

Lab Practical: Marine Taxonomy



Student Name:

School:

Date:/...../.....

Practical Introduction

Since the dawn of time man has been classifying the various life forms which share his world. An ability to classify organisms into a variety of different groups is an essential skill required within any aspect of ecology.

The science of classification of life is called taxonomy. Scientists who study taxonomy are called taxonomists. The methods used for classifying organisms into taxonomic groups are based on the number of shared characteristics that different organisms possess.

There are seven categories which taxonomists use to classify organisms. These categories are called taxons and are as follows:

- **Kingdom** which divides into,
- **Phylum** which divides into,
- **Class** which divides into,
- **Order** which divides into,
- **Family** which divides into,
- **Genera** which finally divides into,
- **Species**

Species diversity gradually reduces as you move down through taxons and finally end up with a single species. Within this final group all individual organisms have the ability to breed, reproduce fertile offspring and share a close physical appearance.

Study Aims

- Examine and classify diverse range of marine organisms into different taxonomic groups based on physical anatomical structures.
- Explain and justify reasons for organism classification.
- Draw illustrated diagrams highlighting physical anatomical structures of organisms.
- Apply ideas and concepts in an orderly manner and make comparisons and judgements regarding the classification of life forms.

Practical Equipment

(Per group)

- Species I.D cards
- Marine specimens
- Compound Microscopes
- Data sheets
- Pencil 2B



Study Methods

1. Obtain a station number from the teacher.
2. Begin by completing the data sheet for your designated station.
3. Note any physical features which distinguish organisms within the same phylum from one another.
4. Note any physical features which distinguish the organisms between different phyla.
5. When directed by the teacher, move to the next station and complete the relevant data sheet and questions.
6. Repeat as above until back at the station you started from.
7. When directed by the teacher swap one specimen with a group either side of you and create a dichotomous key for classifying your new group of specimens. (The teacher will show the class how to do this).
8. Remember to be careful when handling fragile specimens.

PHYLUM PORIFERA

Draw a detailed diagram of two different organisms within the above phylum

1.	
Type of organism:.....	
2.	
Type of organism:.....	

Physical description: 1)

Physical description: 2)

Describe the differences between the two:

PHYLA

ANNELIDA and SIPUNCULA

Draw a detailed diagram of an organism from each of the above phyla

3.	Phylum:.....
Type of organism:.....	
4.	Phylum:.....
Type of organism:.....	

Physical description: 3).....

Physical description: 4).....

Differences between the two organisms:.....

PHYLUM CNIDARIA

Draw a detailed diagram of two different organisms within the above phylum

5.	
	Type of organism:.....
6.	
	Type of organism:.....

Physical description: 5)

.....

Physical description: 6)

.....

Describe the differences between the two:

.....

PHYLUM ECHINODERMATA

Draw a detailed diagram of two different organisms within the above phylum

7.	
	Type of organism:.....
8.	
	Type of organism:.....

Physical description: 7)

.....

Physical description: 8)

.....

Differences & similarities between the two:.....

.....

PHYLUM MOLLUSCA

Draw a detailed diagram of two different organisms within the above phylum

9.	Type of organism:.....
10.	Type of organism:.....

Physical description: 9)

.....

Physical description: 10)

.....

Differences & similarities of the two:

.....

PHYLUM ARTHROPODA

Draw a detailed diagram of two different organisms within the above phylum

11.	Type of organism:.....
12.	Type of organism:.....

Physical description: 11)

.....

Physical description: 12)

.....

Differences & similarities of the two:

.....

PHYLUM CHORDATA

Draw a detailed diagram of two different organisms
within the above phylum

13.	
	Type of organism:.....
14.	
	Type of organism:.....

Physical description: 13)

.....

Physical description: 14)

.....

Differences & similarities of the two:

.....

15.	
	Type of organism:.....
16.	
	Type of organism:.....

Physical description: 15)

.....

Physical description: 16)

.....

Differences & similarities of the two:

.....

Extension Questions

1. For each of the Phyla examined give the common organism group names, i.e. PORIFERA = Sponges
2. What do all organisms within the Phyla Chordata possess?
3. Group the organisms within the title page according to phylum
4. Explain how taxonomy can be thought of as a filing system of organisms
5. Briefly outline the characteristics of organisms within the Arthropod phylum which clearly distinguish them as a separate grouping of organisms from the Echinoderms
6. You are walking around the rocks on the headland and observe a small spherical shaped organism wedged within a rock crevice. It appears to have slender tentacles extending from the outer rim of the upper body surface. The mouth also appears to be located centrally on the upper surface. Which phylum does this organism belong to? Can you name the organism?
7. List the phyla for the following 7 organisms:
 - Tiger shark
 - Mud crab
 - Brain coral
 - Blue ring octopus
 - Sea slug
 - Sydney rock oyster
 - Sea gull
8. For the organisms examined list the various marine habitats you believe they inhabit, e.g. rock pool, open-ocean
9. Explain how the physical characteristics possessed by an organism examined (please name) can be related to where it lives and how it obtains food

The following web site provides an excellent follow up on the individual backgrounds of all organisms examined in this practical activity

- <http://www.mesa.edu.au/friends/seashores/taxonomy.html>

