

# Activities, tools and Interventions

<b>Title of the Activity, Tool or Intervention</b>	Catchment Study with Mini-SASS
<b>Date</b>	13 <sup>th</sup> April 2014
<b>Province and Municipality</b>	Eastern Cape, Makana
<b>Name of School or Group</b>	Ntsika Secondary School
<b>School Grade or level</b>	Grade 10 and 11
<b>Number of participants</b>	19
<b>Number of facilitators</b>	5
<b>Study site</b>	Palmiet River- Howisons Poort (at N2 crossing)
<b>GPS Coordinates of the site</b>	-33.36969 S 26.47615 E
<b>Length of time at the site</b>	2 hours including lunch
<b>Results up loaded onto Google Earth</b>	Yes

# **Makana: Ntsika Secondary School**

## **Tool-kit Excursion, Catchment Study**

**13 April 2014**

### **Preparation – Field-work – Follow-up**

As South Africa moves forward in the 21<sup>st</sup> Century, modern technology has come to the forefront to solve many human-created problems. However, there is one area that does not seem to be benefitting from man's advanced knowledge and that is the continuing degradation of our rivers and streams and the associated worsening of water quality nationwide.

Scientists have been measuring water quality in our rivers and streams for many years and there is considerable data that demonstrates how bad the situation is. Pollution from agricultural run-off, factories and malfunctioning sewage systems contribute to the degradation of our river systems resulting in increased nutrient loading and associated alien vegetation in the rivers and dams. The net result is more quality and diminishing quantities of healthy drinking water.

A range of innovative techniques are being explored to find a different more effective way of engaging government, members of the public and schools in water quality and quantity issues. Citizen science is one such innovative way of involving a wider audience in understanding stream and river quality issues. Citizen science had been defined as the "partnerships between scientists and non-scientists where data are collected, shared and analysed" (Jordan et. al., 2012).

A group of students, from Rhodes University in the Eastern Cape, are undertaking such activities through a public-spirited, student-based, organisation known as WildREACH. The goal of WildREACH is to involve children from poorer socio-economic areas in environmental experiences and field-work studies. One project of WildREACH involves support for an environmental club at Ntsika Secondary school in Makana District Municipality. This project is generously funded by the Biological Control Unit, Department of Zoology and Entomology, at Rhodes University.

### **Preparation for the Excursion**

For a study to be meaningful it is important that preparation is undertaken that helps orientate participants to the topic of study and the context in which the study is being done. The preparation phase should also include a 'tuning in' phase that helps participants mobilise their prior knowledge and understanding of the topic so as to provide linkages and relevance for the study.

Lyndall Pereira (A PhD student from the Albany Museum Aquatic and Invertebrates Department) visited the Ntsika Environmental Club at Ntsika Secondary School on the 10<sup>th</sup> April to provide an orientation to what a catchment is and how human impacts affect a catchment. She shared a power-point overview of a catchment which presented overlays of human activities on a typical, stereotypical, catchment. After the presentation the learners were able to investigate live and preserved invertebrates using microscopes.

Lyndall also introduced the learners to river health issues as well as the miniSASS biomonitoring technique and the pollution sensitivities of different invertebrates.

## **The Field-work Excursion**

On Sunday morning 13<sup>th</sup> April, Sheena Talma, Shana Mian and Chantal Taylor, all graduates at Rhodes University, organised an excursion for the learners. A group of nineteen Grade 10 and 11 learners from Ntsika Secondary School environment club attended the outing. The learners were met at Ntsika School and were given an overview of and sanitation issues by Liz Taylor (from DUCT in Pietermaritzburg). A site in the Makana Township, where a sewage leak has been ongoing for some months was visited. Local residents were interviewed briefly about the spill and they noted that despite various efforts the problem was ongoing. It is certainly posing a health risk to local residents and children who play near the leaks. A local man spoke to the group and said he hopes the municipality can sort it out soon. The participants saw how the sewage was running from this point into the storm water which would eventually lead to a local river.

After the orientation visit the bus took the learners to the site for the excursion, the Palmiet River at Howiesons Poort, close to the N2 between Grahamstown and Port Elizabeth. The Palmiet River runs through a poort near Grahamstown, this area as well as upstream is colloquially known as Howiesons Poort.

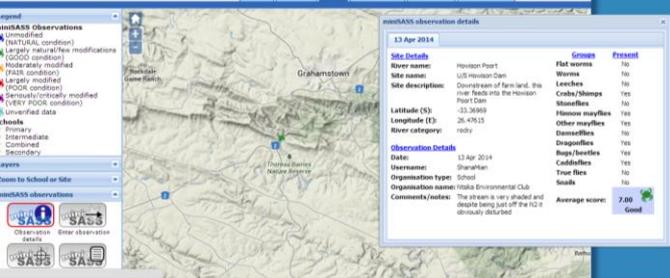
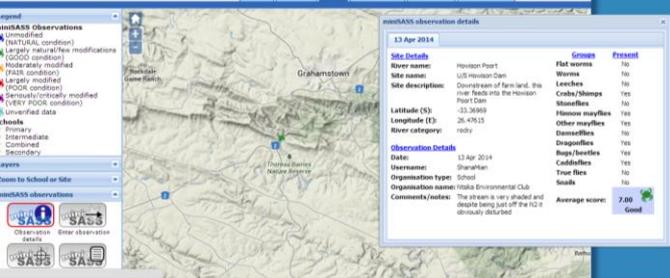
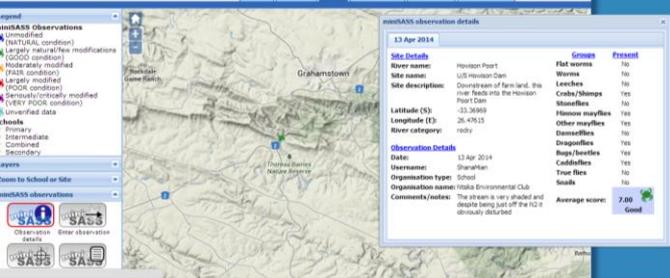
**The Study:** The learners were broken up into 7 groups. Each group was given a sass net, magnifying glass, white ice-cream tub, the minisass scoring sheet, dichotomous keys and a journal to take notes in. They were shown how to collect the invertebrates and identify them. The groups were then allowed to choose spots along the river and start collecting. The 5 demonstrators moved from group to group encouraging the learners to collect enthusiastically and answered any questions they had. The pupils were very focused on the task and enjoyed the unintended competition that arose between groups. One group found a small stonefly which caused much excitement! After about 30 minutes the children were lead to a clearing to score their results. They were shown how to do this by Mrs Taylor. The groups generally got high scores indicating the river was in good condition. The learners were then given lunch and were encouraged to walk around and explore before heading back to the school.

## **Follow-up**

A follow up lesson was conducted so that the results of the minisass could be uploaded and investigated. The school however does not have internet access and this posed problems in that the pupils were not able to interact with the live google map. Although this was not ideal, the demonstrators uploaded the results and took screen shots of each step. One issue we did encounter was that during the uploading process we had 7 different scores (one for each group). An average score couldn't be used as the process requires the organisms to be ticked off and the score generated automatically. Maybe in the future all the organisms found across the groups should be uploaded as one site? It might be a good idea to test what kind of result this gives.

The pupils were then given an assignment that required them to go to the library and find their results on the minisass website. They were to analyse these results and described the level of development and surrounding lands. They were also required to find other rivers in South Africa and compare their results to

these rivers in terms of the minisass score and surrounding land. These results were reported back to the demonstrators in their journals the following week.

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