



Rapid Creek report card 2009

Water quality at the monitoring sites is in very good condition and in most cases complies with water quality objectives. Event-mean concentrations in the Moil subcatchment were greater than for the other sites in the region, indicating greater pollutant loads. The water-bug community at the biological monitoring sites is significantly or severely impaired.

Nature of system

- Rapid Creek is the largest freshwater system within the Darwin city area
- A large proportion of the catchment has been cleared
- Stream corridor and riparian area remains relatively intact

Sources of pollution

- High sediment, nutrient and other human-related pollutant loads during the wet season












Rapid Creek catchment

Rapid Creek catchment showing catchment boundary, features and monitoring sites.



Rapid Creek




Rapid Creek ambient freshwater quality

Symbol	Indicator and units	Water quality objective	Current condition	Sample number for current condition	Compliance
	Electrical conductivity (µS/cm)	<200	42	24	✓
	Turbidity (NTU)	<20	2.5	24	✓
	pH	6.0 – 7.5	4.9 – 6.0	24	✗
	Dissolved oxygen (%)	50 – 100	54 – 83	21	✓
	Total suspended solids (mg/L)	<5	NA	NA	NA
	Chlorophyll a (µg/L)	<2	0.3	20	✓
	NOx (µg N/L)	<8	6	17	✓
	Ammonia (µg N/L)	NA	5	17	✓
	Total nitrogen (µg N/L)	<230	71	17	✓
	Total phosphorus (µg P/L)	<10	2.5	17	✓
	Filterable reactive phosphorus (µg P/L)	<5	0.5	17	✓




Period sampled for current condition is 2005-2008. NA Not available



Rapid Creek catchment loads and event-mean concentrations

Symbol	Indicator and units	Moil subcatchment current condition event-mean concentration
	Total suspended solids (mg/L)	56
	Total nitrogen (µg N/L)	821
	Total phosphorus (µg P/L)	87
	Subcatchment area (ha)	36

Wet season sampled for current condition is 2006-2007

Symbol	Rapid Creek whole catchment load for an average wet season	
	Total suspended solids load (tonnes/year)	1680
	Total nitrogen (tonnes/year)	21.7
	Total phosphorus (tonnes/year)	2.2
	Total catchment area (ha)	2770

Site number	2001	2002	2003	2004	2005	2006	2007
DW04					C	B	
DW21	C	C	B	B	C	C	C
DW22					C		



Community planting day at Darwin International Airport, Rapid Creek. Acknowledgement - Darwin International Airport. Copyright David Silva

Electrofishing in Rapid Creek

Fish surveys in Rapid Creek provide an indication of the health of fish communities in the creek and also help to identify exotic fish. Native fish species surveyed in 2006 and 2007 are shown in the Rapid Creek report card.

Electrofishing is a non-lethal way to research and collect data pertinent to endangered fish species. Electrofishing is a widely recognised research method for all freshwater fish species in Australia, as well as turtles and freshwater crustaceans. Data collected include species name, length, size classes (adult and juvenile) and relative abundance of captured and observed species.

The process applies an electric current through a waterbody to create an electromagnetic field, which causes fish to swim toward the centre of the field and results in temporary stunning. Fish are then released back into the water unharmed. Data collection is undertaken on a 'shot by shot' basis, where a habitat is sampled over a five minute period (1 shot). Fish are then identified, measured and habitat data are collected. A total of 10 shots per stream reach are undertaken, which includes different habitat types in the stream reach such as riffles and pools.



Hyrtl's Catfish (*Neosilurus hyrtlui*) is found in Howard River and Rapid Creek Photo by Dave Wilson



Electrofishing in Rapid Creek. Photo by Julia Fortune

Rapid Creek

Fish survey results

July 2007 survey	Site DW22		Site DW21	
Species	Mean length (mm)	Count	Mean length (mm)	Count
<i>Hypseleotris compressa</i> (Empire Gudgeon)	33	18	30	17
<i>Lates calcarifer</i> (Barrumundi)	-	-	310	1
<i>Leiopotherapon unicolor</i> (Spangled Perch)	43	14	106	2
<i>Melanotaenia australis</i> (Western Rainbowfish)	45	10	30	14
<i>Melanotaenia nigrans</i> (Blackbanded Rainbowfish)	28	1199	25	626
<i>Mogurnda mogurnda</i> (Northern Trout Gudgeon)	61	222	27	24
<i>Neosilurus hyrtlil</i> (Hyrtl's Catfish or Yellow-fin Catfish)	72	40	60	16
<i>Megalops cyrinoides</i> (Tarpon)	-	12	-	-

Note: Survey undertaken over set time (10 shots of 5 min = 50 min) at each site and counts include visual observations.

August 2006 survey	Site DW22		Site DW21		Site DW04	
Species	Mean length (mm)	Count	Mean length (mm)	Count	Mean length (mm)	Count
<i>Hypseleotris compressa</i> (Empire Gudgeon)	48	2	44	3	44	5
<i>Leiopotherapon unicolor</i> (Spangled Perch)	72	23	61	26	59	16
<i>Melanotaenia australis</i> (Western Rainbowfish)	51	1	53	2	-	-
<i>Melanotaenia nigrans</i> (Blackbanded Rainbowfish)	40	217	37	204	34	3
<i>Mogurnda mogurnda</i> (Northern Trout Gudgeon)	71	219	49	7	74	85
<i>Neosilurus hyrtlil</i> (Hyrtl's Catfish or Yellow-fin Catfish)	97	23	85	24	96	85
<i>Ophisternon gutturale</i> (Australian Swamp Eel)	-	-	280	1	300	1

Note: Survey undertaken over set distance (100 m) at each site and counts do not include visual observations.

Rapid Creek is the largest freshwater stream in the Darwin city area.



Aerial view of parts of Girraween Lagoon in the wet season (February 2008) displays large areas of different aquatic macrophyte communities. Photo by Jeremy Freeman