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PHOTOCOPY MASTERS

*The Earth & Life Science Series*

# Oceans

## Science activities for 6 to 9 year olds

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# Teacher Information

The Earth and Life Sciences Series is designed to provide teachers of children in the 6 - 9 age range with a set of materials that will give students a more rounded and scientific understanding of their world and their place in it.

Student activities are directed towards meeting the requirements related to Science education as set down in the document **Science - A Curriculum Profile for Australian Schools** *(Curriculum Corporation, 1994)*. This book, **Oceans**, relates in particular to the conceptual strand of **Earth and Beyond**, at Levels 1 and 2 as indicated in the Profile document. In addition the activities in the book enable children to utilize some cognitive processes which are incorporated in the **Working Scientifically** strand of the curriculum.

These are:

❑ identifying, distinguishing, becoming aware of, observing;

❑ describing, naming features, recording, describing change, describing how, listing;

❑ describing patterns, connecting, linking, classifying, sorting, organising.

## Specific Outcomes Related to The Working Scientifically Strand

Level 1 and Level 2 children working on activities in this book could be expected to realise these outcomes related to this strand:

❑ Students investigate to answer questions about data, and reach and communicate conclusions.

Specifically, students:

❑ Focus on problems in response to teacher generated questions or suggestions;

❑ Carry out sequential activities, and observe and describe their actions;

❑ Share observations;

❑ Identify some of the variables in a problem situation;

❑ Make simple non-standard measurements and records of data.

## Specific Outcomes Related to The Earth and Beyond Strand

Level 1 and Level 2 children working on activities in this book could be expected to realise these outcomes:

❑ Students understand how some changes in the observable environment, including oceans, influence life.

This outcome will be demonstrated by the understanding ...

* that the ocean is a diverse environment; that the beach, waves and tides change constantly;

* that oceans house a wide variety of life.

Sample



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## Structure of this Book

Books in this series are divided into two sections - the section which includes the **"Using Information"** activity pages and that containing **"General Activity"** pages.

Both sections include **Teachers' Notes** which focus on aspects of subsequent activity pages such as:

- ❑ learning outcomes of the relevant pages;
- ❑ materials required to complete the activity page;
- ❑ teaching suggestions for each page in the section.

## "Using Information" Section

All student activity pages in this section are preceded by an **"Information Page"** - a set of notes that provides background knowledge to the activities presented on the worksheet. It is intended that these sheets are also photocopied for students and used by them as they attempt the activity page. It is envisaged that this approach will allow teachers to relate the class Science program to the Language program, through using these Information Pages as opportunities for Reading and Viewing activities. They are ideal for these purposes in that they require students to retell meanings and make simple interpretations for the purposes of completing the accompanying worksheets.

The text in these pages may be at a slightly more difficult level than that presented on the worksheets and further assistance is given by defining some key words or phrases. These are underlined and link to the **Explanations** section at the base of the page, which contains further definitive statements and explanations about the text.

It should be noted that not all the information that is required to complete worksheets is contained in these notes. In fact, children will benefit greatly from introductory discussions and idea sharing sessions about the worksheet in conjunction with the use of the Information Page.

## General Activities Section

The activity pages in this section (headed ACTIVITY PAGE) utilize traditional print related reference materials for children to complete the set tasks on the sheets. It would be useful for a collection of appropriate books and materials to be assembled before commencing the unit so these can be accessed and used with as little disruption as possible. It is imperative, too, that these sheets are discussed thoroughly before children are set to work.

Sample

# Lesson Notes

## Pages 7 - 12

### Content Area(s):

❑ science

### Learning Outcomes:

In this section students will:
❑ examine the features of the sea bed.
❑ explore the depth to which humans can descend into the sea.
❑ explore the depth to which deep sea submersibles can descend.
❑ interpret diagrams showing the earth's tidal movement.

### Materials Required:

❑ Information Pages
❑ pencil or pen

### Time:

❑ approximately 20-35 minutes.

### Background Information:

**Pages 7/8: The Sea Floor**

❑ The sea floor has many of the features of dry land. The longest mountain range and the tallest mountain are in the Pacific Ocean.

**Pages 9/10: The Deep Sea**

❑ The deepest recorded fish was found at 8 370 metres. Fish can swim to these depths because they have special features which help them withstand the water pressure. Humans, however, cannot withstand the water pressure. The greatest depth a human has descended to in a free dive is 127 metres.

**Pages 11/12: Tides**

❑ Tides are the slow steady rise and fall of the sea that happens daily. Every place on earth that is on the coast has two high tides. One is when the moon is directly overhead and the pull of gravity causes the water to rise. The other is when the location is on the opposite side of the moon and the gravity then acts to pull the land towards the moon which causes a high tide on the other side of the world. High tide and low tide happen twice every 24 hours because this is earth's rotation time.

Sample


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# Information Page: The Sea Floor

71% of the earth's surface is covered by oceans. Underneath the water, the sea floor is just like dry land. It has tall mountains, deep valleys, flat plains, and underwater volcanoes.

There are earthquakes in the ocean. These happen when the earth's plates, which make up the surface of the earth, move across each other or crash together. Earthquakes in the sea can cause tsunamis.

The earth's tallest mountain, longest mountain range, and deepest canyon are all under the ocean.

The Mariana Trench in the Pacific Ocean is the deepest point in the ocean. It is 11,700 metres deep.

The longest mountain range in the world is also in the Pacific Ocean. The tops of some of the mountains stick up out of the water making islands. Even though Mount Everest is the tallest mountain on land, Mauna Kea, a mountain in the sea near Hawaii, is taller. However, most of Mauna Kea is under the sea.

The shores around the earth's seas are shaped by water. In some areas, coastlines are eroded, in others the sea leaves pebbles and sand to build them up.

## Explanations

*Coastlines are eroded:* The action of the waves crashing on the coast slowly wears away rocks and soil to make things like cliffs, caves, and natural bridges.

*Tsunamis:* A tsunami is a huge wave that can cause a lot of damage if it hits land.

*Underwater volcanoes:* Underwater volcanoes can erupt. Sometimes an eruption can cause a volcanic island to form.

*Earth's surface:* A lot of land that is covered by ocean now used to be dry land. This explains why the sea bed has the same features as dry land.

Sample

# The Sea Floor

**Use the Information Page on The Sea Floor to help you complete this page.**

❑ Read all about the sea floor and answer the questions below.

1. What are some features of the sea bed that are the same as dry land?

.....

.....

Colour the area that shows the sea floor below.

2. Why do you think the sea bed is similar to dry land?

.....

.....

3. What is a tsunami? .....

What causes a tsunami? .....

.....

.....

4. What is the deepest point of the world's oceans known as?

.....

5. What ocean is the longest mountain range in? .....

6. What is the tallest mountain on land? .....

7. What is the tallest mountain in the ocean and where is it located?

.....

Sample



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# Information Page: The Deep Sea

The deep sea is a very unfriendly place for humans because it is so cold and dark. The deepest a person has dived to is 127 metres. Scuba divers, who use special equipment, can go deeper.

To explore the really deep sea, scientists use small submarines.

Some sea animals can go very deep and have special body parts which help them live in the cold, deep water. Many look like monsters but some of them are tiny. Many deep sea fish are black, red, or silvery. This is so they can't be seen by their predators. Black blends in against the dark, deep waters, silver reflects any light, and red looks black in deep water.

The grenadier is a fish that lives at the bottom of the sea. It swims along the bottom of the sea bed with its big mouth open. It eats live fish as well as the carcasses of sea animals that have sunk to the bottom of the sea. The grenadier has very big eyes because there is very little light to see with at the bottom of the sea.

Deep sea anglers have a light on the top of their heads that glows in the dark. They use the light to try and catch smaller fish for food.

A fish called a flashlight fish makes its own light by glowing in the dark.

The viperfish is one of the meanest fish in the deep sea. The viperfish has hundreds of tiny light organs in its mouth that it uses to attract its prey.

Sample

## EXPLANATIONS

***Carcass:*** A carcass is a dead body.

***Small submarines:*** Small submarines that are used to explore the deep sea are called deep sea submersibles.

***Special equipment:*** The special equipment that scuba divers use to help them swim, breathe, and see underwater.

flippers

oxygen tanks

diving mask

***Scuba:*** SCUBA stands for *Self-Contained Underwater Breathing Apparatus.* Using scuba gear means that people can breathe air from the oxygen tanks while they are underwater.

# The Deep Sea

**Use the Information Page on The Deep Sea to help you complete this page.**

1. Why can't humans swim in the deep sea? .....

.....

.....

2. What are the small submarines that explore the deep sea called?

.....

3. Describe the special features these fish have so that they can live in the deep sea.

**grenadier fish:** .....

.....

.....

**deep sea anglers**: .....

.....

.....

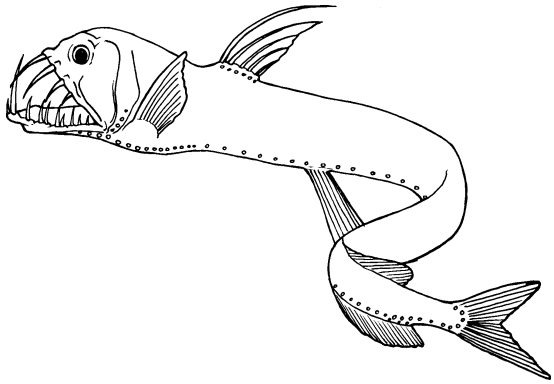
.....

**flashlight fish**: .....

.....

.....

**viperfish**: .....



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Sample


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