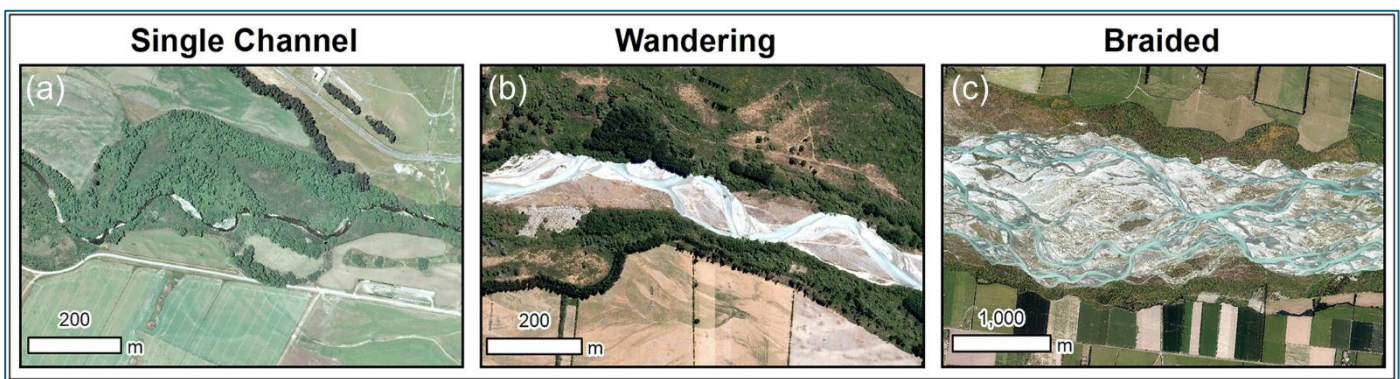
Source: Generated using ChatGPT (OpenAI), April 2026. Note: The removal of vegetation and encroachment over the riverbed alters the morphology, transitioning the braided river from a healthy functioning system (left) to an unhealthy and degraded system (right).

**The dynamic nature of braided rivers leaves them vulnerable to encroachment during reduced flows.**

- ◆ The law in Aotearoa–New Zealand often describes braided rivers as: [‘the space between riverbanks’](#). The lack of specificity fails to include the multiple, highly mobile river channels that are constantly changing.
- ◆ A critical first step to protecting braided river ecosystems requires that a clear, holistic definition on the physical extent to a riverbed is enacted, providing legislative clarity and preventing further encroachment.
- ◆ Te Kura Taka Pini [recommend improving the legal definitions](#) of both ‘river’ and ‘bed’ to include characteristics specific to braided rivers. For instance, a river ‘bed’ should include *“the extent of active channel(s) and marginal areas where river flows actively maintain overall natural river form and function”*.
- ◆ This coincides with a shift away from the ‘command-and-control’ approach to water management, which is required to enable the adoption of a [‘living with water’ paradigm](#).
- ◆ This paradigm shift has already begun and there are growing efforts to ‘re-braid’ or widen rivers using holistic management approaches, revealing a number of [ecological, hydrological and social benefits](#).

## The iconic braided pattern of these riverscapes is disappearing.

- ◆ Overtime, contemporary river management, agricultural intensification and encroachment, the development of instream barriers and modified flow regimes have disrupted braided river systems. Their [ability to respond to natural pressures](#), such as storms, and habitat diversity have both been compromised.
- ◆ Since the mid-1900s, braided rivers in Canterbury have [narrowed on average by almost 50% and by over 90% in some areas](#). A fifth of braided rivers in Canterbury have subsequently shifted from a unique braided pattern to [a simpler, wandering or single channel pattern](#).
- ◆ This has undoubtedly been driven by land-use intensification. Between 1990 and 2022, the total number of dairy cattle in the South Island [increased by 829%](#). Over the same period, the number of dairy cattle in Canterbury increased by over 1000% and in Southland by over 1650%.
- ◆ Simultaneously, the demand for irrigable land and irrigation increased. Around [84% of all irrigated agricultural land](#) is in the South Island, making it uncoincidental that [groundwater level reductions of up to 17 metres](#) have been observed in Mid Canterbury.
- ◆ Restoring and protecting natural riverbed boundaries presents the additional benefits of increasing groundwater levels and storage potential—as water infiltrates the subsurface system at a higher rate—as well as improved community [protection against natural hazards](#), such as floods or droughts.



Source: Barlow & Ashmore, (2024). River confinement and braiding loss in Canterbury region, Aotearoa New Zealand. Accessed from [Earth Surface Processes and Landforms | Geomorphology Journal | Wiley Online Library](#)

## Greater action is required as biodiversity is declining faster in freshwater environments.

- ◆ Globally, [the constriction or confinement of river channels](#) in their floodplains is a leading cause of biodiversity loss. Aotearoa–New Zealand is urgently required to address the multitude of pressures affecting our braided river systems to protect the rare and endemic species at risk.
- ◆ It is increasingly recognised that [holistic restoration and river management approaches are required](#) to deliver the necessary ecological outcomes and natural resilience against environmental hazards.
- ◆ The pressures on braided rivers [have system-wide effects](#) that require targeted actions and changes to management practices at the catchment scale to prevent further losses of [natural character](#).
- ◆ Holistic management approaches will also help to balance the often-competing interests, such as commercial, recreational and ecological, ensuring a range of stakeholders can enjoy braided rivers.
- ◆ Giving our rivers the space they need to migrate over the landscape [has been undervalued](#). However, now there is an important chance to realise environmental co-benefits and enhanced ecosystem resilience by reversing agricultural encroachment and restoring braided river floodplains.

Sources: O'Donnell et al., (2016). [Management and research priorities for conserving biodiversity on New Zealand's braided rivers](#); Hicks et al., (2020). [Morphodynamic research challenges for braided river environments: lessons from the iconic case of New Zealand](#); Gray et al., (2018). [Braided rivers: natural characteristics, threats and approaches to more effective management](#); Barlow & Ashmore, (2024). [River confinement and braiding loss in Canterbury region, Aotearoa New Zealand](#); Te Kura Taka Pini, (2026). [Ngāi Tahu Submission on the Freshwater Aspects of the Natural Environment Bill 2025 and Planning Bill 2025](#); McCabe et al., (2025). [The ecological benefits of more room for rivers](#); Wilkinson et al., (2025). [Towards Holistic Braided River Management: The Interface of Geomorphology, Hydrology, Ecology and Economics](#); StatsNZ, (2024). [Livestock numbers: Data to 2023](#); StatsNZ, (2024). [Irrigated land: Data to 2022](#); Dench & Morgan, (2021). [Unintended consequences to groundwater from improved irrigation efficiency: Lessons from the Hinds-Rangitapu Plain, New Zealand](#); Sayer et al., (2025). [One-quarter of freshwater fauna threatened with extinction](#).