**teachers guide**

**Adaptations 6**

**Freediving**

# Components

William Trubridge underwater glide, photo by Jayhem

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|  | NAME | DESCRIPTION | AUDIENCE |
|  | *Freediving*teachers guide | Human freediving provides a context for comparing acclimatisation and adaptation. | teachers |
|  | *Problems with pressure*background sheet | This background sheet for teachers provides information on problems of pressure when diving to depth. It includes freediving, scuba diving, and adaptations of diving animals. | teachers |
|  | *Vertical Blue*video | This video shows world champion freediver, William Trubridge, complete an 88-metre dive. | students |
|  | *Dangers of diving*worksheet | This three-part worksheet allows students to investigate diving abilities of freedivers, risks of diving to depth associated with pressure; and adaptations of the Weddell seal that enable it to cope with pressure at depth. | students |

# Purpose

To **Elaborate** on students’ knowledge of adaptations of air-breathing, diving animals by investigating potential hazards of diving to depth associated with pressure.

# Activity summary

Outcomes

Students:

* distinguish between acclimatisation and adaptation;
* appreciate that human diving ability is restricted by structure and physiology;
* understand risks of diving associated with pressure, particularly behaviour of gases under pressure; and
* recognise structural, physiological and behavioural adaptations that enable diving animals to cope with pressure.

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| ACTIVITY | POSSIBLE STRATEGY |
| Teacher introduces the video, *Vertical Blue*, which features an 88 m dive by current freediving world champion, William Trubridge. | whole class or individually if resources available |
| Teachers distribute the three-part worksheet, *Dangers of diving*. The worksheet can be completed as a whole, or in parts. | individually or in small groupscompleted as part of class discussion, class activity, or homework |

# Teachers notes

The video, *Vertical Blue*, depicts world champion freediver William Trubridge completing an 88 m dive.

William Trubridge currently holds the world record at 101 m in the category ‘constant weight without

fins’. In this discipline the diver competes without any assistance.

Encourage students to consider the abilities of a professional freediver in light of what they have learned regarding adaptations. The video provides an ideal opportunity to consider differences between adaptation and acclimatisation, either as a group discussion or in conjunction with part 1 of the worksheet, *Dangers of diving*.

To explore freediving further we recommend the websites [www.verticalblue.net](http://www.verticalblue.net/) and [www.](http://www/) aidainternational.org

# Technical requirements

The teachers guide requires Adobe Reader (version 5 or later), which is a free download from www.adobe. com.

QuickTime version 7 or later is required to view the video. This is a free download from [www.apple.com/](http://www.apple.com/) quicktime. A high quality MP4 version is available on CD-ROM or download from the SPICE website.

# Acknowledgements

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# Associated SPICE resources

SPICE resources and copyright

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*Adaptations 6: Freediving* may be used in conjunction with related SPICE resources to study structural, physiological and behavioural adaptations.

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| 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** |