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**For Years 6 - 8
(10 - 12 year olds)**

Marine Worlds

*Activities to Extend Talented Students in
the Regular Classroom*

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Teachers' Notes

This fully revised series was initially devised as a means of providing extension for students within the regular classroom, whilst catering for the needs of the teacher and providing materials that were designed along educationally sound lines.

Although the content and layout for the revised series has been completely updated, the principles behind the series remain the same, using **CONTENT LEVELS** as a basis for categorising activities. The key to this approach, which we term the appropriate curriculum model, is that students are presented with activities appropriate to their levels of understanding of the content together with their mastery of the requisite higher-order thinking processes. The levels are an adaptation of Bloom's Taxonomy of Educational Objectives, still a widely accepted and valued model of education.

Below are the Content Levels and Indicators used in this book:

	Content Level 1	
	What it means	FINDING OUT: Recalling data, showing understanding through restating or extending ideas.
	What the student does	Answers factual questions, interprets information, describes or illustrates events.
	Content Level 2	
	What it means	USING INFORMATION: Using information in a new situation through extending or breaking down concepts being studied.
	What the student does	Problem solving based on knowledge gained. Making assumptions.
	Content Level 3	
	What it means	CREATING / EVALUATING: Putting together ideas to develop new products, making judgements based on new information.
	What the student does	Puts forward theories or original ideas and designs, forms and states opinions on theories.

Moving Through the Content Levels

It is important that higher-order activities such as those at Content Level 3 are underpinned with a solid base of knowledge – the tasks and activities aligned with Levels 1 and 2 are designed to establish and expand this. It should never be assumed that students have the requisite content knowledge, but be prepared to advance students quickly to higher-level activities if they demonstrate a sound understanding of the facts and concepts presented in Levels 1 and 2.

In considering the structure of this material, it is envisaged that in the heterogeneous classroom situation, the series can be implemented as follows:

Child Ability Level	Interpretation
→ Above Average _____	Emphasis on Level 2/3
→ Average _____	Emphasis on Level 2
→ Below Average _____	Emphasis on Level 1

Many pages contain activities from more than one level. In this case, the **TIME** taken on each part will change focus, according to the outline above.

Teachers' Notes

Using the Pacemaker Packs in the Classroom

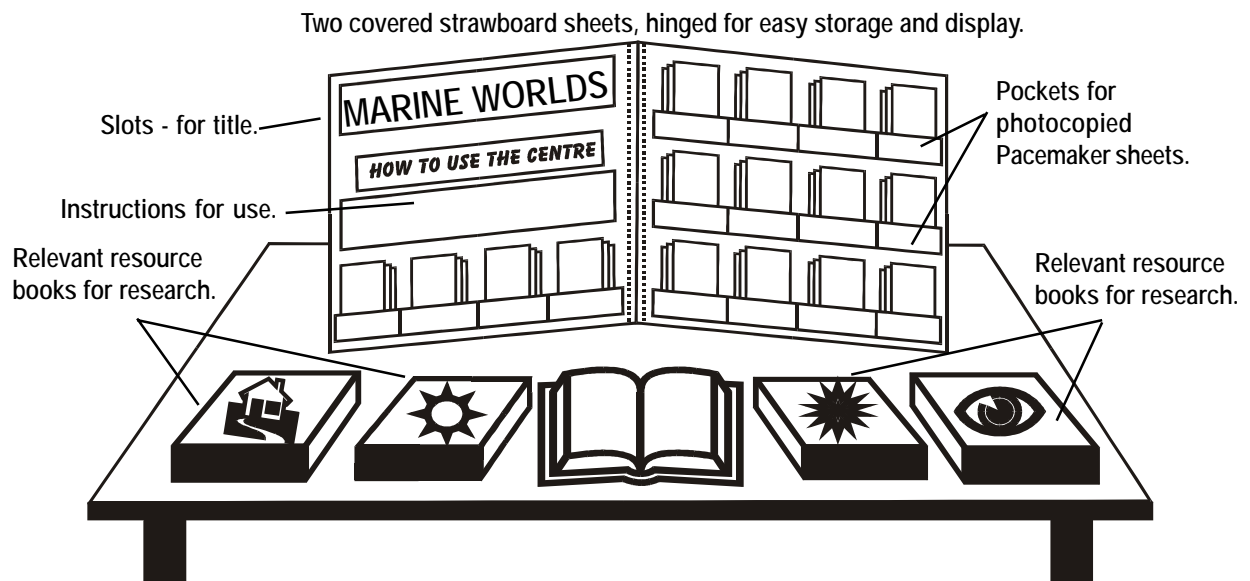
※ **Promote interest in the theme – set up a classroom learning centre that may contain:**

- Books and posters;
- Models and artefacts;
- CD-ROMS;
- Art supplies and plenty of writing and drawing paper;
- A “theme” table with items brought by students from home.

※ **Decide on the approach to the theme that suits you and your students best:**

- Teacher-directed with the whole class completing teacher-assigned sheets at a specified time (teacher records progress).
- Student-directed with students working through materials at their own pace at a specified time (student records progress).
- As an interest-based approach with students working from a selection of photocopied worksheets at their own pace (student monitored and recorded).
- As supplementary materials to a unit of study.

You may wish to use this series as a Learning Centre, with photocopied sheets displayed in pockets that students can select from, perhaps set up like this:



Before commencing, talk over the activities contained in the book with your class. Encourage students to broaden their thinking to suit the open-ended nature of the upper - level activities, helping them to understand that there is not “one correct answer”.

Outline a procedure for the activities:

- How will students store and present their completed worksheets? (In a file, a booklet, a plastic sleeve.)
- How can students work on the contents? (Individually, in pairs, in small groups.)
- From where can further research sources be obtained?
- What people or organisations might be able to help?
- How and when will the sheets be available?

Marine Life - Facts

Name: _____

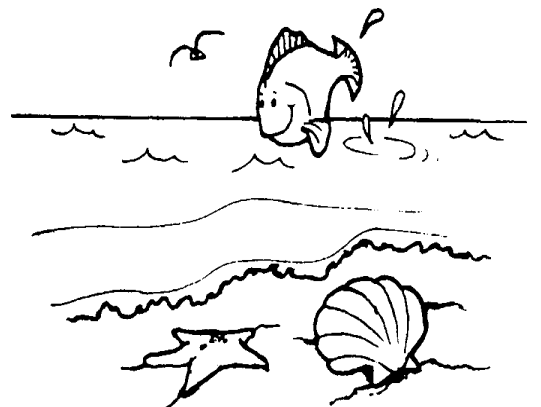


Begin your underwater journey by reading these amazing facts about the ocean.

- Life began in the seas 3.1 billion to 3.4 billion years ago, whereas land dwellers appeared only 400 million years ago.
- 99 percent of the earth's living space is contained in the oceans.
- The blue whale is the largest known animal ever to have lived on sea or land. They can reach more than 33 m in length and weigh nearly 200 tons – more than the weight of 50 adult elephants. The blue whale's blood vessels are so broad that a full-grown trout could swim through them, with a heart the size of a small car.
- The oarfish is the longest bony fish in the world. With its 15 m snakelike body, a huge red fin and a horse-like face and blue gills, it has often been mistaken for the elusive sea-serpent.
- Green turtles can migrate more than 2, 200 kilometres to lay their eggs.
- Many fish can change sex during their lifetimes. Others, especially rare deep-sea fish, have both male and female sex organs.
- Bluefin tuna, are among the largest and fastest marine fish. An adult may weigh 680 pounds and swim up to 88 km per hour. Used as sushi in Japan, bluefins are also among the most valuable fish; individual bluefins can bring as much as \$20,000 at United States docks.
- Penguins “fly” underwater at up to 40 km per hour.
- Since the structure of coral is very close to human bone, coral has been used to replace bone grafts in helping human bones to heal quickly and cleanly.
- Alginates, from the cell walls of brown algae, are used in beer, frozen desserts, pickles, adhesives, ceramics, explosives, paper and toys.

These marine life facts come from the Smithsonian Institution's Ocean Planet exhibition and from the book *Ocean Planet: Writings and Images of the Sea*, by Peter Benchley and Judith Gradwohl (published by Harry N. Abrams Inc., 100 5th Ave., New York, N.Y. 10011).

Source: <http://seawifs.gsfc.nasa.gov>



Identification Parade

Name: _____

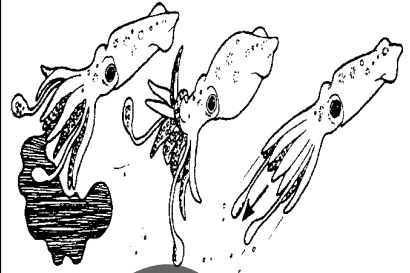


Imagine that you are a marine biologist who has to write a short descriptive passage about the following marine creatures.

Visit www.enchantedlearning.com/subjects/ocean/Oceanlife.shtml or use a similar site to find out some interesting facts about each animal and write it in the box below. One example has been done for you. Cut each fact card out and glue onto card. Draw a picture of the animal on the other side.

The Squid: The squid is a mollusc, an invertebrate (animal with no backbone), closely related to the octopus. Squid have eight arms with suckers and two longer tentacles for feeding, two hearts and two large eyes. They squirt water behind them to move through the water and when threatened, they project a jet of ink to cloud their predator. Squid use their beak-like mouths to eat foods that they collect with their tentacles. Because the esophagus runs through the brain, the food must be in small pieces before swallowing. Giant Squid can be up to 17 metres long with eyes as big as basketballs. These squid live deep in the ocean and have never been seen live, only dead.

Squid:



Clown Fish/Anemone Fish:

Sea Cucumber:

Lantern Fish:

Gulper Fish:

Plankton:

Anemone:

Sperm Whale:

Home Sweet Home

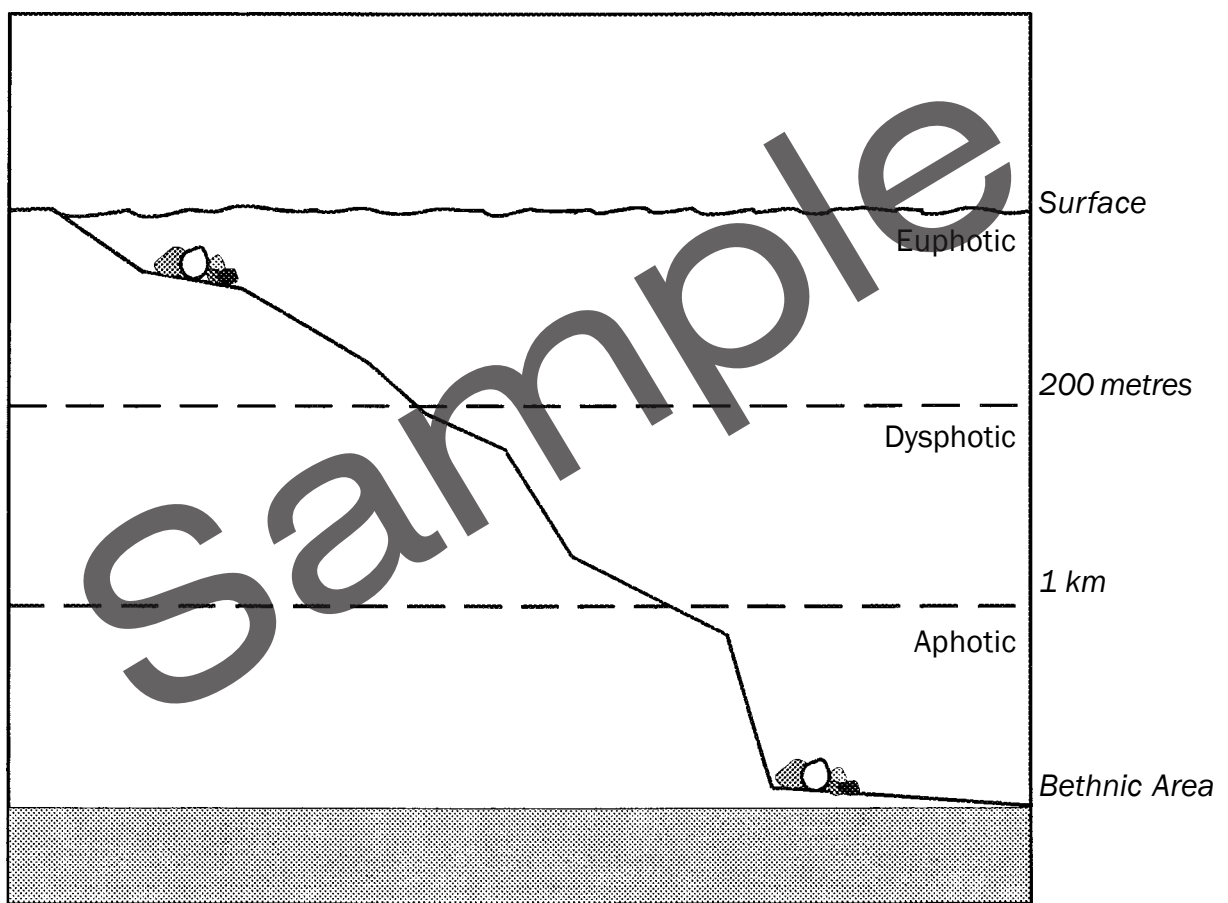
Name: _____

The ocean is divided into the **Benthic** and **Pelagic** areas. The Pelagic area included three zones - the sunlit Euphotic (a lot of light) zone, the twilight Dysphotic (a little light) zone and the midnight Aphotic (no light) or abyssal zone. The abyssal zone is dark and almost freezing, so only about 1% of all sea life can live in this area. The Benthic area forms the sea floor.



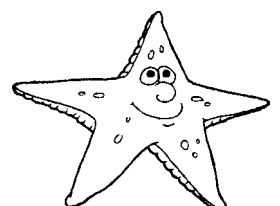
Based on your findings from "Identification Parade" (P. 8) or your common sense, draw a line from each creature that you have just researched to the area in the ocean that you think it would most likely be found.

- | | | | |
|-------------|-------------|--------------|--------------|
| squid | clown fish | sea cucumber | lantern fish |
| gulper fish | sea anemone | plankton | sperm whale |



The Midnight Abyss of the ocean is extremely interesting as it is not only one of the most unexplored areas of the world, it also contains some of the harshest conditions and therefore the most bizarre and well-adapted creatures. You might like to do some more research on this and make a diorama of "The Abyss".

Try these to get you started: www.suelebeau.com/oceanzones.htm
www.extremescience.com/DeepestFish.htm



Write a story about a deep-sea diver's adventures in the abyssal zone.

Related Outcome: Students will demonstrate their understanding of oceanic zones by matching sea creatures to each zone, creating a diorama and writing a story. **Subject Areas:** Science – Life and Living; Technology and Enterprise – Design process; English – Writing.

The Food Chain

Name: _____

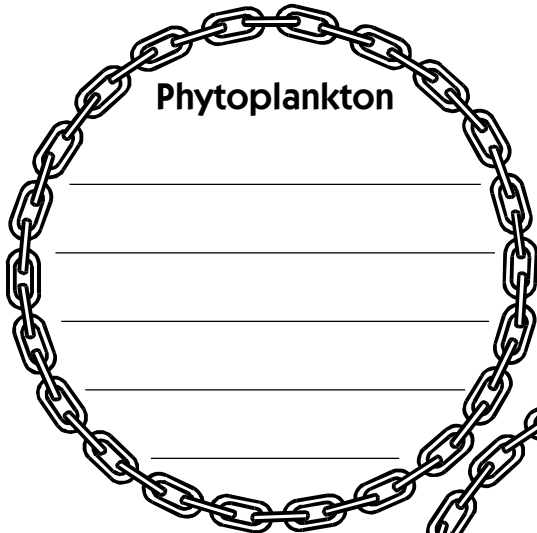
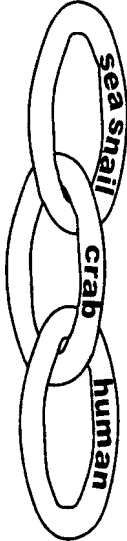


What do you think is meant by the “**food chain**” in an ocean?



Find out some information on these one on a narrow strip of paper. the food chain that they belong to

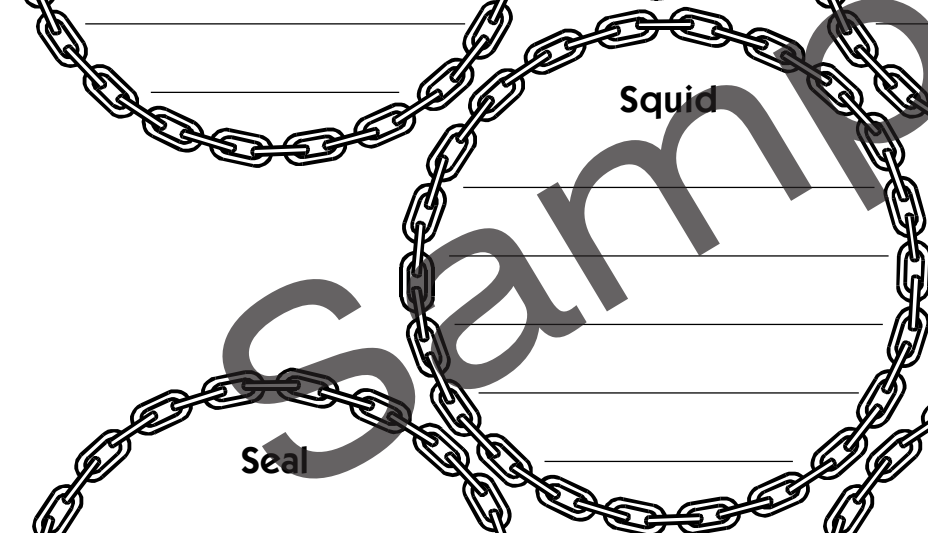
plants and creatures below, then draw each. Decorate with colour. Link them in order of and hang in the classroom (as shown).



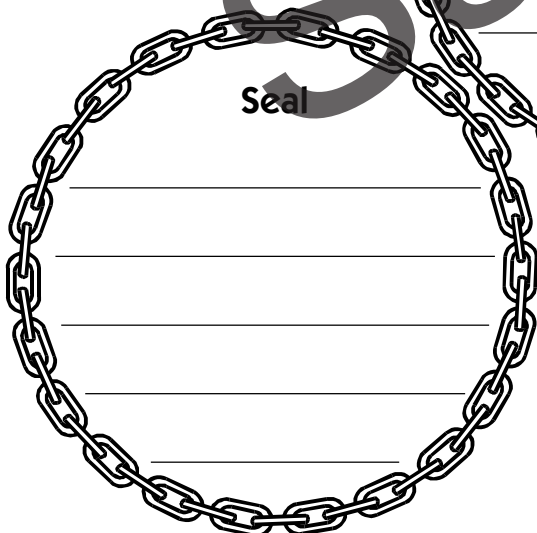
Phytoplankton



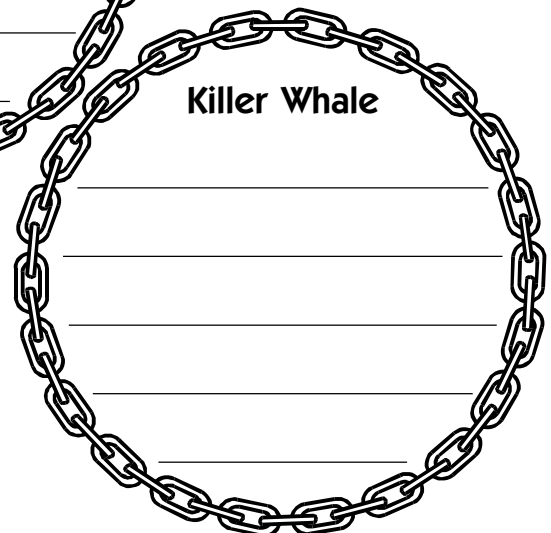
Krill



Squid



Seal



Killer Whale



In reality, ocean food chains are extremely complex and would be hard to draw. Imagine that there is an oil spill that affected the population of seals. Find out what seals eat – what would happen to the population of these creatures if the seals disappeared? What are the seal’s major predators? What would happen to them? Draw a flow diagram on the back of this page and try and go as far as you can down all the tracks of consequences. Messy, isn’t it?

Related Outcome: Students will demonstrate understanding of a food chain by constructing a simple ocean food chain with diagrams.
Subject Areas: Science – Life and Living.

Endangered Species

Name:

Many factors are causing a threat to species of sea life risking possible extinction. Choose two of these to research, or find other marine creatures that you know are under threat:

seahorses

whales

sea turtles

Atlantic salmon



Compile notes on the animal's appearance, habitat, feeding habits, reproduction, reasons for it being endangered and any attempts that have been made to save it. Organisations such as the *World Wildlife Fund* (www.worldwildlife.org) are working towards prevention of animal extinction and may have some helpful information.



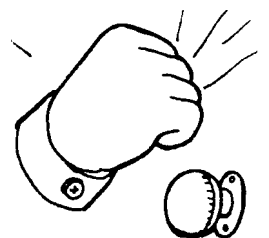
ANIMAL 1: Create a "storyboard" for a television advertisement to educate people on this disappearing species.

1	2	3
4	5	6



ANIMAL 2: Imagine that you are a member of a wildlife protection group and you are conducting a doorknock to raise money to help this species. You may like to do a raffle or sell posters/calendars of the animal, or you may simply be asking for a donation. What will you say to convince the person who answers the door?

Write your speech on the back of this page or a separate sheet of paper.



Related Outcome: Students will use researched information to create a television storyboard for an educational advertisement.
Subject Areas: Science – Life and Living; English – Reading, Viewing; Society and Environment – Place and Space.