

Moggill Catchment Creek Health Monitoring Program - April 2011 sampling overview





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OBJECTIVES of the CHMP

- To assess current conditions throughout the catchment (fish, aquatic macro-invertebrate, habitat and water quality).
- To monitor trends through time in this baseline values to determine decline or improvement in condition.
- To determine spatial and temporal trends in the aquatic ecosystem health throughout the Moggill Creek Catchment.
- •To identify reaches which require particular attention for rehabilitation or protection.
- To increase community awareness and knowledge of issues and relevant skills relating to water quality, creek health and subsequent effects on aquatic ecosystem health.
- To identify issues and opportunities for improving the condition of waterways and take action to address these.
- To foster partnerships between Moggill Creek Catchment Group with other groups, e.g. UQ, SEQ Catchments, BCC.

SUMMARY

- In April 2011 twelve sites throughout the Moggill Creek catchment by members of the Moggill Creek Catchment Group (MCCG) under guidance of Dr Timothy Howell and the organisation of Emma Maltby (Brisbane City Council) and Adrian Webb (MCCG).
- Seven sites were sampled on Moggill Creek itself along with 3 sites along Gold Creek and single sites on Gap Creek and Mackay Brook.
- Following a year of above average rainfall the aquatic ecosystem of creeks within the Moggill Creek catchment were in relatively good condition:
 - · Water quality was variable but generally of reasonable quality.
 - There was a relatively good diversity of sensitive and tolerant macroinvertebrate species in most sites.
 - 1334 fish from 18 species were recorded throughout the catchment (not bad for a one day snapshot survey!!!).
 - Aquatic vegetation was dominated by emergent (bankside) plants. This is largely attributable to the scouring that has occurred during numerous recent large flow events.

Water Quality

- · Variable between sites but generally of reasonable quality.
- Dissolved oxygen particularly low at sites MC3 & MC4 as well as GC1.
- Conductivity was particularly high in Gap Creek Brook (GA1) which is highly ephemeral
- Temperature, pH and turbidity were reasonably low at all sites
- Conductivity gradient in both Moggill and Gold Creeks, although lower in Gold Creek



Water Quality

			Parame	eter	
	Dissolved Oxygen	рН	Temp	Electrical conductivity	Turbidity
Site	ppm	6.5-8.5	٥C	Fresh 0-800 ∫S/cm Brackish 1600-4800	NTUs
MC1	6.22	8.03	15.5	423	4.3
MC2	6.69	7.75	15.8	377	4.4
MC3	2.65	7.9	21.1	457	3
MC4	2.51	7.65	21.4	437	3
MC5	6.54	7.76	15.8	532	4.3
MC6	6.08	7.63	15.5	535	4
MC7	4.75	7.55	15.4	563	3.8
GC1	2.86	8.66	22.3	114	3
GC2	9.98	7.61	15.5	207	4.4
GC3	5.38	8.5	20.4	218	3.1
MB1	6.21	7.6	15.3	360	4.3
GA1	5.46	7.49	14.3	2213	3.8

Aquatic Macro-invertebrates

- Reasonably good spread of sensitive, tolerant and very tolerant orders of macro-invertebrates. Indicates a relatively healthy community.
- An overall downstream increase in scientific order diversity of in both Moggill and Gold Creeks. The clear exception is MC 7 which was tidal.
- Extremely low diversity of orders in Gap Creek. Likely to be attributable to the highly ephemeral nature of the creek (i.e. low chance for colonisation of new species).



Aquatic Macro-invertebrates

	Common name	Scientific order (unless otherwise indicated)	Pollution sensitivity	GA1	GC1	GC2	GC3	MB1	MC1	MC2	MC3	MC4	MC5	MC6	MC7
SENSITIVE	Mayfly nymph	Ephemeroptera	10												
	Caddis fly nymph	Trichoptera	10												
	Stonefly nymph	Plecoptera	9												
	Riffle beetle adult	Coleoptera	8												
	Riffle beetle larva	Coleoptera	8												
	Crane fly larva	Diptera	6												
	Water mite	Acariformes	6												
TOLERANT	Water flea	Cladocera (suborder)	5												
	Whirligig beetle adult	Coleoptera	5												
	Whirligig beetle larva	Coleoptera	5												
	Blackfly larva	Diptera	5												
	Water measurer	Hemiptera	4												
	Damselfly larva	Odonata	4												
	Dragonfly larva	Odonata	4												
	Freshwater yabby	Decapoda	4												
	Scud	Amphipoda	4												
	Freshwater shrimp & prawns	Decapoda	4												
	Biting midge larvae	Diptera	4												
	Copepod	Copepoda (subclass)	4												
	Water strider	Hemiptera	4												
	Seed shrimp	Ostracoda	4												
	Soldier fly larva	Diptera	4												
VERY TOLERANT	Water scorpion	Hemiptera	3												
	Freshwater slater (isopod)	Isopoda	3												
	Freshwater mussel	Bivalvia (class)	3												
	Scavenger water beetle adult	Coleoptera	3												
	Scavenger water beetle larva	Coleoptera	3												
	Mosquito larva/pupae	Diptera	3												
	Flatworm	Turbellaria (class)	3												
	Non-biting midge larva	Diptera	3												
	Freshwater snail	Gastropoda (class)	2												
	Hydra	Hydrozoa	2												
	Backswimmer	Hemiptera	2												
	Leech	Hirudinea (class)	2												
	Predacious diving beetle adult	Coleoptera	2												
	Predacious diving beetle larva	Coleoptera	2												
	Roundworm	Nematoda (phylum)	2												
	Water boatman	Hemiptera	1												
	Segmented worm	Oligocheata (class)	1							1					

Macroinvertebrate Scientific Order richness per site



Abundance & diversity of fish species

- 1334 fish from 18 species recorded. Sampling was successful at recording a broad range of species.
- Sampling techniques employed were more likely to record smaller species. Therefore larger bodied species were largely underestimated by the sampling techniques, although some observations were made.
- Strongly dominated by native species (abundance & diversity)
- Different species composition was apparent between upstream and downstream sites.
- · There was a downstream gradient of increasing species richness.





Fish species abundance

Common name	Scientific name	GA 1	GC 1	GC 2	GC 3	MB 1	MC 1	MC 2	MC 3	MC 4	MC 5	MC 6	MC 7	Totals
Agassiz's glassfish	Ambassis agassizii	-				- 5	-		3	•				8
Long-finned eel	Anguilla reinhardtii	-		1			-	2 -	-					3
Unspecked hardyhead	Craterocephalus stermuscarum	-	2 1	4		-		7 4	-					18
Mosquito fish	Gambusia holbrooki	-				14	- 4	9 14	4 4					45
Striped gudgeon	Gobiomorphus australis	-	- 1	-	- 3		-	1 1	-					6
Empire gudgeon	Hypseleotris compressa	-		-			-	16 12	8					36
Firetailed gudgeon	Hypseleotris galii	-	187 8	30 44	18	15 28	85	10 52	2 30	7				556
Western carp gudgeon	Hypseleotris klunzingeri	-	3 -	-			-		-					3
Crimson spotted rainbowfish	Melanotania duboulayi	5	119	11 49	19	89 14	46	35 1	-	-				388
Purple-spotted gudgeon	Mogurnda adspersa	2	- 1	1	14	4 63		-						81
Bullrout	Notesthes robusta	-		-			-		1					1
Dwarf flathead gudgeon	Philypnodon macrostomas	-		-			-	1 3	-					4
Flathead gudgeon	Philypnodon grandiceps	-		-			-		11					11
Flathead gudgeon species	Philypnodon sp.	-		2			-		-					2
Pacific blue-eye	Pseudomugil signifer	-		1		1 -	6	1 2	13					24
Australian smelt	Retropinna semoni	-	5 -	-			-	5 -	-					10
Eel-tailed catfish	Tandanus tandanus	-		-			-	1 1	-					2
Swordtail	Xiphophorus helleri	-	6 12	2 3 4	46 2	4	1 22	33 4	1 1					134
Platy	Xiphophorus maculatus	-	2 -	-			-		-					2
Totals		7	324 1	06 10	5 83	123	124 13	37 77	129	71	48			1334

Exotic fish species in red







Aquatic macrophytes

- · Aquatic plants dominated by emergent plants.
- Often there are large amounts of submerged and floating plants.
- The consistency of high flows in the last twelve months explains the lack of submerged and floating plants. It is expected that these will be more dominant in future surveys.





Aquatic Macrophytes

Scientific name	Common name	GA1	GC1	GC2	GC3	MB1	MC1	MC2	MC3	MC4	MC5	MC6	MC7
Juncus usitatus	Common rush	-	-	-	-	-	-			-	-	-	-
Phragmites australis	Common reed	-	-	-	-					-	-	-	-
Schoenoplectus mucronatus	Star clubrush	-	-	-	-	-	-		-	-	-	-	-
Alisma plantago-aquatica	Water Plantain	-	-	-		-	-	-	-	-	-	-	-
Persicaria decipiens	Slender knotweed	-	-	-		-		-	-	-	-	-	-
Persicaria attenuata	White smartweed	-	-	-		-	-			-	-	-	-
Unknown species ??	??	-	-			-	-	-	-	-	-	-	-
Avicennia marina ?	Grey mangrove	-	-	-	-	-	-	-	-	-	-	-	
Colocasia esculenta	Taro	-	-				-	-	-	-			-
Cyperus involucratus ??	Umbrella sedge*	-	-				-						-
Cyperus eragrostis	Umbrella sedge*	-	-	-	-	-				-		-	-
Cyperus difformis	Dirty Dora	-	-	-	-	-	-			-	-	-	-
c.f Cyperus polystachyus	Bunchy flatsedge	-	-	-	-	-	-			-	-	-	-
Cyperus species		-	-	-	-	-	-					-	-
Unknown species ??	??			-	-	-	-	-	-	-	-	-	-
Lomandra longifolia	Water ribbon					-							-

Future Directions

- The first sample has been collected!
- · A second season is to be completed later this year.
- An annual report should be done for each year (the first will be done after the next sample and will provide a template for future reports).
- This information will be instrumental in informing future actions taken which have impacts (both positive and negative) on streams within the Moggill catchment.

