

Picture Story: Water and Health

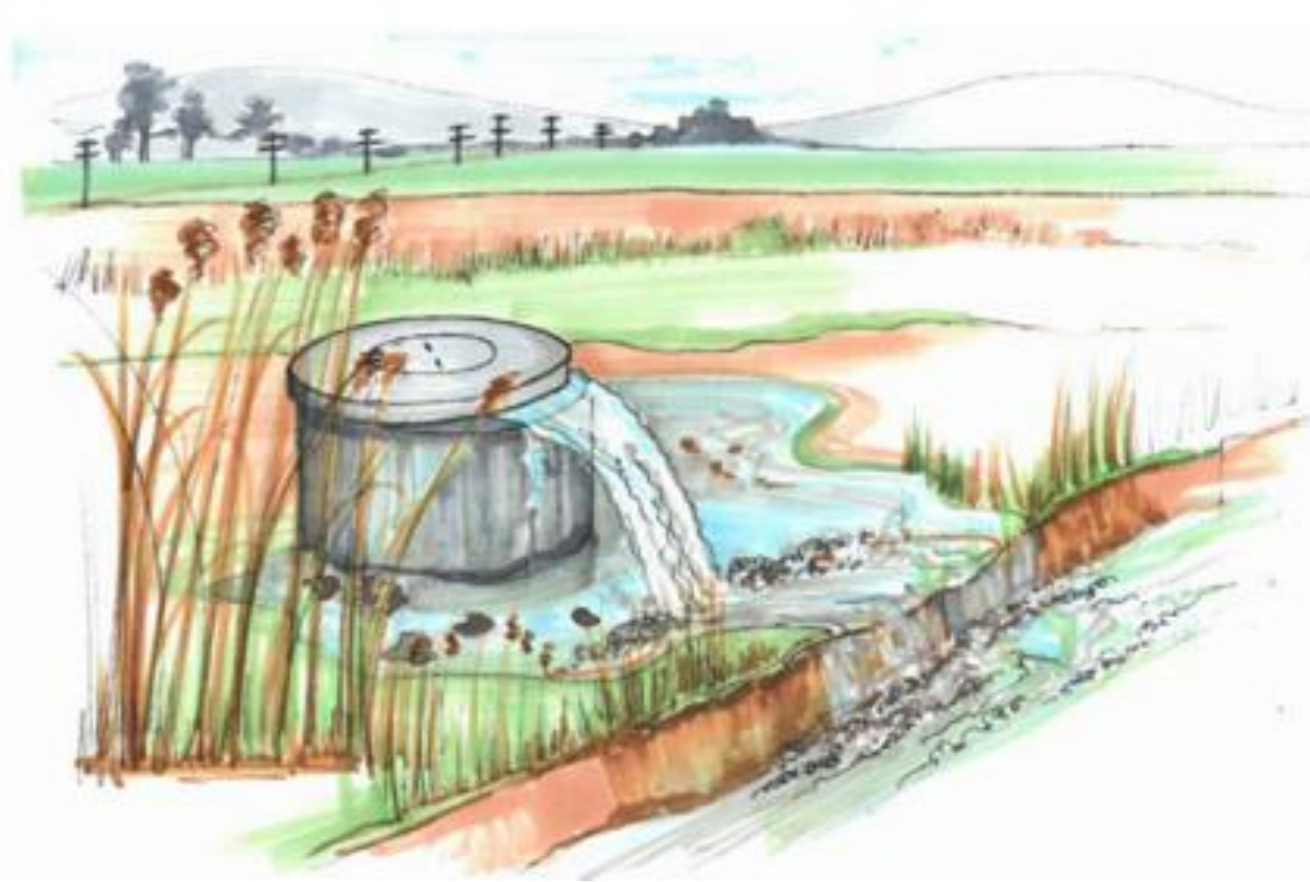
What is happening to our rivers and streams?

Picture 1



Mba's mother told her how she had learned from an early age to 'read' if the water was safe to drink. Her sisters had taught her how to clean the water pots and to use a small bowl to 'lift the water out of a cleared space in the surface of the water.' She had learned to do this by sweeping it gently with her forearm before collecting it with a small bowl or cup. From a young age she had always loved washing her hands before every meal using a special method of 'pour washing with drip-dry.' Hands that drip-dry minimize the chance of germs collecting on towels.

Picture 2



When it rained, they would always wait for the silt in the streams to clear before collecting water. This reduces the risk of collecting e-coli or bacteria that might have washed into the river from the river banks during the storm. While they waited for the main stream or river water to clear the people would source their water from rain water that had collected in rock pools and puddles that were adjacent to the main stream. This was done for up to 3-4 days until the disease-giving bacteria was no longer a risk. . Today, the Enviro-Champs still find bacteria washing into streams from blocked sewage lines in their hometown of Mpophomeni.

Picture 3



The Enviro-Champs also show the townspeople how plastic waste and rubbish is washed into the streams and rivers to pollute the water. Baba Cele also told them that a healthy stream has small frogs and other creatures living in the area and this can indicate that the water is healthy. A strong smell and a place where a diversity of animal life is absent can be a warning to people that this was not a safe place to collect water. If many different kinds of creatures can't survive in the stream it probably means it won't be good for humans either. In times gone by people were also taught to collect water where you can hear it. Water that is bubbling over rocks is usually more healthy than water in a stagnant pool.

Picture 4



Mbali met with her friends Nomtha and Ndu down by the Mthinzima stream. She had her indigenous environmental knowledge and skills to tell if the water was good. At the stream they smelt the water and looked around to see where it was coming from. These are good things to do when you want to figure out water quality. It seemed good and clear but they wanted to be sure. So, they decided to investigate further and does a Stream Assessment Scoring System (MiniSASS) test. The miniSASS tools are useful for checking water quality.

Picture 5



The next day Mbali and the research team met with Ayanda who works with Jim and Liz from DUCT. Ayanda demonstrated how to catch water organisms, using a net, and how to identify them using a dichotomous key. He also showed them how to score the organisms and to rate the stream quality. Together they learned how to conduct a miniSASS test.

Picture 6



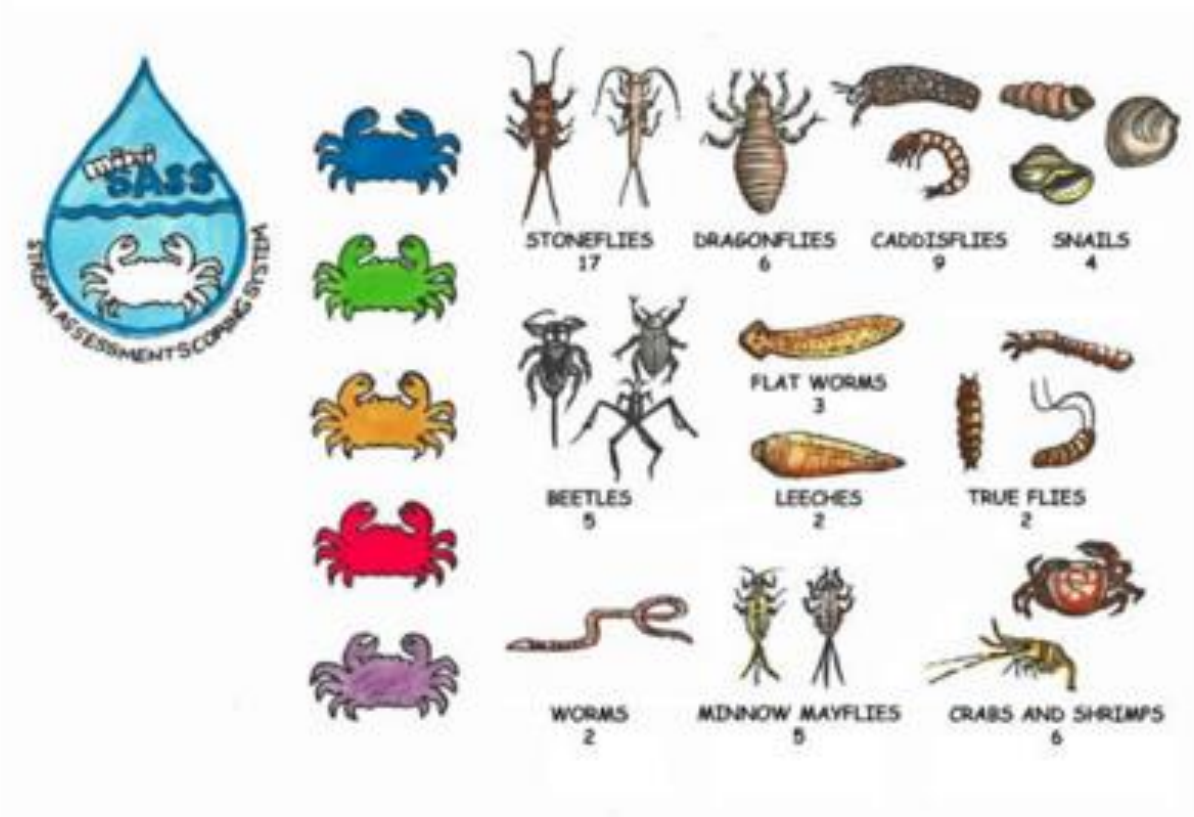
Liz also worked with the team to calculate stream flow because it is not only important to find out what animals are living in the water but how much water is flowing in the river at that time. One can calculate the volume (amount of water) and speed of the water (velocity) using a Velocity Plank.

Picture 7



The miniSASS test is a way of extending indigenous environmental knowledge so that we can get a deeper understanding and more accurate measure of stream health and water quality. The team thus measured, the river flow rate, the turbidity (clarity) of the water and used the animals living in the stream as indicators of water quality.

Picture 8



Water organisms are important indicators of stream quality. We call these tiny creatures' macro-invertebrates and we use them for working out the miniSASS score. This was also the most fun and the team had to not only identify the organisms, using the dichotomous key, but to also count and calculate what they found to get a measure for the stream as either blue (good quality unmodified by human activities), to green, orange, red or an extremely polluted purple.

Picture 9



It was then possible to see what the measure of turbidity meant. Did it mean sewage pollution or sediment that would settle out in a day or two? Reading a river has always been a puzzle but with a combination of indigenous environmental knowledge and the science of what lives in healthy rivers, the Enviro Champs are able to tell a more accurate story about stream quality. This work helps the community to understand and learn to look after our rivers and streams. A good reason to do this is to reduce the risks to the health of people and animals. If we can keep our streams and rivers in better condition, it will also help reduce the costs and efforts to clean (purify) the water that comes out of our taps. . It also helps us all to understand how our streams and rivers work so that we can take informed action to clean and look after them After all healthy rivers really do mean healthy people!

Picture 10



The Enviro-Champs also work with ‘Kids Clubs’ in the local schools. With the local young people, they explore the local streams and under-take fieldwork excursions. Some of the kids Clubs have developed logos for their club, at school, and shared the story about how they were now able to read the river, in an indigenous way, using their environmental knowledge. They also learnt how to work as scientists assessing river health using miniSASS tools. With miniSASS they can also place their findings on a Google Earth layer (at www.minisass.org) so others can find out about their work and get a better picture of what is going on in our precious rivers and streams.

Picture 11



Not only can we use miniSASS to get more accurate information, we can also log our data onto the internet and read the scores that other citizen scientists have discovered in other areas above or below our test site. This was very encouraging as they found out that although the water was polluted in Mpophomeni, the river quality improved when it flowed through the uMngeni River further downstream. That meant that they still had a lot of work to do to restore the river to what the water quality was like, many years ago, when their ancestors had lived in the area.



Questions for classroom discussions

1. What logo would you develop for an Eco-School or Enviro-Club?
2. Why is it possible for Enviro-Champs all over the world to assess their streams and to reliably compare their results?
3. Consider exploring the rivers and streams in you are to assess how did people know where and how to collect clean water in the past. Then ask, are our rivers still good, how can we assess this and what can we do to care for our life-giving wetlands, streams and rivers?