

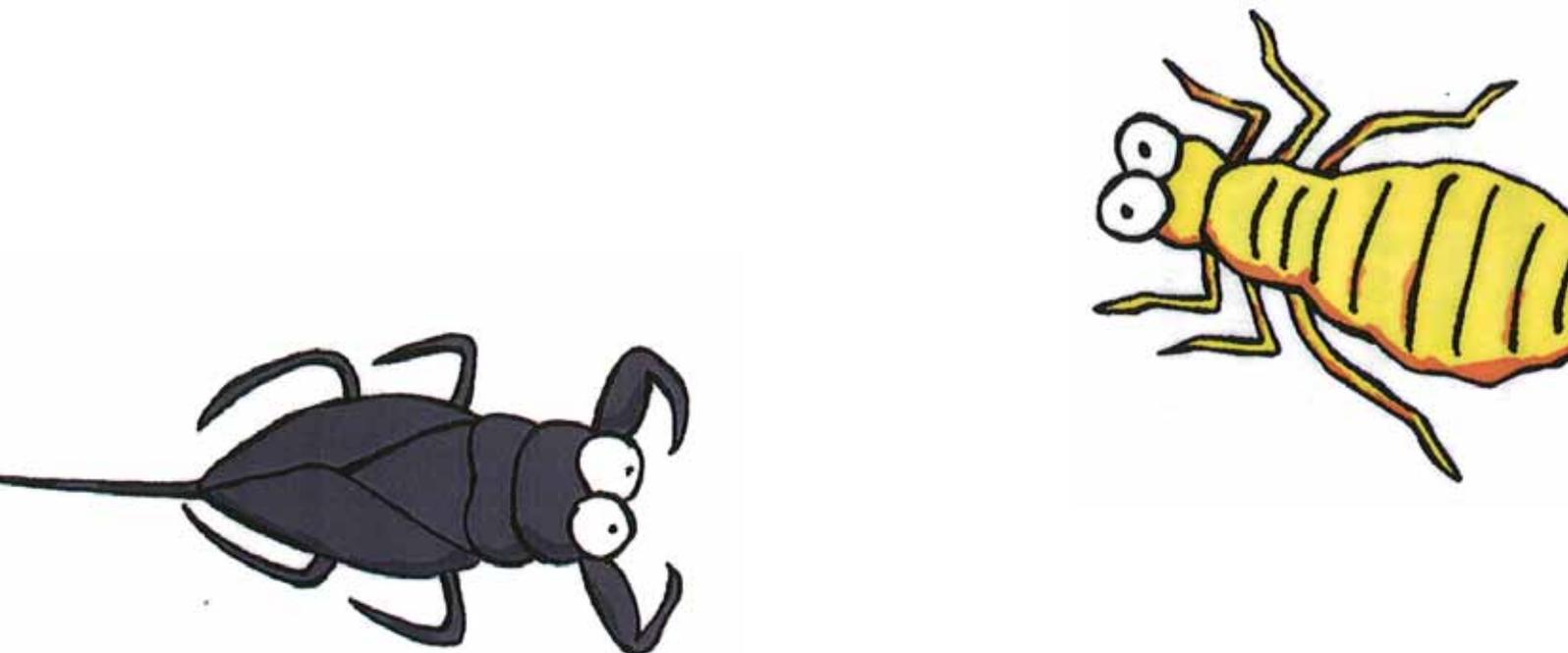


**NRM Education**

Supporting environmental sustainability in schools.

# Critters Galore - Primary Years Teacher Resource

Actively engage students in learning about aquatic macroinvertebrates.

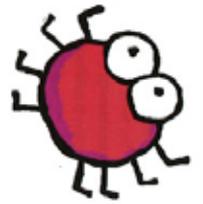




# Critters Galore - Primary Years

## Introduction

Critters Galore actively engages students in learning about aquatic macroinvertebrates, their habits, features and reliance on healthy waterways. Water samples containing live specimens are brought into the classroom to familiarise students with macroinvertebrates they are likely to find and techniques for sorting and identifying them. This session closely relates to water quality monitoring by providing an introduction to one area of biological monitoring.



## Aims

This session aims to develop:

- Understanding of the behaviours of common macroinvertebrates.
- Understanding of the impact poor water quality has on the presence and abundance of macroinvertebrates and other living things.
- Understanding of pollution sensitivity and tolerance.
- Skills in identifying and recording macroinvertebrates.
- Skills in assessing water quality by adding up the diversity and sensitivity ratings of the macroinvertebrates.
- Appreciation of the importance of accurate data collection.



## Activity Classroom Session 50 minutes

Students learn what macroinvertebrates are, where they live, why they're important to aquatic environments and what they indicate to us about water quality. Students are shown a habitat poster and asked to describe the differences between a healthy and an unhealthy habitat.



Pictures and information about common macroinvertebrates and their features are presented to students. They read about the sensitivity and tolerance of each macroinvertebrate to pollution. Students then consider habitat requirements and select appropriate places to stick the macroinvertebrates onto the habitat poster.

Students are also given the opportunity to sort through a water sample containing live macroinvertebrate specimens likely to be found in their local river system. Using a key to identify the macroinvertebrates they have found, groups share their findings and, as a class, review pollution sensitivities and species diversity to determine the quality of the water sample.



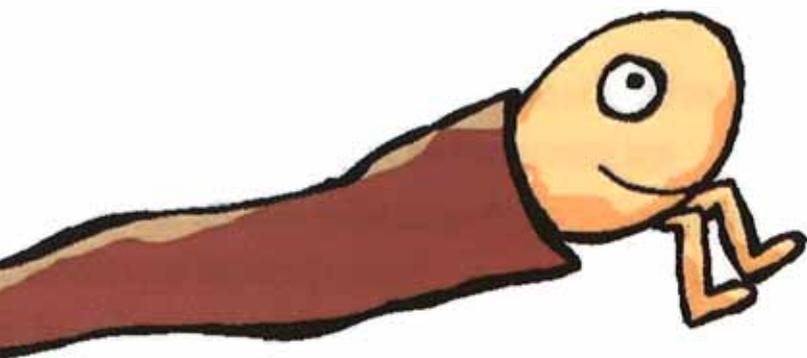
## Links to the SACSA Framework

The Critters Galore session most closely aligns with the Learning Areas of Science and Society and Environment and primarily fosters the Essential Learnings of Interdependence and Thinking.

The Other Learning Opportunities listed also encourage links to additional Learning Areas and Essential Learnings as part of a holistic approach to learning about catchments and health of waterways. Students should also be encouraged to communicate their understanding through written pieces, artwork or other media.

Learning Area	Strand	Key Idea
Science	Earth and Space	Students analyse how the earth sustains life and understand and report that the earth is continually changing. <b>F · In · T · C · KC1 · KC2</b>
Science	Life Systems	Students pose questions and seek explanations about the internal and external features of living things in order to better understand the supports of life in particular environments. <b>In · T · C · KC6</b>
Science	Life Systems	Students construct and explain their ideas about the diversity of living things and how they reproduce and grow. They identify and communicate the importance of maintaining diversity of living things in order to sustain life on earth. <b>F · C · KC2</b>
Society and Environment	Place, Space and Environment	Students examine natural and social environments in local and global communities, analysing patterns, systems and relationships. <b>In · T · KC1</b>
Society and Environment	Place, Space and Environment	Students consider sustainability and care of resources and places as they explore how people's attitudes and values affect their interactions with natural features and cycles. <b>F · In · KC6</b>

South Australian Curriculum, Standards and Accountability Framework (SACSA) 2001, Adelaide: Department of Education, Training and Employment.





## Key Competencies

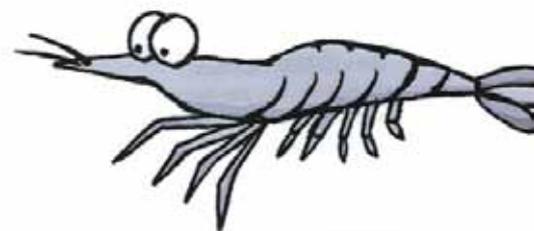
Participation in Critters Galore and the Other Learning Opportunities will encourage the learner to develop the following skills in relation to SACSA's Key Competencies:

- Sort macroinvertebrate species for identification purposes (KC1).
- Communicate ideas and information gathered through researching a macroinvertebrate species (KC2).
- Plan and organise a research project (KC3).
- Use technology to access a variety of information about macroinvertebrate species (KC7).

## Other Learning Opportunities

These learning opportunities encourage the learner to use knowledge gained in Critters Galore to further their understanding of the significance of macroinvertebrates in healthy waterways.

- Using an appropriate form of visual media e.g. photos, paintings, models, etc., show the stages in the life cycle of an aquatic macroinvertebrate.
- Draw a simple food chain of 3 to 5 steps with a large animal such as a bird or fish at the top showing a macroinvertebrate's place in it.
- Imagine a world with no macroinvertebrates (land or water-dwelling). What would this world be like? What would the problems or benefits of this world be?
- If you could be an aquatic macroinvertebrate, which would you most like to be and why?
- Compare the lives and roles of aquatic macroinvertebrates with those of land-dwelling minibeasts.
- Write a letter to another class in your school, or to the media, convincing them of the need to look after aquatic macroinvertebrates.
- Select 5 macroinvertebrates of your choice and compare their features. How are they similar? What makes them different?
- Imagine you are running a restaurant for aquatic macroinvertebrates. What would you have on the menu and who do you think your customers would be?
- Research the features of your favourite macroinvertebrate and construct a 3-D model out of clay, plasticine or other material.





- Construct a wonderword, crossword or jumbled words puzzle using words related to aquatic macroinvertebrates. Give your puzzle to a classmate or another class to solve.
- Use the Minibeasts of the Wetland resource to identify the macroinvertebrates in your local waterway. Add up the pollution index score to assess the health of the water.
- Describe how learning about macroinvertebrates has changed your thinking about water pollution and water care. What sorts of things can you do locally to protect macroinvertebrates?

## Take Action!

- Make your own Artificial Substrate Sampler (see instructions in the Waterwatch Manual) and place it at your Waterwatch site. A substrate sampler sits on the bottom of your waterway for around 6 weeks allowing macroinvertebrates to move in and make the substrate their home. Next time you visit your site, pull it out and collect a sample of macroinvertebrates to identify.

## Resources

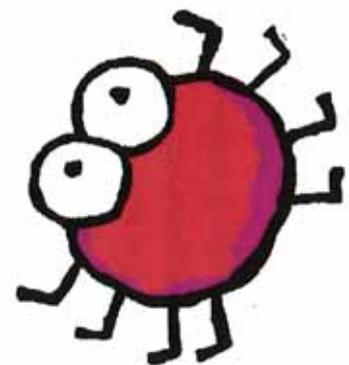
These resources will help your investigations of macroinvertebrates, what they need to survive and what they can tell us about the health of our waterways.

## Books

- Gooderham J and Tsyrlin E (2002) *The Waterbug Book: A Guide to the Freshwater Macroinvertebrates of Temperate Australia*, CSIRO Publishing Vic.  
Ph: 1800 645 051 Fax: (03) 9662 7555
- Winters B (1998) *Australian Guide to Pondlife*, Gould League of Victoria Inc.  
Ph: (03) 9532 0909 Fax: (03) 9532 2860

## CDs

- Hodson A (2002) *A Guide to Minibeasts of the Wetland*, Urrbrae Wetland A manual accompanies CD.  
Ph: 8272 6010



Macroinvertebrate illustrations thanks to AMLR NRM Education and students of Renmark Junior and Renmark North Primary Schools.