

# An Alien Has Landed



**Focus:** Threatened and endangered marine species

**Grade Level:** 3-8

**Connection to other Subjects:** Science, Mathematics, Reading, Language Arts

**Correlation to National Standards:**

*National Science Education Standards (NSES):*

Grades K-8: Abilities necessary to do scientific inquiry; Understanding about scientific inquiry

*American Association for the Advancement of Science (AAAS):*

Grades K-2: Scientific Inquiry

Grades 3-5: Scientific Inquiry

**Focus Question:** How do scientists use observation to identify marine animals?

**Learning objectives:** The students should be able to use their observation skills to identify animals within a species.

**Materials:** Data sheets; clipboards; chart paper and markers (optional); copies of The Kid's Times; fluke and carapace illustrations; transparencies of fluke and carapace examples

**Teaching Time:** 4 class periods of 45 minutes

**Key words:**

Behaviors

Carapace

Characteristics

Fins

Flukes

Scutes

Threatened and endangered species



### **Background:**

The number of threatened and endangered species is growing. The Endangered Species Act of 1973 protects all species, marine or terrestrial, by classifying them as either threatened or endangered. Under the Act, threatened means “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range [habitat].” An endangered classification means “any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.”

The scientists who study threatened and endangered marine species use many different methods, depending on the animal they are studying, for observing and noting animal behaviors and characteristics. Researchers studying whales and dolphins, for example, often use the markings on the fluke (tail) to identify, track, and count these animals. Correctly identifying individuals is very important to their conservation. Without accurate observations and counts of animals, scientists are unable to draw conclusions about behavior and population, both of which are crucial to conserving and protecting threatened and endangered species.

### **Introduction:**

An alien has landed next to the school. After she has visited several classrooms, you and your friends discover she is having trouble telling people apart. You have been selected to help her identify some of the adults in the school so she can learn about human adults and how schools operate in your area. You are going to employ the same methods of observation scientists use to identify animals of the same species.

### **Lesson:**

1. The students will choose an adult in the school and spend some time observing them. The students can do this individually, in pairs, or in small groups depending on the time and availability of the adults. Each student will record observations of the person. It is important that the students record both behavioral and physical characteristics.
2. Scientists observe characteristics that do not change each day (whale flukes, notches in a dolphin’s fin, turtle scutes). Discuss or brainstorm a list of these type of characteristics to observe and record (sex, eye color, hair color, head shape and circumference, length of feet, height, width of hand, sound of their voice, among many others). If necessary, you can prepare the data sheets ahead of time with the items you would like them to observe.

The students should also record behavioral characteristics that generally remain constant such as the length of a person’s stride, the way they move their arms when they walk, or words or phrases they often say. This can be a difficult concept for some students to



grasp so most likely time will need to be taken for discussion and brainstorming. After the students have observed their adult, they can write a descriptive paragraph of the adult incorporating all of the data. They can then read their work to the class and the other students can attempt to guess who was observed. If the adult cannot be identified, ask the students to rework their writing or possibly revisit their adult for further or more detailed observations.

3. The next step is to observe and identify threatened or endangered marine animals. The students can do this with Right whale flukes and Kemp's Ridley turtle shells, two of the most endangered marine species. Display a the first transparency of a Right whale fluke and discuss the colorations and shapes. Show a second picture and discuss the difference with the students. Model recording the data on the data sheet.

4. Pass each group of students a fluke illustration. Since scientists often name each animal they encounter, the students can do this if they choose. Have them record characteristics of the fluke on the data sheet. After they have finished recording, give them a set of cards with a variety of flukes in different positions. Challenge them to identify the whale from the previous diagram from the set.

5. To make the activity more challenging, use a set of illustrations for the first step, instead of one. Have them record the data and when given the second set, identify all the whales based on their characteristics. The more flukes and the more data, the harder it is to identify an individual animal. This is a challenge scientists face in the field.

The activity can be repeated using the Kemp's ridley turtle shell illustrations.

### **Closure:**

Debrief the activity with the students and have them respond to the journal questions below.

- What is the difference between physical and behavioral characteristics?
- How and why do scientists need to use observations skills when studying threatened and endangered animals?

### **Follow up and Evaluation:**

- Assign each student an endangered marine species and give them the corresponding Kids' Times to read. Have them create a "Wanted Alive" poster describing the species (using physical and behavioral characteristics) and explaining why it is endangered. Ask the students to highlight one things people can do to ensure the animals will remain alive.



- Have each student teach a member of their family about observation and about the species they read about in the Times.
- Have each student write a story about their animal incorporating physical and behavioral characteristics with the threats to the species and what people can do to help conserve and protect the animals.

**Resources:**

For further reading the class can visit the website for the Office of Protected Resources at [www.nmfs.noaa.gov/pr/](http://www.nmfs.noaa.gov/pr/).



**NOAA Fisheries**

Office of Protected Resources  
[www.nmfs.noaa.gov/pr/](http://www.nmfs.noaa.gov/pr/)  
Molly Harrison 2004



**Observation Data**

<b>Human or Species</b>	<b>Characteristics</b>
Human:	Physical:
	Behavioral:
Whale:	Physical:
Whale:	Physical: