

This report card summarises the
2021 Native Fish Report Card
(NFRC) survey in the Mitchell River.

SITES: 11

ELECTROFISHING

Fish found in the Mitchell River for NFRC

▶ Target Species

✓ recorded in 2021



✓ **Australian Bass**

Perkalates novemaculeata



✓ **Australian Grayling**

Prototroctes maraena

** These non-target species were incidentally captured during NFRC surveys since 2017 but not measured as for target species.*

▶ Non-target species

✓ recorded since 2017*

Large-bodied native species

- ✓ Cox's Gudgeon
- ✓ Long-finned Eel
- ✓ Short-finned Eel
- ✓ Short-head Lamprey
- ✓ Striped Gudgeon
- ✓ Tupong

+ 10 estuarine species (see following pages)

Small-bodied native species

- ✓ Australian Smelt
- ✓ Common Galaxias
- ✓ Dwarf Flatheaded Gudgeon
- ✓ Flatheaded Gudgeon
- ✓ Australian Anchovy (estuarine)
- ✓ Port Jackson Glassfish (estuarine)

Exotic species

- ✓ Common Carp

Fish community

The NFRC Program began in 2017, with a focus on targeting the monitoring of population dynamics of key iconic fish species that have high recreational and/or conservation values, in large rivers across Victoria. In the Mitchell River, the target species are Australian Bass and Australian Grayling. Surveys occur in February each year, at 11 sites from Bairnsdale to Kingswell Bridge. The Mitchell River uses Smith-root boat electrofishing, with elevated salinities at the two bottom sites requiring Grassl boat electrofishing¹. The equipment and habitats surveyed are focused on these species, which are measured to determine population structures. Other fish species that are incidentally captured are recorded, but not measured to determine their population structures.

Summary of key health indicators for target species in 2021

Species	Key Health Indicators		
	Recent recruitment	Multiple size classes	Mature fish present
Aust. Bass	Yes	Yes	Yes
Aust. Grayling	-	-	-

Recent recruitment means young-of-year fish

* - cannot be determined due to low abundances

Australian Bass are close to the edge of their natural range in the Mitchell River system. Historically they occurred no further west than Wilsons Promontory. Australian Bass are an important recreational species in the Mitchell River with the population aided by stockings. Australian Grayling were once widespread throughout coastal Victoria, including this system. Changes to flow regimes and barriers have impacted this species. The detection of Australian Grayling in four of the five years indicates that conditions are suitable for the population.

Non-target species

The non-target fish species that have been incidentally recorded in the Mitchell River during NFRC surveys since 2017 are:

Large-bodied native species

Other large-bodied species recorded in surveys are Black Bream, Cox's Gudgeon, Eastern Australian Salmon, Estuary Perch, Flat-tail Mullet, Long-finned Eel, Luderick, River Garfish, Sand Mullet, Sea Mullet, Short-finned Eel, Short-head Lamprey, Striped Gudgeon, Tailor, Tupong and Yellow-eye Mullet. Ten of these species (Black Bream, Eastern Australian Salmon, Estuary Perch, Flat-tail Mullet, Luderick, River Garfish, Sand Mullet, Sea Mullet, Tailor and Yellow-eye Mullet) are considered as estuarine

species. Long-finned and Short-finned Eel, Short-headed Lamprey and Tupong are diadromous species found throughout coastal Victoria. Within Victoria, Cox's Gudgeon and Striped Gudgeon and are only found in coastal areas of eastern Victoria. Cox's Gudgeon is listed as endangered under the FFG Act 1988 in Victoria. Cox's Gudgeon was recorded in 2019 (the first record in the Mitchell catchment since 1982) and again in 2021. The Striped Gudgeon was recorded in 2017 and 2018.

Small-bodied native species

The Australian Smelt is a common species distributed across all of Victoria. The Common Galaxias is a diadromous species found across coastal Victoria. Flatheaded Gudgeon is common across Victoria, whilst Dwarf Flatheaded Gudgeons have a more restricted distribution and a rarer. Both Australian Anchovy and Port Jackson Glassfish are estuarine species and are only expected to be detected at the lowest two sites

Exotic fish species

Common Carp have been detected in all sampling years and are widespread throughout the Mitchell River, with juveniles detected as far as Kingswell Bridge in 2020.

Other native fish species known from the Mitchell River

Some fish species known to occur in the Mitchell River have never been recorded during NFRC surveys. For example, no Climbing Galaxias, Dwarf Galaxias, Mountain Galaxias or Spotted Galaxias, Flinders Pygmy Perch, Pouched Lamprey or River Blackfish have been detected in the surveys. The Climbing Galaxias, Spotted Galaxias and Pouched Lamprey are diadromous species occurring in coastal Victoria. The Climbing Galaxias and Spotted Galaxias have patchy distributions and are found in lowland areas but are hard to detect using NFRC sampling methodology. The Pouched Lamprey was considered widespread but in recent times adults are rarely seen and are usually active nocturnally. The Mountain Galaxias is found on both sides of the Great Dividing Range from Melbourne eastwards in Victoria. In the Mitchell River they are widespread and patchy in the lower areas, but more common in higher altitudes and are hard to detect using the NFRC sampling methodology. The Dwarf Galaxias (listed as vulnerable nationally under the Environmental Protection and Biodiversity Conservation Act 1992) and Flinders Pygmy Perch (listed as vulnerable in Victoria under the FFG Act 1988) are often found in offstream habitats. The River Blackfish are a lowland species, generally found at altitudes below 200 metres. This species has suffered a decline in distribution and abundance across Victoria and was historically considered to be widespread, but with a patchy distribution within the Mitchell River basin².

Other notable species

Surveys have also recorded Platypus.

Environmental and Management Context

Environment

Low flow conditions were present in all five sampling seasons, albeit slightly higher in 2021. During 2020 and 2021 there was elevated turbidities due to increased sediment loads following the 2019/2020 fires. These elevated turbidities will have decreased electrofishing efficiency in those two years.

River rehabilitation efforts in the Mitchell River

Many rehabilitation actions have occurred, and are underway, to improve the health of the Mitchell River. These are informed in particular by the East Gippsland Waterway Strategy 2014-2022. Efforts include revegetation, weed control and fencing of riparian areas, bank stabilisation and reintroduction of instream woody habitat. Some monitoring of the fish community has occurred including associated with rehabilitation efforts. In the upper Mitchell River catchment well above the NFRC area, there have been surveys of a suite of threatened galaxiid species as well as Forest Protection Survey Program (FPSP) surveys of fish and crayfish. The [East Gippsland Catchment Management Authority](#), DELWP and the [Victorian Fisheries Authority](#) support rehabilitation and management of the Mitchell River and its fish community.

See the ARI website for more information about the [Native Fish Report Card program](#).

¹ Lieschke et al. (2019). Extending the effectiveness of electrofishing to estuarine habitats: Laboratory and field assessments. *Transactions of the American Fisheries Society*, 148:584–591.

² Lieschke et al. (2013). The status of fish populations in Victorian rivers 2004–2011 – Part A. Arthur Rylah Institute for Environmental Research Technical Report Series No. 246. Department of Environment and Primary Industries, Heidelberg, Victoria.

The NFRC program, and related monitoring initiatives, provide improved understanding of the structure of fish communities and how rivers can be best managed.



Figure 1. Map showing the section of Mitchell River where NFRC sampling occurs

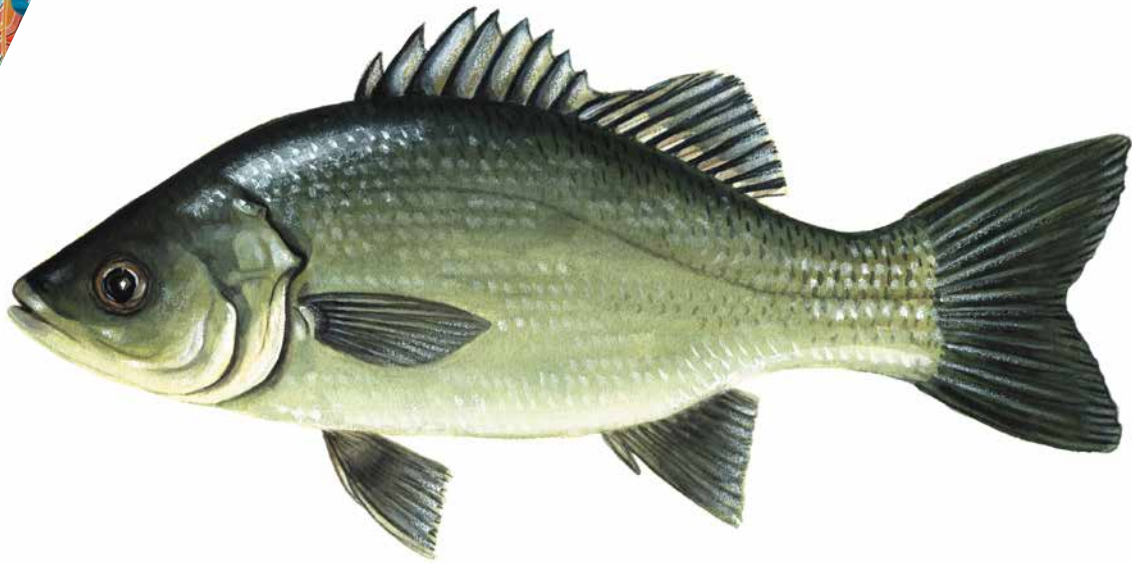
Figure 2. An Australian Bass

Figure 3. An Australian Grayling



Australian Bass

Percalates novemaculeata



Key Health Indicators

- ✓ Recent recruitment
- ✓ Multiple size classes
- ✓ Mature fish present

Monitoring Results

Total number of fish caught	45
Fish per 1km of waterway	6.65
Largest fish by length (cm)	37
Largest fish by weight (kg)	0.88
% of the catch that is legal size	20

MITCHELL RIVER

RECREATIONAL SPECIES

Australian Bass (*Percalates novemaculeata*) - formerly *Macquaria novemaculeata* - are a targeted recreational fishing species in the Mitchell River. Recruits, juveniles and adults have been collected in all five years of surveys (Figure 4). The population abundance is dominated by recruits, which are likely from stockings. Even though recruits made up nearly 50% of the fish collected in 2021, there was a wide range of size classes including large adult fish (Figure 5). There is limited evidence of survivorship with no increase in adults or larger juveniles between 2017 and 2021 sampling. This may be a sampling issue with insufficient sites represented across the catchment and a large gap between the Fernbank-Glenaladale Road sites and Angusvale, where access for boat electrofishing is limited. Also of note was the increase of the abundance of Australian Bass in 2021 at the lowest site on the Mitchell River. Previously 0-3 fish were captured at this site, while 19 fish were captured in 2021 (lengths ranging from 58-366 mm). This site is at the top of the estuarine influence and the water conductivity was considerably lower at this site in 2021, due to a recent rainfall event increasing flows.

Stocking

Ten thousand Australian Bass were stocked in late 2016; 150,000 in late 2017; 30,000 in late 2018, 44,000 in 2019 and 66,000 in 2020.

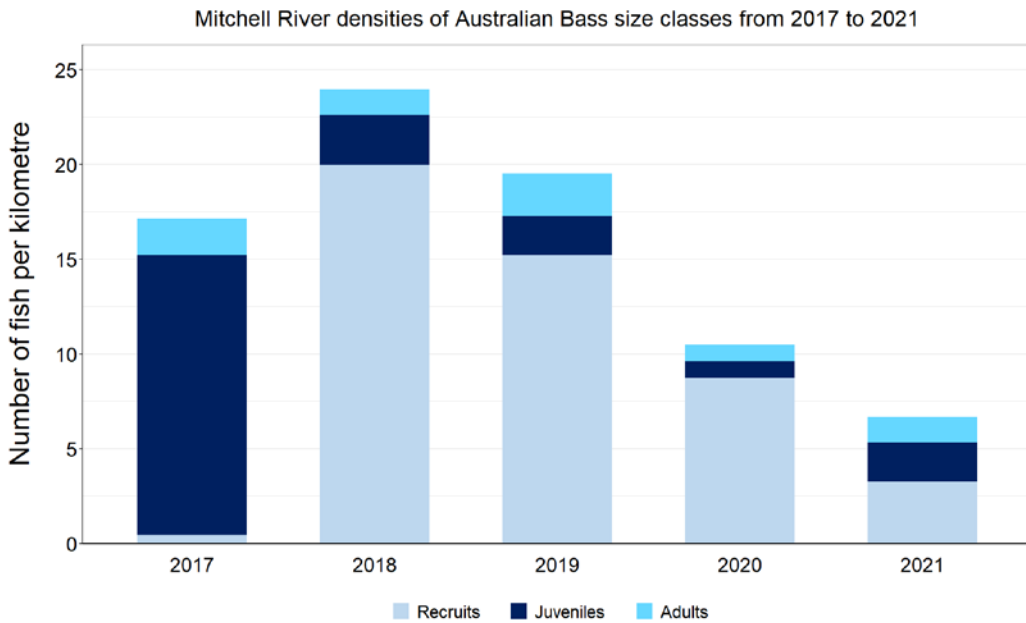


Figure 4. The densities of recruits, juveniles and adult Australian Bass Perch for NFRC surveys in the Mitchell River from 2017 to 2021

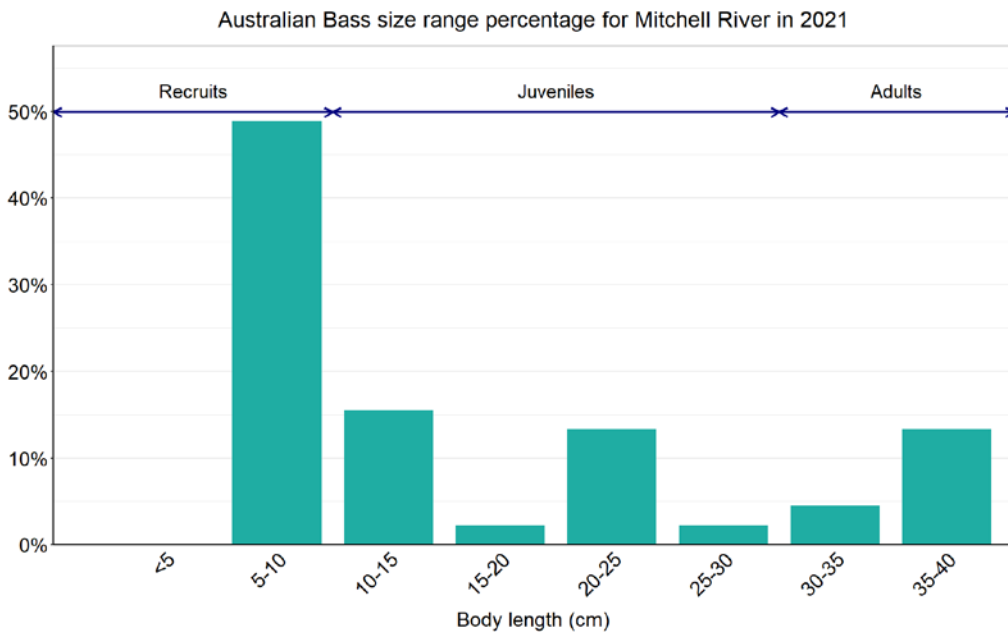
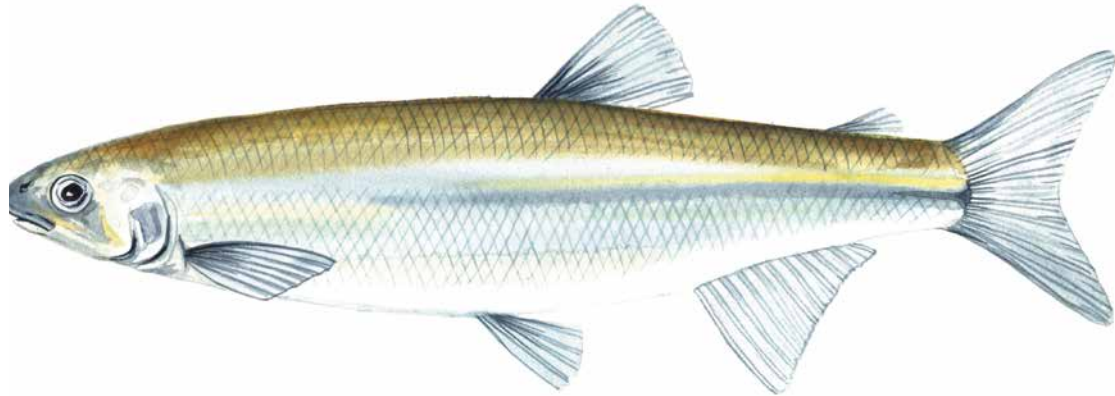


Figure 5. The size range percentage of Australian Bass measured from the Mitchell River during NFRC surveys in 2021.

Australian Grayling

Prototroctes maraena



Key Health Indicators

- Cannot be determined
- Cannot be determined
- Cannot be determined

Monitoring Results

Total number of fish caught	10
Fish per 1km of waterway	1.48
Largest fish by length (cm)	21.9
Largest fish by weight (kg)	0.05
% of the catch that is legal size	NA

Stocking

No stocking has occurred.

MITCHELL RIVER

THREATENED SPECIES

Australian Grayling (*Prototroctes maraena*) are a diadromous species which has undergone declines in distribution and abundance across its range. The species is listed as endangered in Victoria (Flora and Fauna Guarantee Act 1988) and nationally (Environmental Protection and Biodiversity Act 1992). While NFRC expects to only capture low numbers of this species, the monitoring can provide a greater understanding of the current status of the populations which is essential to inform management of these species. Due to the low abundances of Australian Grayling collected during NFRC the key health indicators cannot be determined. However, low abundances of adults have been captured in 2017, 2019, 2020 and 2021 (Figure 6). Low abundances of juveniles were detected in 2017, while low abundances of recruits were detected in 2020 and 2021 (Figure 6). Fifty percent of Australian Grayling captured in 2021 were recruits and fifty percent were adults (Figure 7). Another 23 young-of-year or juveniles were observed in 2021, indicating successful recent recruitment. This indicates stream conditions were suitable for recruits to be attracted into the system in 2020, despite elevated sediment loads following the 2019/2020 fires. It is worthwhile noting that seven adult fish were recorded in the Dargo River (a tributary of Mitchell River) during autumn 2019 as part of another program (Wild Trout Fisheries Management program -Lieschke unpublished data).

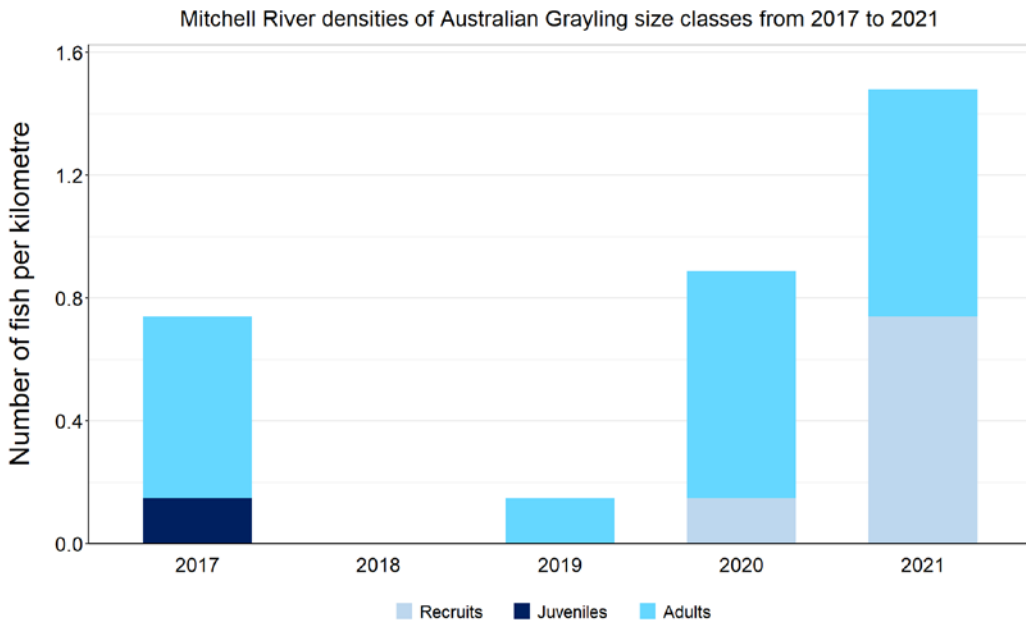


Figure 6. The densities of recruits, juveniles and adult Australian Grayling for NFRC surveys in the Mitchell River from 2017 to 2021

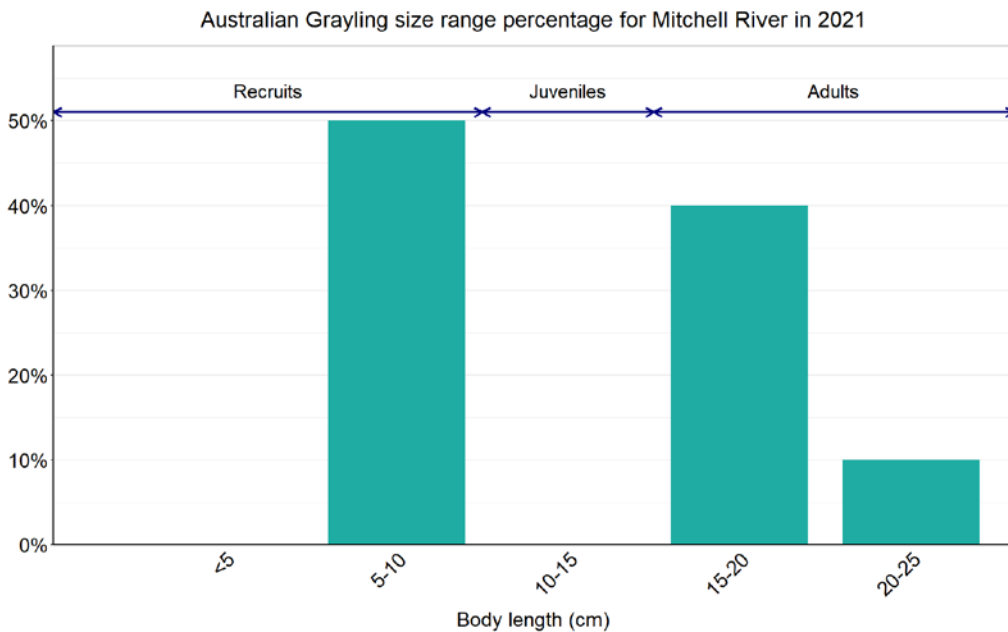


Figure 5. The size range percentage of Australian Grayling measured from the Mitchell River during NFRC surveys in 2021.