

Aquatic Invertebrate Survey

Jacksons Creek Organ Pipes National Park

25th March 2013

By Terry Lane

A beautiful sunny autumn day, I met up with Christina Cheers from The Friends of Emu Bottom and the chair of the Jacksons Creek EcoNetwork to conduct an aquatic invertebrate survey with volunteers from Outdoors Inc. This organization helps people dealing with mental illness by introducing them to activities in the environment.

Whilst waiting for the group of 10 to arrive we had a quick chat with ranger Tamara Karner just back from maternity leave, Tamara is now the Friends coordinator for FOOPs and Friends of Holden Reserve.

Outdoors Inc coordinator Megan Archibald arrived with her group around 11am and after a quick morning tea break we headed down to the tessellated pavement and set up the equipment on my Ute.

The tessellated pavement is an ideal site for this activity as it provides an easy and safe access and egress of the creek which was flowing normally.



Setting up

As well as looking for creek critters we showed the group how monthly chemical testing is done as part of Melbourne Waters Healthy Waterways Waterwatch program.



Christina conducting a phosphate test.

The phosphate readings at the Organ Pipes over the past few months have been a bit of a puzzle, sometimes the levels are so high you cannot get a reading but when you take a second test the level has dropped remarkably and this was the case today with second and third tests reading 0.07mg/L which is not unusual at this site.

The results today 11.50am

Water Temp - 20°

Turbidity – 24NTU

pH – 7.9

Conductivity - 680µS/cm

Dissolved Oxygen – 85%

Ammonia - 0

Phosphate – 0.07

With the chemical tests out of the way we climbed into the waders and with nets took to the water.



Michael was first to put his hand up



Michael ready for action



I gave a quick demonstration showing how to collect the macro invertebrates by ramming the net into the vegetation and working upstream for a couple of metres. Michael then started on the south bank and I the north.

There are two types of sampling, Edge sampling which is what we are doing today and riffle sampling which involves putting the net into the river bed and turning over rocks for the animals to flow into the net



After a short time our nets had collected a good variety of animals including a lot of fresh water shrimp. Next it was time for Jen to have a go and we worked another section of the creek bank and flushed through the muddy samples



Putting the catch into four sample trays we worked our way through using teaspoons and separating the varieties into ice cube trays



A magnifying glass is needed to look at the smaller species.



Caddis fly larvae and a fresh water shrimp, two animals sensitive to water quality.

We were finding a good variety of animals and a good abundance of those in the sensitive category

There are four levels in the stream index category (Modified Signal Scoring) Very sensitive, Sensitive, Tolerant, Very tolerant with signal scores from 7-8 (very sensitive) down to very tolerant 1-2

The animals are sorted to their order classification but this method has been superseded by the ALT method (Agreed Level Taxonomy) which combines edge and riffle samples and sorts further through the animals and separates them into their various genus classifications to get a more accurate assessment of the health of the waterway.

The ALT method requires further training as it is quite involved and time consuming determining animals by colour, body parts, shape and even behaviour. Christina and I will be attending courses given by Melbourne Water in a few weeks.

But for doing activities with large groups the old method is much more suitable as it is quicker and give a snapshot into the health of the waterway, only next time I would be more organized splitting the group into groups of four to get an even more accurate and clearer picture of the creek.

It was soon time for lunch kindly provided by Megan



After lunch it was time to work out our score and no surprise, with so many high scoring animals caught the creek was shown to be in a healthy state. (See attached data sheet)

We finished up around 2pm, I had to go to work and the group decided to go for a walk.

It was a great day for all and we hope to develop an activity program with Outdoors Inc, JCEN and Melbourne Water.

To learn more about Outdoors Inc go to their website

www.outdoorsinc.org.au.

Terry.

Aquatic Invertebrate Data Sheet



Group Name: FOOPS / SCEN
Survey Site Code: OUTDOORS INC

Group Size: 13
Date Sampled: 25-3-2013

Sample Type (circle): Eggs or Riffle

For further information refer to the Waterwatch Victoria Methods Manual

Sample Collection:
When collecting the sample work over an area of 10m for 10min.

Live Sorting:
Sort through the sample for 30mins removing one of each different aquatic invertebrate observed and place into a ice cube tray. If after 30mins you find an invertebrate that you haven't observed before, sort for a further 10 mins.

When finished sorting use reference texts to identify each type of invertebrate. Circle the type in column 1 and in column 2, estimating the number found.

Stream Condition Chart:
From the total scores at the bottom of column 1 and 2 use the values to calculate a Stream Condition.

From column 2 use the total no. of animals to find the abundance category. Use the scale on the side to rate abundance category (0-5) and the total in column 1 to find the matching box.

Eg A sample with an abundance category of 4 and a total bug score of 40 will have a rating of Good.

AQUATIC INVERTEBRATES NAME	Column 1	Column 2
	Bug scores	Abundance
Very Sensitive Aquatic Invertebrates		
Stonefly Nymph	8	
Mayfly Nymph	7	3
Caddisfly Larvae	7	35+
Sensitive Aquatic Invertebrates		
Toe-biters/Dobsonflies/Alderflies (Megaloptera)	6	
Damselfly Nymph	6	6
Dragonfly Nymph	6	4
Freshwater Mussel	5	
Aquatic caterpillars (Lepidoptera)	5	
Freshwater Shrimp/prawn	5	30
Freshwater Yabbie/Crayfish	5	
Water Mite	5	
Freshwater Slater	5	
Tolerant Aquatic Invertebrates		
Hydra	4	
Beetle Larvae	4	
True Bugs (Backswimmer, Water Scorpion, Water Boatman, Lesser Water Strider, Water Strider/Treader)	4	250+
Freshwater Sandhopper (Amphipod)	4	1+
Beetles (Dytiscid Beetles, Whirligig Beetles)	3	
Nematodes	3	
Leech	3	
Snails (freshwater)	3	1
Flatworm	3	
Very Tolerant Aquatic Invertebrates		
Mosquito Larvae	2	
Midge Larvae	2	
Fly Larvae	2	
Aquatic Earthworm	1	
Blood Worm	1	
Totals	42	330

Overall Abundance Categories

Nos. of animals	Category
0-30	1
31-100	2
101-200	3
201-500	4
>500	5

Stream Condition Chart

5		
4	Fair	Very Good
3		
2	Poor	Good
1		
	0	18 35 >35

Abundance Categories (Column 2)

Total Bug Score (Column 1)