

# 50 facts about Canterbury mudfish

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## General information

1. The scientific name for Canterbury mudfish is *Neochanna burrowsius*
2. One of five species of mudfish in New Zealand, there is also a species in Australia
3. The '*burrowsius*' part refers to Mr Burrows, who collected the first specimen, not to the reputed ability of mudfish to burrow
4. Mudfish are a galaxiid, this family also includes the whitebait species
5. Canterbury mudfish are found from the Ashley River in the north, to the south bank of the Waitaki River



## Description

6. Mudfish have a cigar shaped body with reduced fins and no scales
7. Brown in colour, they can have darker stripes and splotches, as well as gold flecks
8. Canterbury mudfish have pelvic fins unlike three of the other NZ mudfish, but each pelvic fin only has 4 - 5 rays, less than the 6 - 7 for other galaxiid fishes
9. Mudfish swim with an eel-like motion that allows easy movement through dense aquatic vegetation
10. In their head region, bones are strengthened, which may allow mudfish to burrow into stream banks
11. The longest Canterbury mudfish recorded is 157 mm

## Reproduction

12. Can reproduce in their first year, when some are as small as 55 mm long
13. Spawn in late winter to early spring
14. Scatter clear, 2 mm diameter eggs amongst dense aquatic vegetation near the water surface
15. Eggs take 2 weeks at 15 °C to develop and the nearly transparent larvae are 1 cm long
16. Canterbury mudfish have a high reproductive rate, a 100 mm long female may produce 2000 eggs
17. Their early sexual maturity and high reproductive rate means populations can recovery quickly after disturbance



## Behaviour

18. Canterbury mudfish do not migrate to the sea, remaining in freshwater habitat
19. Not being territorial, mudfish can occur in high densities (4.5 fish per m<sup>2</sup>), if habitat is suitable
20. Carnivorous, they eat worms, micro-crustaceans, snails, and insect larvae such as mosquitoes
21. Adults are largely nocturnal and are rarely seen by the casual observer
22. Larval and juvenile fish (< 40 mm), actively swim in the water column during the day and are readily seen from spring to early summer
23. All life stages have a tendency to disperse and colonise new habitats, compensating for habitat loss and disturbance
24. Canterbury mudfish in the wild have been found in holes that look like burrows, but in controlled trials mudfish did not burrow as water levels declined. There is much to learn about mudfish behaviour



## Habitat

25. Natural habitats are mainly spring fed streams flowing through wetland areas, with water sourced either from hill seepage, or groundwater
26. But they can be found in a wide variety of habitats, including dams, farm ponds, soakage pits, scour holes, under road culverts, and stockwater races
27. Mudfish do not need extensive or natural habitats to survive, populations can persist in small artificial ponds and water races
28. Many other species eat mudfish, including herons, bitterns, eels, and trout, thus mudfish are mainly found by themselves in habitat with lots of cover
29. Aquatic plants are an essential part of their habitat and mudfish are associated with the presence of certain native species
30. Heavy shade from riparian plants is not essential, the presence of aquatic plants is more important
31. Canterbury mudfish are considered a 'clean water species' doing best in habitat with generally high water quality, especially during spring





### Status and threats

32. Canterbury mudfish are named as a taonga (treasured) species in the Ngai Tahu Deed of Settlement 1997
33. Canterbury mudfish are acutely threatened, with the Department of Conservation currently classifying them as 'nationally endangered', this means they are the second most threatened native fish in NZ
34. By the time Canterbury mudfish were described in 1926, the Canterbury Plains had been transformed from vast wetlands into productive farmland
35. Once extensive populations have been repeatedly fragmented, reducing gene flow, which may lead to genetic problems
36. Canterbury mudfish already have low intra- and inter-population genetic diversity
37. Main threats are extreme environmental conditions, such as drought, and negative inter-specific interactions, such as the presence of trout, but landuse change and intensification can also threaten populations
38. Most remaining populations occur on private land and few are formally protected
39. Many populations occur in waterways that are directly used for irrigation, stock water, and land drainage, or are close to roads
40. Yet, it is possible to integrate Canterbury mudfish habitat into a productive agricultural landscape if managed responsibly



## Surviving drought

41. Canterbury mudfish are not well adapted to surviving periods of complete or extended habitat desiccation and have none of the adaptations found in species such as the lungfish
42. They do not actually aestivate (summer hibernation), because when out of water they remain active and do not significantly reduce their metabolic rate
43. Mudfish do have characteristics that indicate adaptation to seasonally stagnant habitats, and which have allowed them to survive droughts in Canterbury
44. Mudfish skin is permeable to water, ions, and gases, and through it they can absorb 40 % of their oxygen requirements
45. When placed in water with little oxygen content, Canterbury mudfish will gulp air at the water surface and hold a bubble in their mouths
46. They have amphibious tendencies and will readily leave the water if conditions deteriorate, but need moist conditions to survive
47. Mudfish have a low resting metabolic rate meaning they have low energy requirements, which allows them to survive starvation and low dissolved oxygen levels
48. Seasonal droughts may have ecological benefits if competitors or predators are present, because mudfish are more tolerant than many other fish; but these conditions can also limit mudfish populations
49. Mortality levels during drought have been found to be about 30 %, even in moist conditions
50. Mudfish living in habitats that dry up frequently are often stunted in size

