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Supplementary Material

The importance of off-river areas for fish in the mid- and lower Lachlan catchment of the Murray–Darling Basin, Australia: three case studies

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Table S1. Numbers of fish species recorded from all sites within the Lake Cargelligo system from summer 2017–18 to winter 2021, and the size range of sampled individuals (standard length, mm, given in parentheses).

Scientific name	Common name	Dec 2017	Dec 2017 (2)	Jan 2018	Mar 2018	May 2018	Jan 2019	Apr 2019	Aug 2019
Native species									
<i>Nematolosa erebi</i>	Bony herring	410 (30–270)	328 (20–140)	818 (24–200)	4102 (30–250)	339 (30–200)	1068 (25–135)	626 (40–225)	40 (20–370)
<i>Retropinna semoni</i>	Australian smelt	–	17 (30–50)	–	–	3 (42–50)	–	–	110 (60–70)
<i>Tandanus tandanus</i>	Freshwater catfish	–	–	–	–	–	–	–	–
<i>Craterocephalus s. fulvus</i>	Un-specked hardyhead	–	4 (25–43)	2 (27, 40)	–	1 (45)	–	–	–
<i>Macquaria ambigua</i>	Yellowbelly	1 (28)	12 (32–175)	1 (40)	2 (55, 60)	3 (50–65)	–	–	–
<i>Maccullochella peelii peelii</i>	Murray cod	–	–	–	–	–	–	–	2 (700, 800)
<i>Philypnodon grandiceps</i>	Flathead gudgeon	5 (25–35)	228 (28–50)	3 (45–50)	1 (40)	2 (35, 60)	–	2 (both 40)	–
<i>Hypseleotris</i> spp.	Carp gudgeons	43 (14–42)	953 (15–32)	589 (12–35)	2958 (15–25)	575 (10–35)	173 (12–40)	131 (15–35)	72 (15–20)
Alien species									
<i>Cyprinus carpio</i>	Carp	–	9 (35–530)	3 (30–380)	–	2 (225, 720)	6 (35–60)	1 (320)	1 (520)
<i>Carassius auratus</i>	Goldfish	–	1 (50)	1 (110)	–	–	–	–	–
<i>Gambusia holbrooki</i>	Gambusia	47 (15–40)	5 (15–35)	364 (17–34)	293 (20–30)	352 (12–35)	5 (15–27)	60 (15–30)	–
<i>Perca fluviatilis</i>	Redfin	2 (75, 90)	13 (55–90)	4 (65–90)	2 (60, 70)	–	2 (50, 60)	1 (105)	–
		Jan 2020	Mar 2020	Aug 2020	Oct 2020	Jan 2021	Feb 2021	Mar 2021	Jun 2021
Native species									
<i>Nematolosa erebi</i>	Bony herring	742 (30–300)	1034 (30–200)	103 (35–120)	31 (45–455)	750 (30–250)	2771 (25–220)	190 (16–280)	92 (30–150)
<i>Retropinna semoni</i>	Australian smelt	1 (50)	5 (55–60)	63 (50–60)	61 (23–70)	–	–	–	33 (50–75)
<i>Tandanus tandanus</i>	Freshwater catfish	1 (450)	–	–	–	–	–	–	–
<i>Craterocephalus s. fulvus</i>	Un-specked hardyhead	4 (20–65)	4 (25–30)	47 (36–60)	–	4 (40–70)	93 (12–60)	–	–
<i>Macquaria ambigua</i>	Yellowbelly	1 (45)	1 (50)	–	–	–	1 (175)	–	3 (32–320)
<i>Maccullochella peelii peelii</i>	Murray cod	1 (45)	–	–	–	–	–	–	–
<i>Philypnodon grandiceps</i>	Flathead gudgeon	15 (25–95)	3 (40–45)	12 (42–80)	–	2 (35, 50)	1 (35)	6 (50–60)	–
<i>Hypseleotris</i> spp.	Carp gudgeons	377 (10–32)	2400 (15–25)	1130 (15–30)	276 (17–25)	210 (12–35)	379 (12–30)	12 (10–38)	10 (20–30)
Alien species									
<i>Cyprinus carpio</i>	Carp	3 (35–560)	5 (40–220)	13 (30–700)	3 (62–660)	–	5 (35–340)	1 (80)	11 (65–210)
<i>Carassius auratus</i>	Goldfish	–	–	2 (250, 300)	–	–	–	–	–
<i>Gambusia holbrooki</i>	Gambusia	6 (all 35)	132 (15–30)	1 (17)	–	5 (22–30)	97 (17–32)	–	1000 (15–40)
<i>Perca fluviatilis</i>	Redfin	1 (70)	1 (310)	–	2 (295, 300)	13 (70–80)	112 (55–220)	5 (60–132)	6 (70–110)

Table S2. Numbers of fish species recorded from all sites within Lake Brewster from December 2021 to March 2024, and the size range of sampled individuals (standard length, mm, given in parentheses).

Scientific name	Common name	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	Jun 2022	Jul 2022	Aug 2022
Native species									
<i>Nematolosa erebi</i>	Bony herring	–	–	41 (40–120)	613 (30–240)	692 (20–170)	100 (30–150)	1 (110)	–
<i>Retropinna semoni</i>	Australian smelt	–	–	–	–	159 (40–60)	90 (55–65)	511 (45–70)	557 (40–70)
<i>Tandanus tandanus</i>	Freshwater catfish	4 (360–530)	–	–	–	–	–	–	–
<i>Craterocephalus s. fulvus</i>	Un-specked hardyhead	15 (40–70)	–	–	–	–	–	–	–
<i>Ambassis agassizii</i>	Olive perchlet	–	1 (30)	–	–	–	–	–	–
<i>Macquaria ambigua</i>	Yellowbelly	–	1 (180)	1 (150)	–	–	–	1 (195)	–
<i>Philypnodon grandiceps</i>	Flathead gudgeon	22 (40–80)	84 (35–90)	840 (45–80)	151 (40–90)	1280 (50–90)	855 (50–90)	292 (40–95)	408 (30–90)
<i>Hypseleotris</i> spp.	Carp gudgeons	420 (15–40)	45 (15–30)	2126 (15–35)	18 (20–30)	57 (17–30)	53 (20–30)	50 (20–35)	91 (14–30)
Alien species									
<i>Cyprinus carpio</i>	Carp	2709 (30–220)	26349 (30–610)	612 (30–900)	136 (60–450)	214 (80–540)	294 (70–320)	34 (50–120)	9 (90–230)
<i>Carassius auratus</i>	Goldfish	–	43 (60–90)	1 (95)	–	–	1 (130)	2 (both 110)	5 (110–120)
<i>Gambusia holbrooki</i>	Gambusia	1 (35)	2 (25,30)	–	900 (18–35)	387 (17–38)	52 (18–35)	10 (20–30)	20 (20–30)
<i>Perca fluviatilis</i>	Redfin	1 (60)	–	1 (80)	–	–	–	–	–
		Oct 2022	Nov 2022	Dec 2022	Jan 2023 (1)	Jan 2023 (2)	Feb 2023	Mar 2023	Apr 2023
Native species									
<i>Nematolosa erebi</i>	Bony herring	10 (60–320)	–	18 (30–50)	103 (30–70)	340 (20–110)	7 (40–90)	344 (30–180)	165 (30–155)
<i>Retropinna semoni</i>	Australian smelt	92 (40–65)	92 (40–65)	14 (20–65)	49 (50–70)	58 (30–55)	1 (40)	10 (60–65)	2 (65, 80)
<i>Tandanus tandanus</i>	Freshwater catfish	–	–	–	–	–	–	–	–
<i>Craterocephalus s. fulvus</i>	Un-specked hardyhead	–	–	–	20 (30–60)	–	–	–	18 (40–55)
<i>Ambassis agassizii</i>	Olive perchlet	–	–	–	–	–	–	–	–
<i>Macquaria ambigua</i>	Yellowbelly	10 (310–470)	–	–	–	–	–	–	–
<i>Philypnodon grandiceps</i>	Flathead gudgeon	120 (65–95)	645 (40–90)	108 (20–65)	486 (40–90)	237 (40–85)	1650 (30–70)	162 (40–90)	156 (40–95)
<i>Hypseleotris</i> spp.	Carp gudgeons	328 (14–42)	150 (15–45)	300 (10–35)	451 (15–35)	182 (17–32)	595 (20–35)	96 (20–40)	53 (20–40)
Alien species									
<i>Cyprinus carpio</i>	Carp	12 (90–130)	33 (30–195)	870 (10–220)	172 (40–200)	–	5 (55–130)	–	116 (25–60)
<i>Carassius auratus</i>	Goldfish	–	3 (110–135)	1 (60)	5 (70–80)	–	–	–	–
<i>Gambusia holbrooki</i>	Gambusia	–	37 (20–45)	21 (15–40)	440 (10–40)	278 (17–32)	3000*(16–35)	1900*(10–40)	1130(17–40)
<i>Perca fluviatilis</i>	Redfin	–	14 (35–40)	–	–	–	–	–	–
		May 2023	Jun 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024
Native species									
<i>Nematolosa erebi</i>	Bony herring	10 (40–60)	6 (40–70)	28 (90–235)	34 (50–240)	56 (30–210)	2473(25–230)	970 (20–220)	367 (30–200)
<i>Retropinna semoni</i>	Australian smelt	127 (35–60)	54 (35–60)	149 (50–60)	2 (30, 50)	137 (30–60)	12 (40–60)	10 (40–60)	9 (50–60)
<i>Tandanus tandanus</i>	Freshwater catfish	–	–	–	–	–	–	–	–
<i>Craterocephalus s. fulvus</i>	Un-specked hardyhead	–	–	18 (35–50)	5 (30–50)	2 (both 40)	3 (38–40)	5 (40–50)	–
<i>Ambassis agassizii</i>	Olive perchlet	–	–	–	–	–	–	–	–
<i>Macquaria ambigua</i>	Yellowbelly	–	–	–	–	–	–	–	–
<i>Philypnodon grandiceps</i>	Flathead gudgeon	57 (30–65)	7 (60–70)	130 (40–65)	69 (40–70)	920 (30–80)	55 (30–70)	21 (40–80)	19 (40–70)
<i>Hypseleotris</i> spp.	Carp gudgeons	59 (20–35)	24 (14–32)	184 (18–34)	676 (15–35)	852 (15–35)	131 (15–40)	921 (15–35)	5 (15–35)
Alien species									
<i>Cyprinus carpio</i>	Carp	32 (30–60)	–	33 (30–500)	77 (24–600)	120 (25–550)	49 (30–310)	33 (65–400)	25 (130–550)
<i>Carassius auratus</i>	Goldfish	–	–	3 (70–75)	–	1 (90)	–	–	–
<i>Gambusia holbrooki</i>	Gambusia	42 (10–30)	5 (16–20)	72 (20–30)	10 (20–30)	2 (30, 40)	25 (20–30)	155 (15–35)	755 (15–35)
<i>Perca fluviatilis</i>	Redfin	–	1 (200)	–	12 (all 50)	29 (50–60)	–	1 (70)	1 (100)