



## ENVIRONMENTAL EDUCATION & AWARENESS PROGRAMME PLANNER

**PROGRAMME TYPE (circle/cross):** curriculum aligned X

DETAILS					
Name of school/ group	<b>N/A GRADE 6 CIRRUCLUM: WETLANDS DAY - WATER POLLUTION AND WETLANDS</b>				
No learners/ participants expected	<b>Max 60</b>	No learners/participants actual	N/A	Programme length/duration	<b>1 – 1 hr 30 hours (can be tweaked to 30 mins)</b>
Location (reserve/site)	<b>On reserve</b>			Grade/age group	<b>Grade 6</b>
Is this part of the work plan?	N/A			If no, motivate why the programme is needed	Water is a main awareness theme for CapeNature. The programme links to work done in the classroom and supports the curriculum.

CONTENT	
Theme (circle/cross)	Water
Topics covered (e.g. water cycle/ importance of water)	<b>Mixtures and water resources: Concepts water pollution and wetlands.</b>
Curriculum link (for curriculum aligned programmes only) – note subject/strand/topics (if not listed in topics above)	<b>Subject: Natural Science and Technology Grade 6 Strand: Matter and Materials</b>
Prior knowledge required (if applicable)	
Skills practiced (cross/circle)	<b>explain list create collect draw listen read write commit discuss explain an answer</b>
Key message (e.g. we must save water)	<b>#DontBeTrashy – save our biodiversity, keep our wetlands clean</b>

GENERAL LOGISTICS			
	Responsible person	Done (tick)	Status
Invite *			
Venue			
Transport			
Booking confirmed			
WCED permission *			
Presentation equipment & camera			
Risk assessment done, confirmation and checklist sent			
Catering *			
Indemnity *			

**Other:**

Plan requested by: \_\_\_\_\_ (name)  
 \_\_\_\_\_ (date)

Plan approved by: \_\_\_\_\_ (name)  
 \_\_\_\_\_ (date)

Budget and cost centre			
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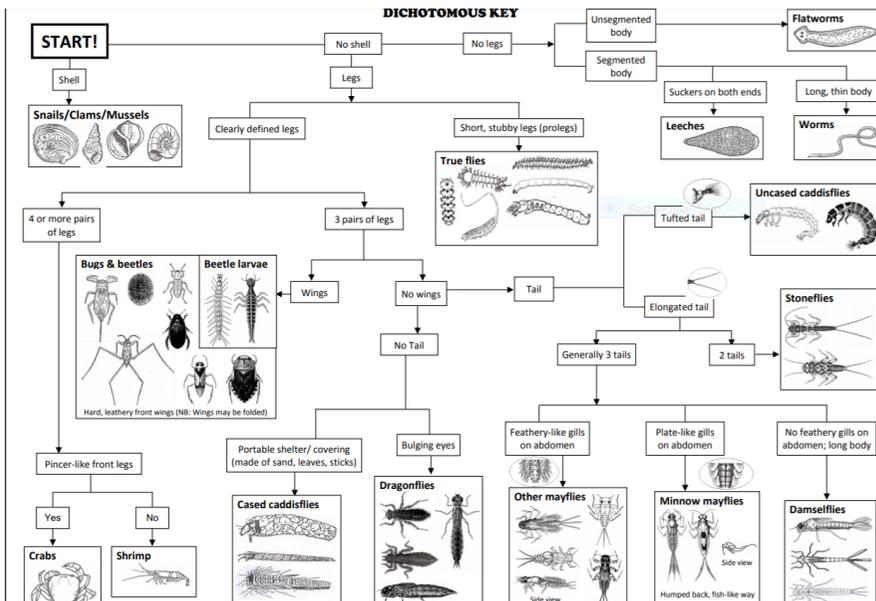
\*If applicable

## LESSON PLAN

Time	Location	Activity & explanation	Resources & person responsible for bringing/preparing the resource	Facilitating staff (if more than 1, indicate lead facilitator & timekeeper)
<b>INTRODUCTION &amp; ICEBREAKER</b>				
2min		Welcome the group and introduce the area/nature reserve that they find themselves in. Ask learners to show you on a map where they are and where they came from.	Power Point presentation	
1 min		Introduce staff	Power Point presentation	
2 min		Give any house rules (any rules of engagement, bathrooms, conduct, safety briefing)	Power Point presentation	
10 min		Give a programme outline and a short introduction to Wetlands Day and what wetlands are	Power Point presentation	
15 min		Icebreaker and tuning in:  Know: 1) Read an indigenous knowledge story about water. Ask the learners to listen. 2) Ask the learners why they think water needs to be clean? 3) Introduce the idea that one of the reasons water is so useful is because of its properties – it is runny, a good solvent and it flows 4) Explain that everything that we pour onto the ground or in the soil eventually gets into our water.	Primary Science Programme Natural Science and Tech teachers' book – copies of story page 35/36 Matter and Materials grade 6. Story pasted below.	
<b>BODY/ ACTIVITIES</b> (very large groups, split and rotate)				
15 min		<b>Water pollution activity</b> Do: Working in groups or by demonstration, let learners take a bucket of water and let learners throw in items that will pollute the water - solids, liquids etc. Mix the water. Ask learners to note what things dissolved and what didn't dissolve.  Value: Explain that without clean water we cannot survive. Ask learners if they would drink the water from the bucket now? Ask why clean water is essential for life.	Bucket or buckets, clean water, solid items like paper, leaves, sand, sticks, salt, sugar (learners can even collect this themselves), liquids like oil, ink, cool drink. Something to stir the bucket/s with.	
OR/AND		OR/AND		
20 min		<b>Threats to wetlands</b>  Do2: Divide learners into groups. Ask each group to make a threats to wetlands poster. Discuss  Ask each learner to think of one thing they can do when they go home to help solve one of the threats to wetlands. E.g. stop littering, teach others. Learners must commit to one action that will lead to the protection of wetlands. We must save our wetlands, we need water to survive.	Stationary box. Flipchart paper.	
30 min		AND/OR Mini SASS <a href="http://www.minisass.org/en/downloads/">http://www.minisass.org/en/downloads/</a>		

			Mini SASS kit. Trays, butterfly nets, magnifying lenses, MINI SASS charts, whiteboard markers
<b>CONSOLIDATION &amp; EVALUATION</b>			
10 min		Graffiti board. Divide into groups if needed for large groups. Ask learners to create a graffiti board by drawing and or writing something that they learned. Briefly discuss one or two items, link it back to the key message and ask what they will do when they leave to conserve water and prevent pollution.	Flipchart paper, prestick and coccis, stationary box
5 min		Thank the venue, group leaders and relevant parties and emphasise the key message once more.	

### MINI SASS EXAMPLE



SITE INFORMATION TABLE	
River name:	Date (dd/mm/yr):
Site name:	Collector's name:
GPS co-ord Lat(S):	Long(E):
Site description:	School/Organisation:
	Notes:
pH:	Water temp: °C
	Dissolved oxygen: mg/l
	Water clarity:

GPS co-ordinates are degrees, minutes, seconds (e.g. 29° 30' 25" S / 30° 45' 10" E) or as decimal degrees (e.g. 29.50694° S / 30.75277° E) If you don't have a GPS, upload your results at [www.minisass.org](http://www.minisass.org), find your site on the map, click to upload your result and the co-ordinates are saved for you!

GROUPS	SENSITIVITY SCORE
Flat worms	3
Worms	2
Leeches	2
Crabs or shrimps	6
Stoneflies	17
Minnow mayflies	5
Other mayflies	11
Damselflies	4
Dragonflies	6
Bugs or beetles	5
Caddisflies (cased & uncased)	9
True flies	2
Shrimp	4
<b>TOTAL SCORE</b>	
<b>NUMBER OF GROUPS (miniSASS Score)</b>	
<b>Average Score = Total Score ÷ Number of groups</b>	

Ecological category (Condition)	River Category	
	Sandy Type	Rocky Type
<b>NATURAL CONDITION</b> (Unchanged/untouched – Blue)	> 6.9	> 7.2
<b>GOOD CONDITION</b> (Few modifications – Green)	5.9 to 6.8	6.2 to 7.2
<b>FAIR CONDITION</b> (Some modifications – Orange)	5.4 to 5.8	5.7 to 6.1
<b>POOR CONDITION</b> (Lots of modifications – Red)	4.8 to 5.3	5.3 to 5.6
<b>VERY POOR CONDITION</b> (Critically modified – Purple)	< 4.8	< 5.3

Now, upload your results at [www.minisass.org](http://www.minisass.org) or use the



[www.minisass.org](http://www.minisass.org)  
Version 3.0 – September 2015

- Method**
1. Whilst holding a small net in the current, **disturb** the stones, vegetation, sand etc. with your feet or hands.
  2. You can also lift stones out of the current and gently **pick** organisms off with your fingers or forceps.
  3. Do this for about 5 minutes whilst **ranging across the river to different habitats** (biotopes).
  4. Rinse the net and turn the contents into a plastic tray. **Identify** each group of organisms using the identification guide (see insert: start with the dichotomous key, then use the identification guide for more information).
  5. Fill in the site information and **mark** the identified organisms off on the scoring sheet (back page).
  6. **Add up** the sensitivity scores and determine the **average score**.
  7. Interpret your miniSASS score.
  8. Remember: **WASH** your hands when done!

miniSASS is used to monitor the health of a river and measure the general quality of the water in that river. It uses the make-up of macro-invertebrates (small animals) living in rivers and is based on the sensitivity of the various animals to water quality.

**NOTE: miniSASS does NOT measure the contamination of the water by bacteria and viruses and thus does not tell us if the river water is fit to drink.**

- Equipment list**
- Net (see [www.minisass.org](http://www.minisass.org))
  - white container / tray / ice-cream box
  - magnifying glass
  - pencil
  - shoes/gumboots
  - hand wash / soap

**Don't have a net? Make your own – it is easy!**  
Take any piece of wire, for example an old clothes hanger, and bend it into the shape of a net. Then tie the netting (which can be any porous material) to the wire

### Key Concepts

- In the environment, many things mix with or dissolve in water.
- Water can be polluted by:
  - insoluble substances, such as oil, plastics, tyres, tins, glass, toilet waste
  - soluble substances such as soaps, fertilisers, insecticides, acids and other poisons
  - living germs from toilet waste, that can cause water-borne illnesses such as diarrhoea.

## 1 Water pollution

### TEACHER TASK

1. Find a story (or ask your learners to bring one), which illustrates the importance of water. See the reading task called 'Sweet water/Amanzi amnandi' below, and on page 70.

Tell it or read it with your class.

### Reading task: Sweet water

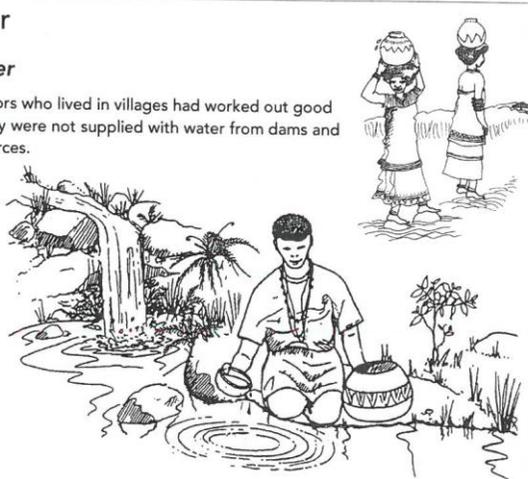
#### Indigenous knowledge about water

Long ago, before there were cities, our ancestors who lived in villages had worked out good ways of collecting and storing clean water. They were not supplied with water from dams and taps, but had to collect water from natural sources.

#### Collecting water from clean sources

People knew that everyone needs water but it is important to have clean water to keep healthy. Water was usually collected where people could hear and see the clean water running and dripping over stones and down rocks. Fast running water gets mixed with the oxygen in the air. This helps natural processes, which clean the water. The Nguni people used to sniff the water and hold it up to check that it was 'sweet' water. Today water quality scientists still do this. Our human senses tell us about whether water is clean and safe to drink. But now we can also test water in scientific ways.

Sometimes water was collected from a spring. A spring is a place where water comes out of the ground naturally. When people found a good spring they would surround it with a small circle of stones and keep the outlet of the spring small. This protected the spring, and cattle and people could not trample it. The people used to find other places where the cattle could drink. In the Nguni culture the women and girls from villages would collect



the water in clay pots. Then the spring would also become a meeting place for them.

#### Respecting the water sources

Our African ancestors knew that they had to approach a good source of water with care. They did not disturb crabs and other water animals because their movement would stir up mud and sediments. The person would have to wait for the sediments to settle before collecting

water. The people would also skim any dirt off the surface of the water. The dirty surface of the water, especially round the edges of the pool, contains many bacteria which can cause illness.

#### Storing water safely

The water that was collected was stored in porous clay pots made by the people. The mouth of the pot was covered with a fresh mat made from incense grass. The water would evaporate a little through the porous pot. This kept the water cool. Also most water bacteria cannot reproduce in dark, cool conditions inside the pot. After a time certain bacteria could collect in the pores of the clay pot and make the water taste bad. Then the pots were scrubbed out to clean them or new pots were used.



#### Traditions about collecting water

Children were warned not to urinate in rivers. The reason for this is that a disease called Bilharzia is passed on from human urine and faeces to water snails. Later the water snails release the small Bilharzia parasite back into the water where people can get re-infected by swimming in this water.

People were also told to wait for four days after heavy rains before they collected water again. Heavy rains wash human and animal wastes into rivers. This pollutes the water with bacteria that can cause serious diarrhoea and other diseases such as cholera. People hoped that by waiting four days the water would have cleared to use safely again.

Adapted from a Share-net resource: 'Sweet water/amanzi amnandi'.



### TEACHER TASK

#### Questions and information for discussion

1. Why it is important to have clean water?
2. Introduce the idea that one of the reasons why water is so useful to us is because of its properties.
  - Water is runny. So we can use it to rinse things. For example, to wash the sand off our hands. The water washes the insoluble sand off our hands.
  - Water is a good solvent. This means that many substances are soluble in water. So we can use it to dissolve some of the dirt and stains out of our clothes. Soap and washing powders help in this process. We also use water to dissolve things when we prepare food and when we cook. For example, making tea with sugar, making jelly, adding salt to soups and gravy and so on.
  - Water flows. So we can use it to carry things in boats. But we also use it to carry away unwanted substances such as sewage from our toilets.

#### How does water become polluted?

The next activity will demonstrate how water becomes polluted. The task will remind learners that everything that gets washed, poured off, and carried by water eventually pollutes the water.

#### Discussion

Ask your learners about the different ways that they use water. Then ask them about the things that they put into water.

**Acknowledgement**

Primary Science Programme (PSP),



, [www.psp.org.za](http://www.psp.org.za)

