

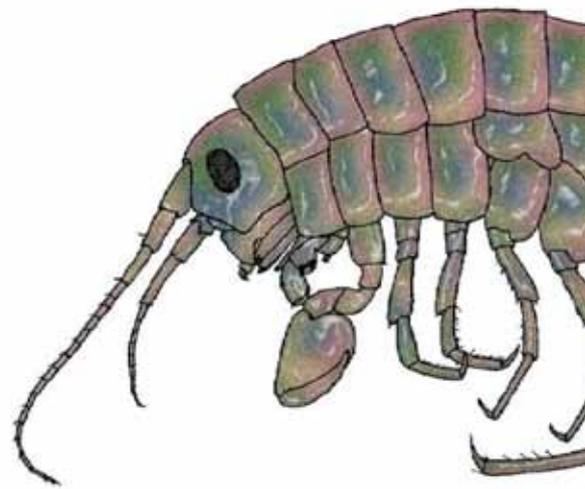
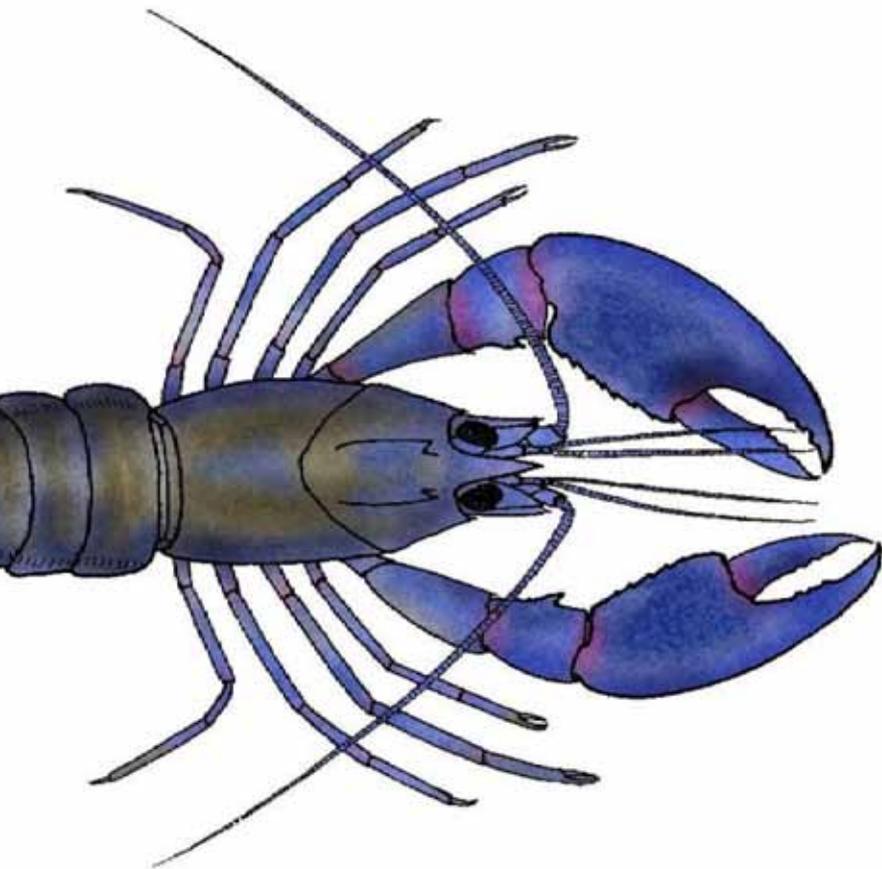


NRM Education

Supporting environmental sustainability in schools.

Critters Galore - Middle Years Teacher Resource

Actively engage students in learning about aquatic macroinvertebrates.





Critters Galore - Middle Years

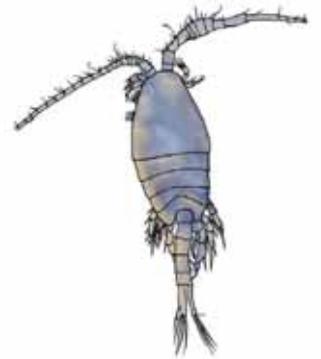
Introduction

Critters Galore actively engages students in collecting and analysing a macroinvertebrate sample. Students are encouraged to consider habitat preferences and the impact of poor water quality on the presence and abundance of macroinvertebrates and other living things.

Aims

This session aims to develop:

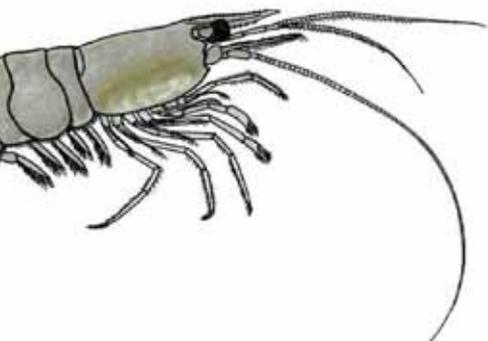
- Skills in collecting a representative sample of macroinvertebrates
- Skills in identifying local macroinvertebrate species
- Appreciation of the importance of accurate data collection
- Skills in interpreting the health of the water sample
- Understanding of the use of macroinvertebrates as indicators of water health



Activity Classroom Session 50 minutes

In groups, students learn techniques involved in collecting a representative macroinvertebrate sample. Students use an invertebrate key to identify the common macroinvertebrates of their local waterway.

The groups share their findings with the class and work out the pollution index of the water sample, collating the sensitivity rating of each species. Students are encouraged to draw conclusions from their results. Groups can compare their biological monitoring results with chemical monitoring results and habitat observations to determine catchment health at the sampling site.





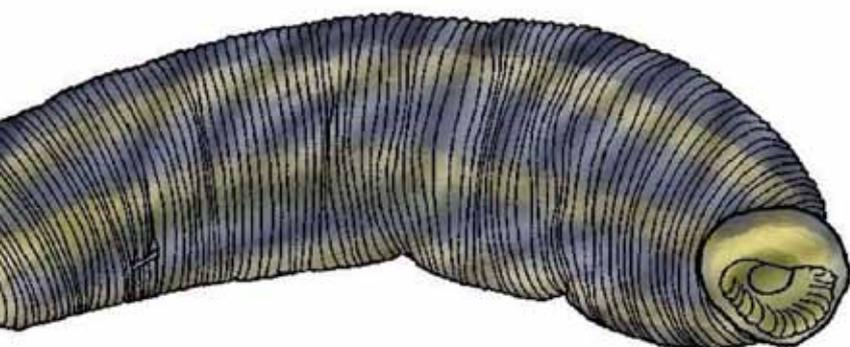
Links to the SACSA Framework

The Critters Galore session most closely aligns with the Learning Areas of Science and Society and Environment and primarily fosters the Essential Learnings of Futures, 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 macroinvertebrates and their reliance on healthy 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 investigate, through fieldwork and research, the central importance of the earth's role in sustaining life and how changes impact on life; and understand the interaction of the atmosphere, the oceans and the earth's surface. F · In · T · KC1 · KC3
Science	Life Systems	Students develop a shared understanding of the characteristics and behaviour of living things and how they are interrelated and interdependent. They appreciate and report on the place for humans in the earth's ecology; and develop their understanding of, explore future possibilities for, and act to contribute to, sustainable environments. F · In · KC1 · KC2 · KC3
Society and Environment	Place, Space and Environment	Students discuss environmental, conservation or resource issues, and individually and/or in teams collaboratively develop strategies to bring about positive change in the local community. F · In · T · KC2 · KC4 · KC6

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





Key Competencies

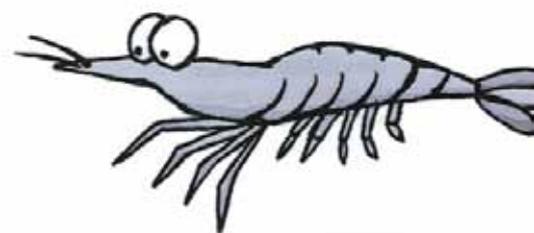
Participation in Critters Galore and the Other Learning Opportunities will encourage the learner to develop the following skills in relation to SACSA's Key Competencies:

- Sort macroinvertebrate species for identification purposes (KC1)
- Analyse data from a variety of sources to draw conclusions on water quality (KC1)
- Communicate ideas and information gathered through researching a macroinvertebrate species (KC2)
- Plan and organise a research project (KC3)
- Work with others in teams to conduct fieldwork safely and efficiently (KC4)
- Apply problem-solving techniques to identify solutions to pollution issues (KC6)
- Use technology to access a variety of information about macroinvertebrate species (KC7)

Other Learning Opportunities

These learning opportunities encourage the learner to use knowledge and information gained in Critters Galore as a basis for furthering their understanding of macroinvertebrates and their significance as indicators of water quality.

- Using an appropriate form of visual media e.g. photos, painting, models, etc., show the stages in the life cycle of an aquatic macroinvertebrate.
- 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?
- Investigate and compare historical macroinvertebrate data at your monitoring site. Investigate why numbers increase or decrease throughout the year. Is it due to seasonal change or on-ground activities such as revegetation?
- 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?
- Develop a sensitivity rating for students in your class to environmental factors e.g. noise, temperature, shelter and food.
- Construct a board game or puzzle to communicate the importance of having good quality water and conserving aquatic habitats for macroinvertebrates species.
- Imagine that you are designing a constructed wetland aimed at conserving macroinvertebrate diversity. You wish to stock the wetland with a range of different macroinvertebrates to ensure the survival of those species. Communicate, in an appropriate way, what you think are the most important factors affecting macroinvertebrate diversity at a site.

Take Action!

- Provide a better habitat for your local macroinvertebrates by clearing any litter left at your site and revegetating the banks of your local waterway with local native species.

Resources

These resources will help your investigations into macroinvertebrate features and functions, their reliance on healthy waterways and their significance as indicators of water quality.

Books

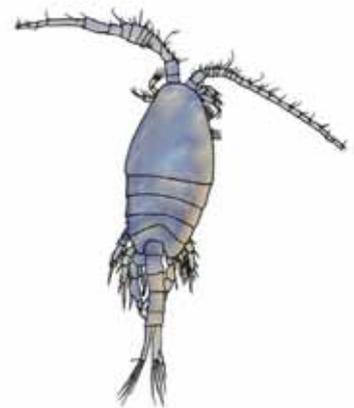
- Gooderham J and Tsyrlin E (2002) *The Waterbug Book: A Guide to the Freshwater Macroinvertebrates of Temperate Australia*, CSIRO Publishing Vic.
Ph: 1800 645 051 Fax: (03) 9662 7555
- Hawking JH & Smith FJ (1997) *Colour Guide to Invertebrates of Australian Inland Waters*, Murray-Darling Freshwater Research Centre, NSW.

CDs

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

Front cover Dragonfly Nymph image by Callie Nickolai.

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