

NSW Trout Fisheries Annual Report Cards

2020/21 survey results

Summary

This document includes the 2020/2021 report cards for the NSW stream based trout fishery. The monitoring and associated report cards have been developed to provide information to anglers and managers on how the fishery is tracking across the Northern, Central, and Southern trout fishery regions. This report summarises the 3rd year of annual sampling which took place between September 2020 and June 2021. Overall, the report cards indicate that the NSW trout fisheries appear to be in a recovery phase following bush fires and drought during 2019/2020. The recovery includes improved angling opportunities with larger fish beginning to be recorded in the Southern and Central regions following years of low abundance of large fish. However, further recovery is still required, especially in the Northern region.

Background

NSW trout fisheries are challenged by a range of environmental impacts (e.g., drought, bushfires, pest species and habitat degradation) and other factors such as access restrictions. Trout populations naturally vary from year to year due to a range of environmental and biological factors, and it is important to track these changes to appropriately manage the fishery. We have adopted a standardised backpack electrofishing programs widely used throughout the world to track changes in river based trout fisheries. The data collected can provide valuable information about the fishery to managers and anglers alike. As a result, NSW DPI Fisheries has developed a state-wide trout monitoring program as a critical component of the NSW Trout Strategy.

These surveys provide an indication of abundance (number of fish) and population structure (size) in each region. Completing surveys at several sites shows if there is any variation between locations and when repeated year to year, this gives an indication of any changes in the fishery over time. Importantly, survey methods such as electrofishing do not detect all fish in the system and are likely to underestimate the fish numbers, but these methods provide a repeatable way to obtain a representative sample of fish at each site in each year. Overall, the NSW trout monitoring program aims to determine how the river based trout fisheries are tracking as well as determining the initial success of fish stocking events. This information will be available to managers and anglers in the form of report cards shared electronically (via web and social media) as well as through this document. This document will be prepared annually and report cards provided for the Northern and Central locations in November/ December each year. Due to later stocking events, the Southern report card and this document is likely to be provided later in the season (e.g., late Summer or early Autumn).

What we did

During the NSW Trout Strategy workshops in 2018, stakeholders were asked to indicate key streams for spawning, monitoring, and habitat rehabilitation. From these workshops, 45 stream monitoring sites were identified across the state (see Figure 1). This includes 15 indicator sites in each of the North, Central, and Southern NSW trout fisheries. These sites are sampled annually to provide representative data on the long term trends in the river fisheries in each region. Sampling at each site occurs at least 6 weeks after the last stocking event in that area. The survey streams are designed to be indicators on how the fishery is tracking in each region (and across the state) and are less a report card on each specific river or site.

Backpack electrofishing was used in all water ~1m deep or less at each site and included 8 x 150 second shots (typically ~500m of stream at each site). The length of stream covered by each electrofishing shot was measured to allow the number of fish per 100m to be calculated. All trout captured at each site are measured (fork length to the nearest mm) and released. This method of electrofishing for trout and reporting the number of fish per 100m is widely used to monitor stream trout populations throughout the world. Overall, monitoring of the NSW trout populations has adopted international best practice and scientifically rigorous techniques which will also allow comparison across years, to previous survey data from NSW streams and to surveys completed in other trout fisheries.

How to read the NSW trout report cards: The report cards provide an overall rating for the region with a rating summary provided in the top right (see key below) and more specific values in the lower left of the card. Key highlights from the region are presented in the top left of the report card and represent the rivers that performed best in each category for that region.

Abundance	A = >10 fish/ 100m at 3 or more rivers B= At least 5 fish/ 100m at 3 or more rivers C= At least 2 fish / 100m at 3 or more rivers D= At least 0.5 fish/ 100m at 3 or more rivers F= 0 – 0.5 fish/ 100m at 3 or more rivers
Recent recruitment/ stocking success	A= Fish <12cm at 12 or more sites B= Fish <12cm at 8 to 11 sites C= Fish <12cm at 3 to 7 sites D= Fish <12cm at 1 to 2 sites F= no fish <12cm
Mature fish	A= Fish >25cm at 12 or more sites B= Fish >25cm at 8 to 11 sites C= Fish >25cm at 3 to 7 sites D= Fish >25cm at 1 to 2 sites F= no fish >25cm
Multiple size classes	A= various sized fish from 5 to >45cm B= various sized fish but few very large or few smaller fish C= various sized fish but no very large or very small fish D= very limited size range F= only one size range
Distribution	A= All sites contain trout B= 10-14 sites contain trout C= 6-9 sites contain trout D= 3-5 sites contain trout F= <3 sites contain trout
Overall rating	Excellent = A or B on all categories across both species Good = A, B or C on all categories for both species Moderate = Mostly A, B, C on all categories for both species Poor = Multiple D and F for both species Very poor= D and F on all categories across both species

How to interpret length frequencies diagrams: length frequency diagrams are a standard tool used in fisheries science and management to understand fish populations. The length frequency data provides a snapshot into the dynamics of the population (e.g., recruitment, growth, and mortality). The diagrams show the percentage of the population which is in each size category and these can be found in this document after the report cards. For trout population in NSW we can expect to see a large percentage of the population as small juveniles as they enter the fishery (via spawning and stocking) and another peak or two in the graph which would indicate the last few years of recruitment. A broad size range of fish with a larger proportion of smaller fish compared to larger fish is considered normal.

Monitoring sites



Northern Trout Monitoring Sites

Waterway	Site	Coordinates
Guy Fawkes River	Ebor	-30.404659, 152.348607
Guy Fawkes River	Majors Point Rd Bridge	-30.396033, 152.382973
Guy Fawkes River	Bees Nest Trail	-30.146332, 152.305982
Manning River	Manning River Campground	-31.880016, 151.490482
Manning River	Gummi Rd	-31.859298, 151.551508
Manning River	Thunderbolts Way	-31.858729, 151.878854
Styx River	Little Styx Campground	-30.507985, 152.366581
Styx River	Thungutti Campground	-30.500473, 152.387512
Styx River	Jeans Rd	-30.517793, 152.302520
MacIntyre River	Elsmore Rd	-29.899849, 151.402615
MacIntyre River	Paradise Creek	-29.873849, 151.408246
MacIntyre River	Querra Creek	-29.928443, 151.441038
MacDonald River	Niangala Rd	-31.034689, 151.437110
MacDonald River	Surveyors Creek	-30.983745, 151.385841
MacDonald River	D/S Cobrabald River	-31.096038, 151.465838
MacDonald River	Alternate – Cobrabald River	-31.103463, 151.466799



Central Trout Monitoring Sites

Waterway	Site	Coordinates
Campbell's River	Swallows Nest Rd	-33.784802, 149.604983
Campbell's River	Dogs Rocks	-33.770400, 149.57641
Campbell's River	Below Chifley	-33.557531, 149.618745
Fish River	Tarana	-33.520963, 149.859105
Fish River	Mutton Falls	-33.547595, 149.792032
Fish River	O'Connell Bridge	-33.525740, 149.723684
Cox's River	Glenroy	-33.549633, 150.148111
Cox's River	Hartley Reserve (River Lett)	-33.545858, 150.165123
Cox's River	Marrangaroo NP	-33.472278, 150.08335
Duckmaloi River	Burrough's TSR	-33.773950, 149.907290
Duckmaloi River	Spring Mount	-33.830883, 149.907320
Duckmaloi River	Cascadeurs Camp	-33.818745, 149.898484
Cudgong River	Melrose Bridge	-32.650249, 149.672501
Cudgong River	Riverlea	-32.692702, 149.720768
Cudgong River	Below Windamere	-32.716966, 149.760584



Southern Trout Monitoring Sites

Waterway	Site	Coordinates
Goobarragandra River	Pretty Sally	-35.426417, 148.450842
Goobarragandra River	Ugly Creek	-35.439725, 148.491813
Goobarragandra River	Emu Flat	-35.428197, 148.512971
Goodradigbee River	Flea Creek	-35.335860, 148.754104
Goodradigbee River	Brindabella Rd	-35.384628, 148.744323
Goodradigbee River	Koorabri	-35.461752, 148.716470
Mowamba River	Barry Way	-36.479997, 148.590723
Mowamba River	Big Yard	-36.48356, 148.53864
Mowamba River	Moonbah Hut	-36.501124, 148.481695
Numeralla River	Dangalong Nature Reserve	-36.361321, 149.324711
Numeralla River	Numeralla TSR	-36.46075, 149.38027
Numeralla River	Kybeyan TSR (Kybeyan River)	-36.36297, 149.42185
Snowy River	Snowy portal	-36.289985, 148.510933
Snowy River	D/S Guthega	-36.375982, 148.373845
Snowy River	U/S Lake Jindabyne	-36.316602, 148.548791

Figure 1. Monitoring sites in the Northern, Central, and Southern NSW trout fisheries.



Northern Region

REGION HIGHLIGHTS

FISH PER 100M	Guy Fawkes River
CATCHABLE FISH PER 100M	Styx River
LARGEST CAUGHT	Styx River
AVERAGE SIZE OF CATCHABLE TROUT	Styx River
BEST FOR RAINBOW TROUT	Styx River
BEST FOR BROWN TROUT	Guy Fawkes River

LOOKING AHEAD

- » Locally high abundance of juvenile rainbow trout were recorded in the Guy Fawkes River and Styx River, indicating recovery of these streams from the fires and low flows of 2019/2020. Low abundances were recorded at the remainder of the sites suggesting further stocking will be required in 2021/22.
- » Despite the low abundance at most sites, juvenile trout were recorded in all rivers suggesting recovery from 2019/2020. With improved conditions in 2021 and continued stocking, it is expected trout abundance will increase across the entire region for the 2021/22 report cards.

OVERVIEW OF RESULTS

RAINBOW	BROWN	
2.4	0.4	FISH PER 100M
0.03	0.03	CATCHABLE FISH PER 100M
21cm	23cm	LARGEST CAUGHT
20cm	21cm	AVERAGE SIZE OF CATCHABLE TROUT

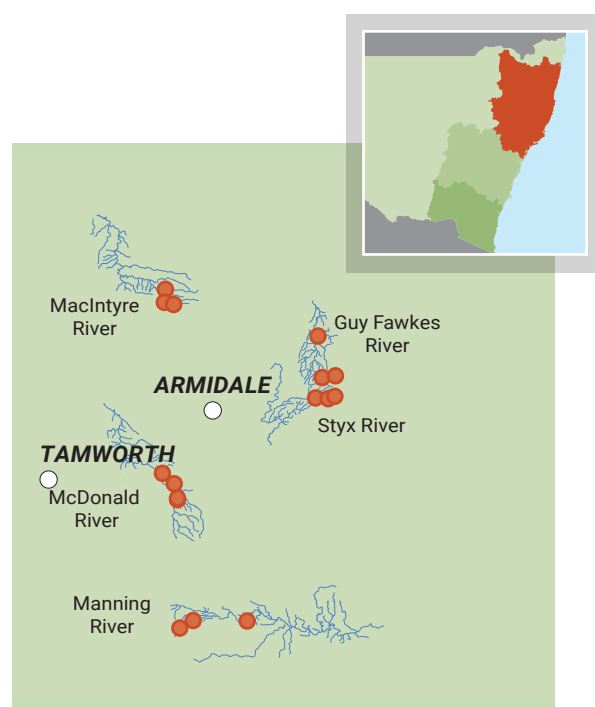
OTHER SPECIES RECORDED

- » Cox's gudgeon, smelt, catfish, longfin eel, goldfish, mountain galaxias & mosquitofish

Last Surveyed October 2020

Report Card

	RAINBOW	BROWN
ABUNDANCE	F	F
RECENT RECRUITMENT	B	D
MATURE FISH	F	F
MULTIPLE CLASS SIZES	D	D
DISTRIBUTION	B	F
OVERALL RATING	Poor	





Central Region

REGION HIGHLIGHTS

FISH PER 100M	Fish River
CATCHABLE FISH PER 100M	Cudgegong River
LARGEST CAUGHT	Cudgegong River
AVERAGE SIZE OF CATCHABLE TROUT	Cudgegong River
BEST FOR RAINBOW TROUT	Cudgegong River
BEST FOR BROWN TROUT	Cudgegong River

LOOKING AHEAD

- » Many sites had strong survival and good numbers of small rainbow and brown trout.
- » Signs of improvement in angling opportunities were recorded at many sites with evidence of ~2 year old fish (20-30cm) recorded at some sites. With suitable conditions in 2021, it is expected that larger fish (>35cm) may be more abundant in 2021/22 sampling.
- » The Cudgegong River recorded high abundance and broad size range of both rainbow and brown trout in 2020/2021. This might suggest that tailrace fisheries will provide angling opportunities in 2021/2022 season while streams impacted by drought continue to recover.

OVERVIEW OF RESULTS

RAINBOW	BROWN	
3.4	1.0	FISH PER 100M
0.1	0.15	CATCHABLE FISH PER 100M
33cm	50cm	LARGEST CAUGHT
29cm	32cm	AVERAGE SIZE OF CATCHABLE TROUT

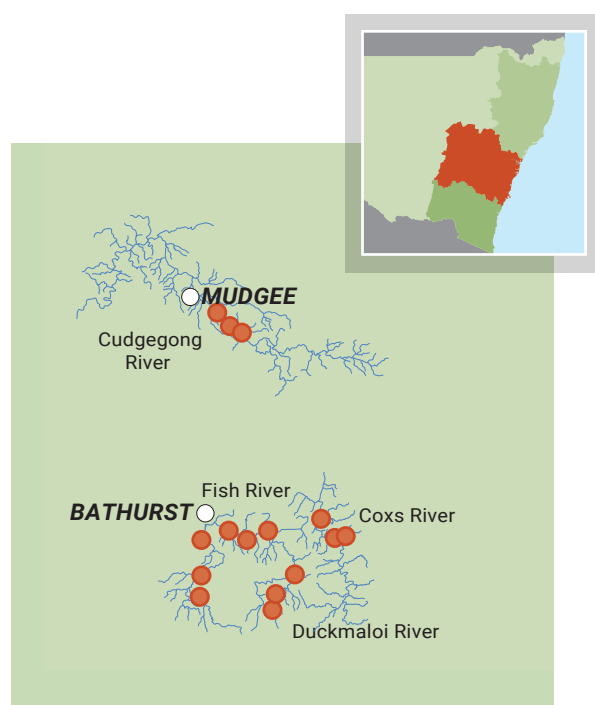
OTHER SPECIES RECORDED

- » Mountain galaxias, redfin & carp

Last Surveyed October 2020

Report Card

	RAINBOW	BROWN
ABUNDANCE	C	D
RECENT RECRUITMENT	A	C
MATURE FISH	D	D
MULTIPLE CLASS SIZES	C	A
DISTRIBUTION	B	D
OVERALL RATING	Moderate/Poor	





Southern Region

REGION HIGHLIGHTS

FISH PER 100M	Mowamba River
CATCHABLE FISH PER 100M	Mowamba River
LARGEST CAUGHT	Goobarragandra River
AVERAGE SIZE OF CATCHABLE TROUT	Mowamba River
BEST FOR RAINBOW TROUT	Snowy River
BEST FOR BROWN TROUT	Mowamba River

LOOKING AHEAD

- » This report focuses on resident stream fish in the southern region and does not reflect spawn run fisheries or those supplemented by lakes. Keep an eye out for the spawn run monitoring data on the NSW DPI recreational fisheries research website.
- » All streams recorded strong survival of fish stocked in 2021 (now 10-15cm) as well as those stocked in 2020 (25cm+), suggesting recovery in many streams across the region.
- » Tailrace fisheries (e.g., Tumut and Swampy Plains Rivers) are still providing strong angling opportunities in this region. These are not included in this sampling due to the size and higher flows which make surveys more complex.

OVERVIEW OF RESULTS

RAINBOW	BROWN	
1.2	1.4	FISH PER 100M
0.15	0.74	CATCHABLE FISH PER 100M
30cm	47cm	LARGEST CAUGHT
24cm	29cm	AVERAGE SIZE OF CATCHABLE TROUT

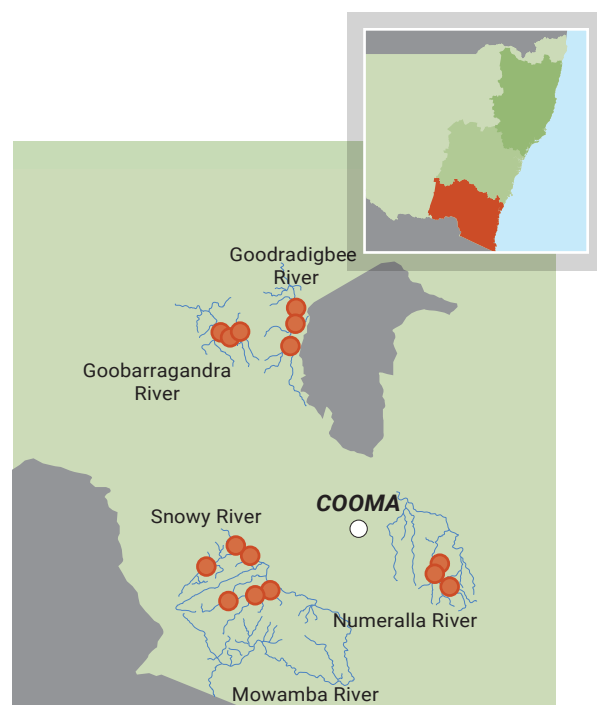
OTHER SPECIES RECORDED

- » River blackfish, mountain galaxias, redfin, shortfin eel, goldfish & carp

Last Surveyed May 2021

Report Card

	RAINBOW	BROWN
ABUNDANCE	D	C
RECENT RECRUITMENT	A	C
MATURE FISH	D	B
MULTIPLE CLASS SIZES	C	A
DISTRIBUTION	B	B
OVERALL RATING	Moderate	



Population size structure

Northern: Rainbow and brown trout in the Northern fishery were both dominated by smaller size classes (Figure 2). Rainbow trout were comprised mostly of fish less than 100mm and few individuals in the middle size classes (150-250mm). Similarly, brown trout had a high abundance of fish below 100mm, but had better representation of middle sizes classes (150-250mm) than rainbow trout. The results from 2020/2021 suggest a decline in medium and larger size trout in the Northern region and that rivers in the region are in a recovery phase after drought and bushfires in 2019/20.

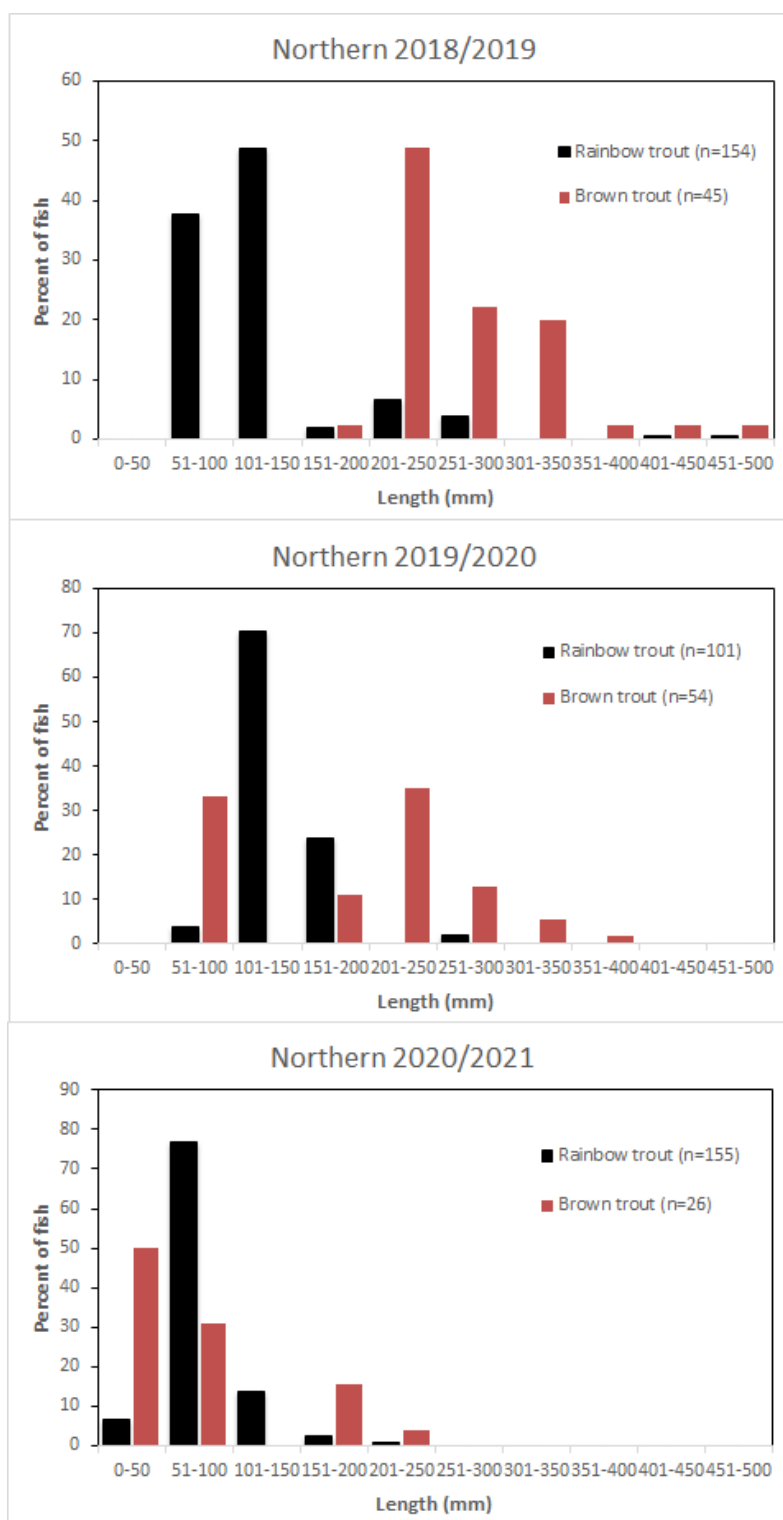


Figure 2. Northern rainbow and brown trout length frequency diagrams for the 2018/2019, 2019/2020 and, 2020/2021 trout fishing seasons. These figures present the percent of fish in each of the length categories. *n* refers to the number of fish sampled in each season. Data represents fork lengths for both species.

Central: The rainbow and brown trout fisheries in the Central region in 2020/2021 began to show recovery of medium to large size fish (>250mm) and successful stocking/ recruitment (e.g., fish <150mm) (Figure 3). Strong survival of juvenile fish (50-100mm) into middle size classes (200-300mm) over 2021 is required to improve the size structure of this fishery and increase angling opportunities for trout in the region during the 2021/2022 season.

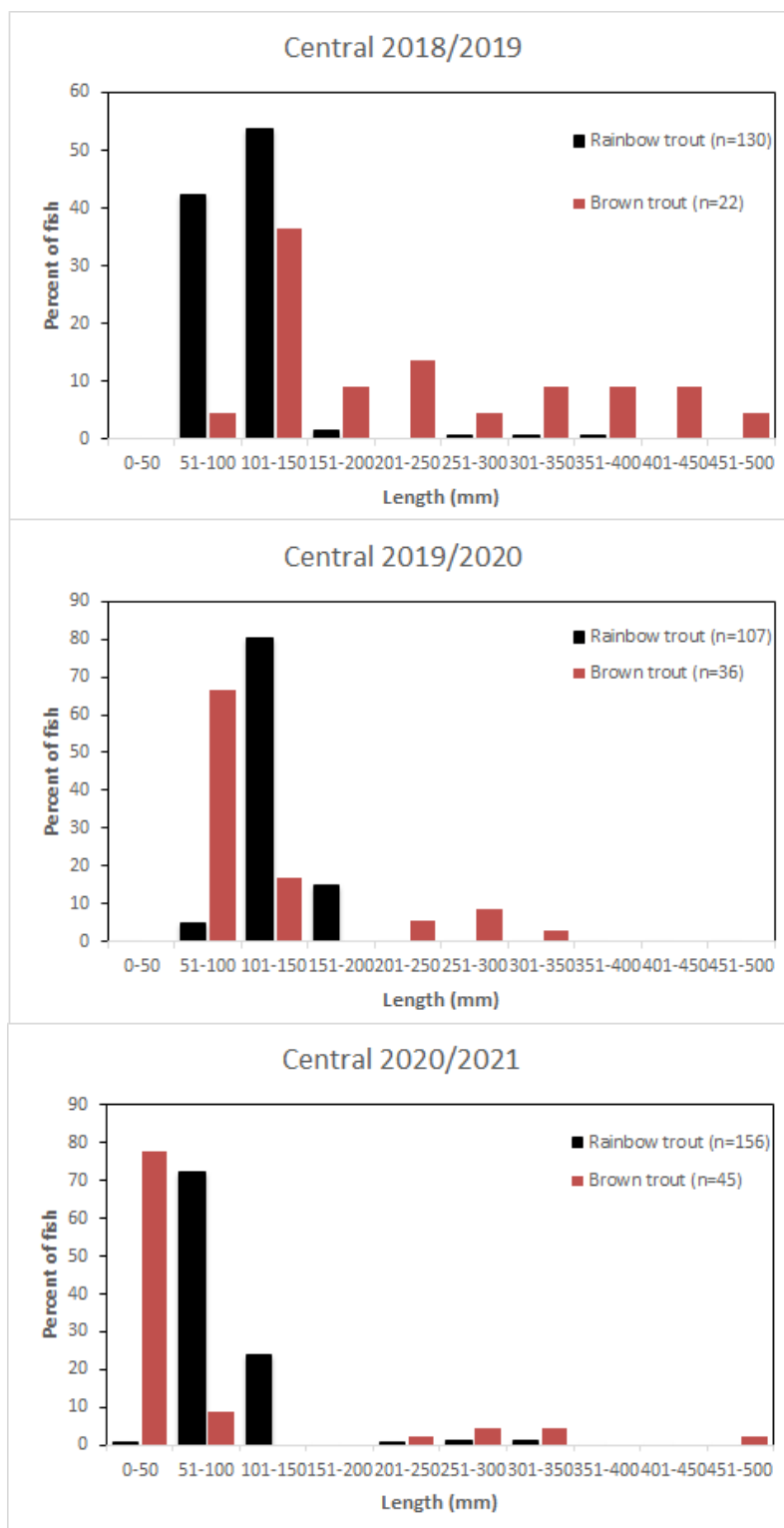


Figure 3. Central rainbow and brown trout length frequency diagrams for the 2018/2019, 2019/2020 and, 2020/2021 trout fishing seasons. These figures present the percent of fish in each of the length categories. *n* refers to the number of fish sampled in each season. Data represents fork lengths for both species.

Southern: Resident rainbow trout were mostly confined to small-mid size categories in the Southern region (Figure 4). Brown trout displayed a better size structure with various sized fish recorded. Unlike the Northern and Central regions, little change was seen in the Southern region between seasons. The broad size range of brown trout, including larger fish (>350mm) recorded in 2020/2021 indicates an improved size structure since 2019/2020. The improved size structure might indicate ongoing recovery in rivers of the Southern region after the drought and bush fires. As a result, resident stream fish along with spawn run and tailrace fisheries will provide good angling opportunities in the Southern region in 2021/2022.

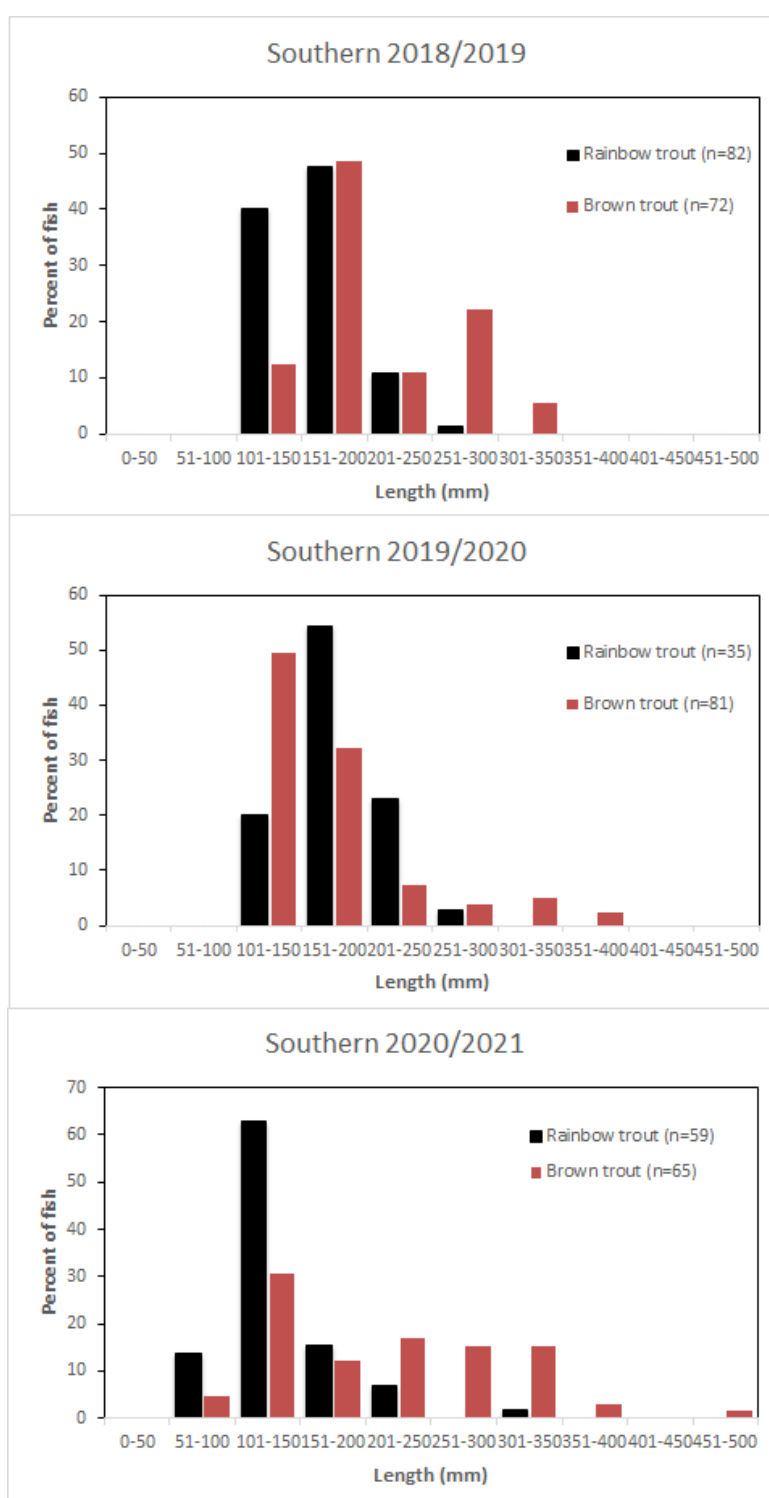


Figure 4. Southern rainbow and brown trout length frequency diagrams for the 2018/2019, 2019/2020 and, 2020/2021 trout fishing seasons. These figures present the percent of fish in each of the length categories. *n* refers to the number of fish sampled in each season. Data represents fork lengths for both species.

NSW Trout Fisheries Annual Report Cards

If you wish to provide feedback or have further questions about the Trout Strategy please email: **fish.stocking@dpi.nsw.gov.au**



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