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STANDARDS

- **CCSS:** RST.9-10.1, 2, 3, 4, 5, 7, 8, 9, 10; RST.11-12.1, 2, 3, 4, 7, 8, 9, 10; W.9-10.2, 4, 7, 8, 9; W.11-12.2, 4, 7, 8, 9; SL.9-10.4, 6; SL.11-12.4, 6
- **NGSS:** HS-LS4-1
- **OLP:** 4.B.1, 4.B.2, 5.C.22

ONLINE CONTENTS

- [Classification Quiz](#)
- [What Clade R U?](#) Interactive (at bottom of *How To Build A Cladogram* section) Use the interactive program to learn and explore more about the anatomy of a stony coral polyp.
- [What Are Corals? Video](#) Classification helps scientists tell species apart. This educational video explains modern biological classification categories from the most general (domain) to the most specific (species).

CLASSIFICATION

This lesson is part of the *Classification* unit, which explains how to organize the millions of organisms on Earth. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- How Do We Classify Organisms?
- Linnaean Naming System
- Coral Classification
- Modern Classification
- Understanding Cladograms
- How to Build a Cladogram

B. Lessons

[Watch It! Naming Nature](#)

- A worksheet to accompany the [Naming Nature](#) video

[Classify This!](#)

- A worksheet to classify an organism and identify its characteristics

[Rules, Rules, Rules](#)

- A worksheet about scientific names

[“Taxing” Corals](#)

- An activity to classify corals based on their characteristics

[In Light of New Evidence](#)

- A writing assignment on an organism that has been reclassified

[The Key to ID](#)

- An activity using a dichotomous key for sea stars

[And Then There Was One](#)

- An activity to create a dichotomous key for corals

[Cladograms 1](#)

- A lesson on creating and interpreting a cladogram

[Cladograms 2](#)

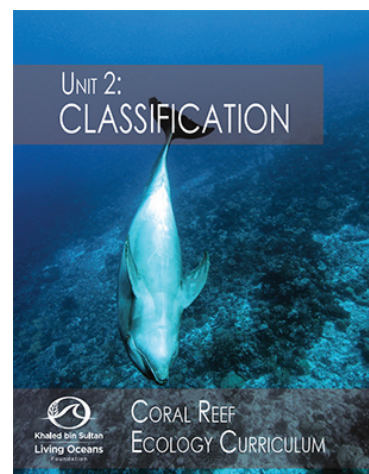
- A lesson on creating and interpreting a cladogram (with traits already included)

[Read It! Troubling Taxonomy](#)

- A worksheet to accompany the [Troubling Taxonomy](#) field blog

[Read It! Blue, You Say?](#)

- A worksheet to accompany the [Blue, You Say?](#) field blog



LESSON 1

TEACHER'S NOTES

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LEARNING OBJECTIVES

- Demonstrate how to classify organisms.
- Apply the rules of binomial nomenclature.

KEYWORDS

- Binomial Nomenclature
- Classification
- Common Name
- Eukarya
- Scientific Name
- Taxonomy

MATERIALS

- Internet or library
- Computer
- Watch It! Naming Nature** student worksheet
- Lesson 1A: Classify This!** student worksheet
- Lesson 1B: Rules, Rules, Rules** student worksheet

EXTENSION

- Students can give a brief presentation and/or write a paper about the animal that they chose for this assignment.

STANDARDS

- CCSS:** RST.9-10.4, 5; RST.11-12.4
- NGSS:** HS-LS4-1
- OLP:** 4.B.1, 5.C.22

PROCEDURE

- Watch *Naming Nature* YouTube video (<https://youtu.be/5h5nSivm1KI>) and answer questions on **Watch It! Naming Nature** student worksheet.
- Teach *Background Information* section A) *How do we classify organisms?* and B) *Linnaean Naming System*.
- Hand out **Lesson 1A: Classify This!** student worksheet. Explain the instructions to the students:
 - Choose an organism (plant or animal).
 - Write the common name and scientific name of the chosen organism on the lines provided. (Remind them to use the rules of binomial nomenclature.)
 - Classify the organism by the eight taxonomic divisions.
 - Write four characteristics that classify it to each division.

NOTE: Tree of Life (<http://tolweb.org/tree/>) is a website that is a free resource that students can use to complete this worksheet.
- Hand out **Lesson 1B: Rules, Rules, Rules** student worksheet. Explain the instructions to the students:
 - Using Linnaeus' rules of binomial nomenclature write each scientific name in its proper form.
 - Answer the questions. NOTE: Students may need to research the names.

LESSON 1A

CLASSIFY THIS!

INSTRUCTIONS:

1. Choose an organism (plant or animal) and write its common name on the line below.
2. Write the scientific name on the line below, following the Linnaean rules of binomial nomenclature.
3. Classify it by its eight taxonomic divisions.
4. For each category, write four characteristics that are used to classify the organism.

Common Name: _____ Scientific Name: _____

DIVISIONS	TAXONOMY	CHARACTERISTICS
DOMAIN		
KINGDOM		
PHYLUM		
CLASS		
ORDER		
FAMILY		
GENUS		
SPECIES		

LESSON 1A

CLASSIFY THIS!

INSTRUCTIONS: Answers may vary.

1. Choose an organism (plant or animal) and write its common name on the line below.
2. Write the scientific name on the line below, following the Linnaean rules of binomial nomenclature.
3. Classify it by its eight taxonomic divisions.
4. For each category, write four characteristics that are used to classify the organism.

Common Name: Green sea turtle Scientific Name: Chelonia mydas

DIVISIONS	TAXONOMY	CHARACTERISTICS
DOMAIN	Eukarya	<ul style="list-style-type: none"> • Contains cells that have complex structures enclosed within membranes • Cell division by mitosis • Multicellular
KINGDOM	Animalia	<ul style="list-style-type: none"> • Adult animals develop from embryos • Multicellular and reproduce sexually • Heterotrophic, obtaining their energy by consuming energy-releasing food substances
PHYLUM	Chordata	<ul style="list-style-type: none"> • Possess a notochord • Three germ layers and a well-developed coelom • Bilaterally symmetrical • Pharyngeal slits and post-anal tail
CLASS	Reptilia	<ul style="list-style-type: none"> • Possess a backbone (vertebrate) • Ectothermic or cold-blooded • Breathe air with lungs • Have scales, leathery shells, lay eggs
ORDER	Testudines	<ul style="list-style-type: none"> • Bony or cartilaginous shell • Shell is a modified rib cage and part of the vertebral column • Do not possess teeth • The postfrontal bone is absent
FAMILY	Cheloniidae	<ul style="list-style-type: none"> • Marine sea turtles • Oval or heart-shaped shells • Shells covered with scutes (horny plates) • Front legs are stronger than back legs
GENUS	Chelonia	<ul style="list-style-type: none"> • Only one species in this genus (see other traits below)
SPECIES	mydas	<ul style="list-style-type: none"> • Considered green due to the color of their fat • Single pair of prefrontal scales on head • Carapace has five central scutes • Four pairs of lateral scutes on carapace

LESSON 1B

RULES, RULES, RULES

PART A:

INSTRUCTIONS: Use the rules of binomial nomenclature to write each scientific name in its formal form.

1. *dasyatis Americana*
2. *carcharhinus leucas*
3. *amphiprion perideraion*
4. *carcharhinus melanopterus*
5. *epinephelus tauvina*

PART B:

INSTRUCTIONS: Answer the following questions (#1-3) using the scientific names above. Then answer #4.

1. Which organisms are the most closely related? Why?
2. How many different genera are represented? _____
3. How many species are represented? _____
4. Why is binomial nomenclature important? List two reasons.

LESSON 1B

RULES, RULES, RULES

PART A:

INSTRUCTIONS: Use the rules of binomial nomenclature to write each scientific name in its formal form.

- | | |
|------------------------------|---|
| 1. dasyatis Americana | <u><i>Dasyatis americana</i> or <i>Dasyatis americana</i></u> |
| 2. carcharhinus leucas | <u><i>Carcharhinus leucas</i> or <i>Carcharhinus leucas</i></u> |
| 3. amphiprion perideraion | <u><i>Amphiprion perideraion</i> or <i>Amphiprion perideraion</i></u> |
| 4. carcharhinus melanopterus | <u><i>Carcharhinus melanopterus</i> or <i>Carcharhinus melanopterus</i></u> |
| 5. epinephelus tauvina | <u><i>Epinephelus tauvina</i> or <i>Epinephelus tauvina</i></u> |

PART B:

INSTRUCTIONS: Answer the following questions (#1-3) using the scientific names above. Then answer #4.

1. Which organisms are the most closely related? Why?

***Carcharhinus leucas* and *Carcharhinus melanopterus* are the most closely related. They are part of the same genus. No other animals in Part A are that closely related.**

2. How many different genera are represented? **Four**
3. How many species are represented? **Five**
4. Why is binomial nomenclature important? List two reasons.
- **It allows scientists around the world to communicate about the same organism.**
 - **It allows people to see the relationships among organisms.**
 - **It gives species a unique classification.**