teachers guide

Adaptations 3: Barrow Island marsupials

Components

	NAME	DESCRIPTION	AUDIENCE
	Barrow Island marsupials teachers guide	This guide provides a framework to use the learning object, *Barrow Island explorer*, to investigate water conserving adaptations of marsupial species living in an arid environment.	teachers
Start	*Barrow Island explorer* learning object	Students investigate behavioural and physiological adaptations of four marsupial species living on Barrow Island, which enable them to survive arid conditions.	students
	Life in the dry worksheet	Students record data from the learning object, and answer questions about the adaptations of Barrow Island marsupials.	students
	Adaptations to an arid climate background sheet	This background sheet for teachers describes regulation of body water by the kidney, and hormonal responses to varying water inputs.	teachers

Purpose

To **Explain** physiological and behavioural adaptations for water conservation in four species of marsupials living in arid conditions on Barrow Island.

Outcomes

Students:

- understand that strategies for water conservation vary between different marsupial species;
- identify physiological and behavioural adaptations relative to water conservation; and
- recognise that physiological and behavioural adaptations enable animals to survive in arid environments.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Students use the learning object, *Barrow Island explorer*. As they work through the learning object, students answer questions on the worksheet, *Life in the dry*.	individually or in pairs
Students complete worksheet.	whole class discussion of answers

Teachers notes

The learning object enables students to examine water-conserving adaptations of four marsupial species living on Barrow Island. An investigative component is included that allows students to discover landscapes and climatic conditions on Barrow Island, through exploration of an interactive map.

Students record physiological and behavioural data, from the learning object, onto the worksheet and use this information to make decisions about conservation outcomes for each marsupial species.

Key conclusions students should reach when using the learning object and worksheet are that all four marsupials depend on adaptations to cope with the arid environment of Barrow Island.

Both burrowing bettongs and black-flanked rock wallabies rely principally on behavioural adaptations (nocturnal activity, use of burrows or caves) to avoid water loss. Euros and spectacled hare-wallabies have physiological adaptations to conserve water, with the spectacled-hare wallaby displaying remarkable physiological regulation of body water volumes.

Technical requirements

The learning object requires Adobe Flash (version 9 or later), which is a free download from adobe.com. The teachers guide, background sheet and worksheet require Adobe Reader (version 5 or later), which is a free download from www.adobe.com. The worksheet is also available in Microsoft Word format.

SPICE resources and copyright

All SPICE resources are available from the Centre for Learning Technology at The University of Western Australia ("UWA"). Selected SPICE resources are available through the websites of Australian State and Territory Education Authorities.

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Acknowledgments

Barrow Island explorer

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Thanks to Emeritus Professor Don Bradshaw (School of Animal Biology, UWA) and Chevron Australia.

Designed and developed by the Centre for Learning Technology, The University of Western Australia. Production team: Anton Ball, Jan Dook, Alwyn Evans, Jenny Gull, Dan Hutton, Emma Pointon, Jodie Ween and Michael Wheatley, with thanks to Pauline Charman, Bob Fitzpatrick, Charmaine White and Wendy Sanderson.

Associated SPICE resources

Adaptations 3: Barrow Island marsupials may be used in conjunction with related SPICE resources to study structural, physiological and behavioural adaptations.

DESCRIPTION	LEARNING PURPOSE
Adaptations (overview) This learning pathway shows how a number of SPICE resources can be combined to teach the concept of adaptations in plants and animals.	
Adaptations 1: Defining adaptations An interactive quiz encourages students to differentiate between different types of adaptation: structural, behavioural or physiological.	**Engage**
Adaptations 2: Emperor penguins Students conduct experiments to model structural, physiological and behavioural adaptations of emperor penguins.	**Explore**
Adaptations 3: Barrow Island marsupials Students use a learning object to investigate adaptations of four marsupials that live on Barrow Island.	**Explain**
Adaptations 4: Samphires A profile diagram of a lake provides students with an opportunity to determine which species of samphire would be mostly likely to survive in particular locations.	**Explain**
Adaptations 5: Diving adaptations Students use a learning object to compare and contrast physiological, structural and behavioural adaptations of air-breathing diving animals.	**Explain**
Adaptations 6: Freediving Students watch a video of a human freediver and consider differences between acclimatisation and adaptation. Students review risks of diving associated with pressure.	**Elaborate**