

# Grade Level: 9-12

## Reef Survey 101

### Pre-Lesson

#### Time Allotment

90 minutes over a two or three day period

#### Materials

Per person:

- Sample paint cards from Home Depot or Lowes (7)
  - 3 tiered, various colors
- Permanent markers
- Brad (1)
- Lined index cards (7)
- Science text book

Per group:

- Computer/Internet

#### Advance Preparation

Make sample cards so that the students are familiar with the setup of the flip chart. Schedule time in the computer lab or request the use of laptops in the classroom. Decide on the 5 Florida endangered or protected species you will be classifying. Have all students bring in their 7 paint cards and index cards at least 1 week before starting the project.

#### Lesson Objectives Students Will:

- Define taxonomy and advance their understanding of the need for classification.
- Recognize that diversity exists among organisms.
- Advance skills in reading, writing and organization
- Learn scientific names for five of Florida's endangered or protected species

#### Sunshine State Standards for Highschool

Category:

SC.912.L.15.6, SC.912.L.15.4

#### Vocabulary

Class  
 Classification  
 Family  
 Genus  
 Kingdom  
 Order  
 Phylum  
 Species  
 Taxonomy

#### Background Information

Organisms were once classified according to general characteristics such as the presence or lack of a spinal cord. However, once Charles Darwin's Theory of Evolution was presented, classifications began to reflect evolutionary relationships.

Karl von Linne, more recently known as Carolus Linnaeus, laid out the classification framework that is still being used today. While some classification systems differ in their divisions, most still rely on the general seven tiered grouping: kingdom, phylum, class, order, family, genus and species. The kingdom group is the broadest in its classification while the species group is the most specific. In Linnaean taxonomy all organisms are represented by two Latin categories: the genus and the species. An example of this would be the American alligator or *Alligator mississippiensis*. The use of Latin in scientific classification is used and accepted worldwide.

So why do we need to classify organisms? Simply stated, it is to illustrate the diversity of life. Given that there are nearly 1.8 million species classified to date, this organized system allows for worldwide communication among scientists and recognition of the species.

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#### Initial Discussion

1. Discuss the importance of taxonomy and the purpose of scientific names.
2. Go over all seven hierarchical categories and briefly describe their importance based on characteristics.
3. In groups of five, have students research the five endangered or protected species. Each student will be responsible for sharing their species' information with the rest of the group. The species information should include the following: kingdom, phylum, class, order, family, genus and species.
4. Have each student label each of the seven index cards with the seven categories. Again, there should only be one category per index card. See illustration 1.2.
5. At this time the students should be ready to fill in the endangered or protected species information for each of the five species chosen. An example of how the cards should be written are as follows:
  1. Florida Panther: Animalia  
See illustration 1.2.
6. After all index cards are complete, they should then be adhered to the backs of the appropriate paint cards. The paint cards should then be connected together by a brad in the upper left hand corner. Using a hole punch to make the holes for the brad to go through is recommended. Note: the cards should be put into the correct hierarchical order. See illustration 1.3.

#### Hands-On Activity

1. Students should first label each paint card with its appropriate category: kingdom (red), phylum (orange), class (yellow), order (green), family (blue), genus (indigo or aqua) and species (purple). This heading should go on the top tier of the paint card. See illustration 1.1.
2. Students should now move onto the definition section of their project. On the second tier of their paint cards, they must write the definition of the category labeled on each card. See illustration 1.1.
3. The 3<sup>rd</sup> tier will require a bit more research. This tier is designated for specific group names. For example, the kingdom card may include the following group names: Animalia, Plantae, Monera and Protista. It is recommended that they specify at least five group names.

#### Relate Activity to Concept

1. The purpose of the tiered cards is to be a quick reference to the definition and examples of the key vocabulary or category in question.
2. By researching the taxonomy of five endangered or protected species, the students should be able to understand the taxonomic relationships among them, thus illustrating diversity.

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**Assessment**

Consider a simple quiz where you give the students a few group names and they need to tell you what category they fall into. For example: Animalia, Plantae and Monera are all examples of kingdoms. Adding to this, have the students explain the importance of taxonomy and the use of Latin in scientific classification.

**Extension Activity**

Have students research a specific order. They should include as many animals or plants that fall into that order as possible. By doing this they should start to understand how specific characteristics of these animals and plants help to categorize them. Making a family tree is a good way to show these relationships. Refer to sample below.

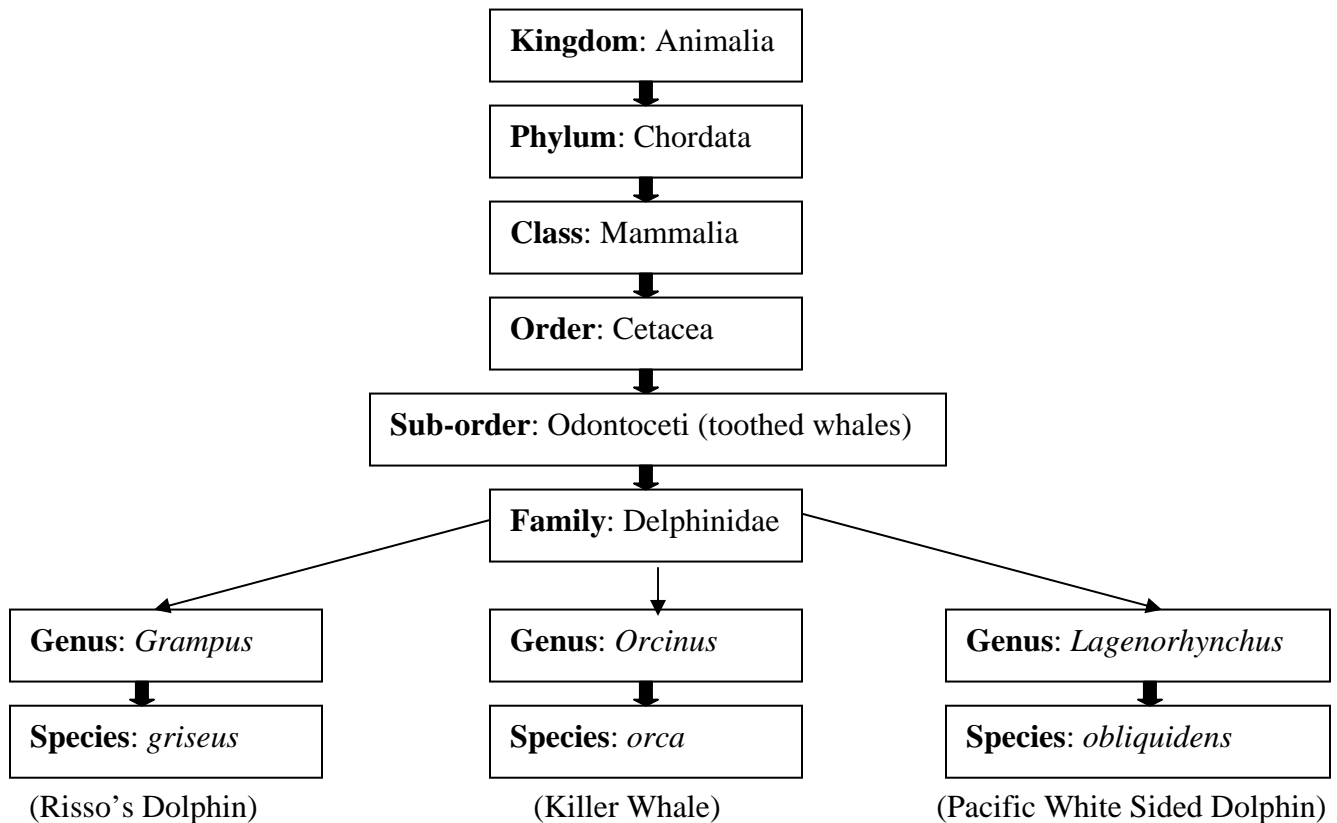




Illustration 1.1



Illustration 1.2

Illustration 1.3

