

LESSON 3 Humpback Whale Behaviors

Lesson at a Glance

Students learn about the behaviors of humpback whales in the Hawaiian breeding and nursery grounds. Students then create their own interpretation of humpback behaviors. They also study the different structures of humpback whales that help them survive in their different environments.

Lesson Duration

Two 45 minute periods

Essential Question(s)

Why do humpback whales need to migrate between Alaska and Hawai‘i?
What are the behaviors of humpback whales in the Hawaiian breeding and nursery grounds during the winter months?

Related HCPS III Benchmark(s):

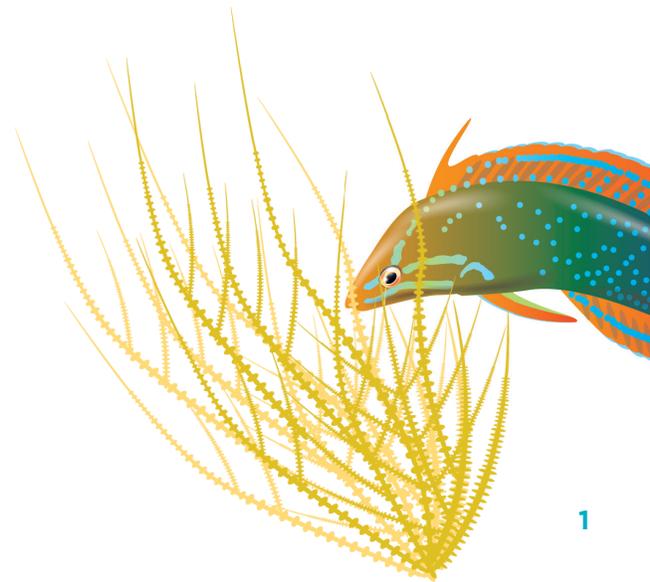
Language Arts LA 3.1.3.
Use new grade-appropriate vocabulary, including homophones and homographs, introduced in stories, informational texts, word study, and reading

Key Concepts

- Humpback whales migrate to Alaska in the Spring and Summer months to feast on the krill that can only be found in colder waters.
- Humpback whales migrate to Hawai‘i because the winters in the Polar regions are so severe and the food availability decreases. They also need the warmer waters of the Tropical regions to breed and have their calves.
- Humpback whales display unique grouping and competitive behaviors in the breeding and nursery grounds during the winter months in Hawai‘i.

Instructional Objectives

- I can describe the unique grouping and competitive behaviors of humpback whales in the breeding and nursery grounds during the winter months in Hawai‘i.
- I can describe how the marine environment determines the feeding and breeding behavior of humpback whales.



Assessment Tools

Benchmark Rubric:

Topic		Vocabulary and Concept Development	
Benchmark LA.3.1.3		Use new grade-appropriate vocabulary, including homophones and homographs, introduced in stories, informational texts, word study, and reading	
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Use new grade-appropriate vocabulary, including homophones and homographs, with precision, fluency, and accuracy	Use new grade-appropriate vocabulary, including homophones and homographs, with no significant errors	Use new grade-appropriate vocabulary, including homophones and homographs, with difficulty and a few significant and/or many minor errors	Use new grade-appropriate vocabulary, including homophones and homographs, with great difficulty and/or many significant errors

Materials Needed

Teacher	Class	Group	Student
<ul style="list-style-type: none"> A funky hat Method to present PowerPoint PowerPoint Presentations: “A Whale of a Tail” and <i>Humpback Whale Behaviors</i> 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Worksheet: <i>Humpbacks’ Behavior in Hawai’i</i>

Instructional Resources

PowerPoint Presentations:

Why Humpback Whales Migrate from Alaska to Hawai’i “A Whale of a Tail”
Humpback Whale Behaviors

Teacher Answer Key: *Humpbacks’ Behavior in Hawai’i*

Student Worksheet: *Humpbacks’ Behavior in Hawai’i*

Teacher Reading: *Behavior Cards*

Video: *Humpback Whale Migration*

Student Vocabulary Words

barnacle: a marine crustacean with a hard shell that attaches to surfaces under water, including the rostrum, lower jaw, pectoral fins, and flukes of humpback whales.

behavior: The actions or reactions of an organism in response to external or internal stimuli; what an organism does.

blow: the visible exhalation of a whale; also called a spout.

breaching: a behavior of cetaceans when the animal jumps out of the water and lands on its side or back with a big splash.

cetacean: a marine mammal in the Order Cetacea, including whales, dolphins, and porpoises.

crustacean: a marine animal with a segmented body, shell, and jointed legs.

competition pod: a group of male whales competing to mate with a female whale.

escort: a male whale swimming close to a female whale in the breeding grounds.

flukes: the two lobes of a whale's tail.

head lunge: a behavior where a whale lunges forward with its head raised above the water.

hypothesis: an idea that can be tested by experiment or observation.

inference: an explanation or interpretation of an observation.

krill: shrimp-like planktonic crustaceans; a major food source for baleen whales.

median notch: an indentation in the center of the outer edge of a whale fluke.

observation: something noticed using one or more of the senses.

pec slap: a behavior of humpback whales in which the whale rolls onto its side with its long pectoral fin out of the water, then slaps the surface of the water.

peduncle slap: an aggressive behavior of humpback whales where the whale raises its flukes and peduncle muscle out of the water and whips it to the side, slapping the surface of the water or other whales forcefully.

spy hop: a behavior of cetaceans where the animal raises its head vertically out of the water, then sinks back into the water without causing much of a splash.

tail slap: a behavior of humpback whales in which the whale raises its flukes out of the water and slaps them forcefully on the surface of the water.

ventral pleats: long folds in the skin under the mouth that expand when the whale takes in large amounts of water and food.

whale lice: small parasitic crustaceans that live on whales and feed on their skin.

Lesson Plan

Lesson Preparation

- Read the Science Background provided in the Unit's Overview.
- Make copies of Student Worksheet *Humpbacks in Hawai'i*, one per student.
- Make arrangements to project the PowerPoint presentations *Why Humpback Whales Migrate from Alaska to Hawai'i "A Whale of a Tail"* and *Humpback Whale Behaviors*.
- Make a copy of the *Behavior Cards* and cut into individual cards. Laminate, if desired, to make the cards more durable.

I. *Why Humpback Whales Migrate from Alaska to Hawai'i "A Whale of a Tale": PowerPoint Presentation*

- Present the PowerPoint *Why Humpback Whales Migrate from Alaska to Hawai'i*, encouraging students to focus on the reasons for migration between these locations.
- During the PowerPoint, stop at designated spots for the teacher to conduct question and answer session to check for understanding.
- After the PowerPoint, have students do a Round Table exercise. The teacher will divide the class into groups containing 3-4 students. The group will have one sheet of blank paper. Each member of the group will take a turn to write down a fact about why Humpbacks migrate from Alaska to Hawai'i. The paper will make its way around the table multiple times. The groups must complete this task in 2-3 minutes.



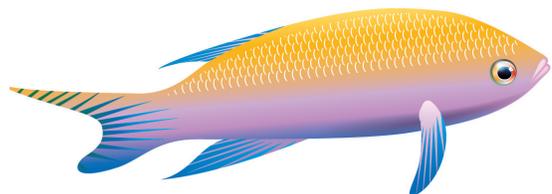
- D. When the Round Table exercise is complete, go around the room and have each group share their answers. The teacher will write each group's contribution on the board and discuss them.

II. Humpback Behaviors in Hawai'i: PowerPoint Presentation and Worksheet

- A. Present the PowerPoint *Humpback Whale Behaviors*, and engage students in describing and interpreting the behaviors of humpbacks in their breeding and nursery grounds in Hawai'i. Provide each student with a copy of *Humpbacks' Behavior in Hawai'i* worksheet.
- B. During the PowerPoint, have the students label the name of each behavior and draw the behaviors that do not have an illustration in the spaces provided. You may need to *pause* after each behavior, to allow time for the students to label and draw.
- C. After the PowerPoint presentation, have the students take turns reading the information for each behavior. (Suggestion: You may want to have students read sections aloud to the class or partner read.)

III. Cetacean Charades

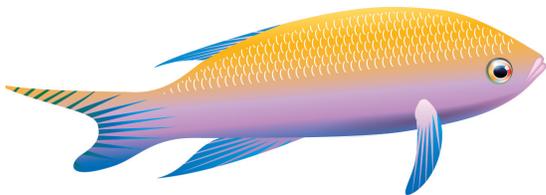
- A. Review the behaviors and anatomy of humpback whales by engaging the students in a game of charades. If the students are unfamiliar with charades, pantomime an example to demonstrate.
- B. Show the students the *Behavior Cards*. Explain that on each card is a word or phrase about humpback whale behaviors or body features which the students will be acting out.
- C. Assign students for the following roles: *Timekeeper* (uses a stopwatch to keep track of play time) and *Scorekeeper* (records the points for each team). Divide the remaining students into two teams, and allow time for students to name their teams.
- D. The game proceeds as follows:
- A player from Team A draws a *Behavior Card*, reviews the behavior written on the card, then waits for the Timekeeper to tell the player to start pantomiming the behavior.
 - Team A then has one minute to guess the behavior. If they figure it out, the Scorekeeper records a point for Team A on the board, or somewhere visible to all students. If students do not figure out the behavior within one minute, the Timekeeper announces that *time is up*, and allows Team B to guess the behavior.
 - Then, a player from Team B draws a *Behavior Card*, and play proceeds as above.
 - If Team B players get excited and say the name of the behavior during Team A's turn to guess, Team A automatically gets a point. (Remind the teams to answer only when it is their turn to guess.)
 - The Scorekeeper keeps track of the Behavior Cards guessed by each team during play. Cards not guessed should be placed in a separate stack.



- Continue the game until every player has had a chance to participate, or as time allows.
- The team that guesses the most behaviors wins the game.
- You can go back to the Behavior Cards that were not guessed and continue play until all behaviors have been guessed.
- After the game, you can use the Behavior Cards to review details about each behavior.

Extended Activities

1. Use the charades cards to play a matching game with students. Have them place the name of the behavior next to the image of the behavior.



LESSON 3 Teacher Answer Key

Humpbacks' Behavior in Hawai'i

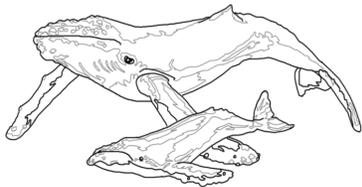
Name: _____ Date: _____

Directions:

1. Write the name of each behavior in the space provided.
2. Draw a picture for the behaviors that are missing a picture.
3. Read the description for each behavior.
 - a. For each behavior observed in the *breeding grounds* underline the observations.

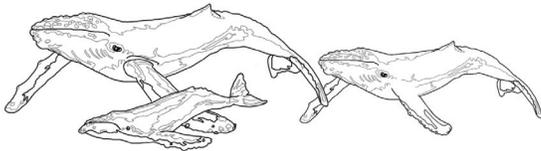
Grouping Behaviors in Hawai'i

Humpback whales interact with each other more in their Hawaiian breeding and nursery grounds during the winter months. They form the following groups:



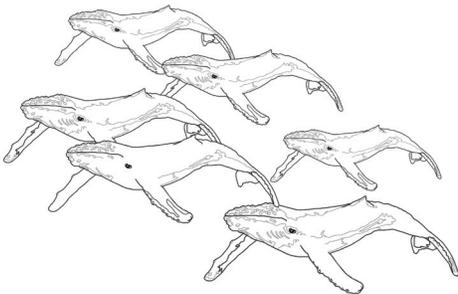
Name of behavior: *Mom/ Calf Interaction*

A female whale is a cow. A baby whale is a calf. The calf swims very closely to its mother for protection, to nurse rich milk, and to learn how to behave by mimicking her actions.



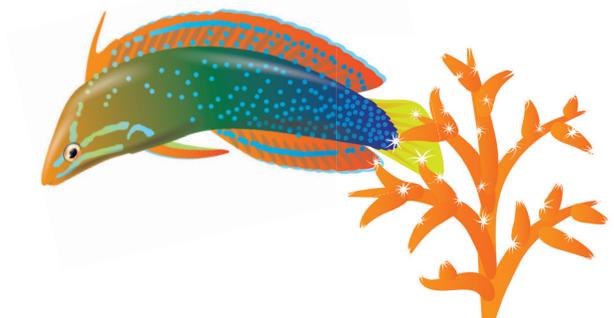
Name of behavior: *Escort*

A female whale and her calf swimming together in the breeding grounds are sometimes joined by a male whale. The male is called an escort. He may be guarding Mom and calf, or interested in mating with Mom.

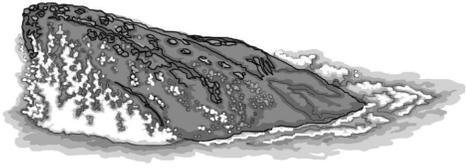


Name of behavior: *Competition Pod*

A female whale is joined by more than one male. The males are competing to mate with the female. The males will show off for the female, or try to hurt each other to prove who will be the best mate. They can be very rough, sometimes, injuring other males.

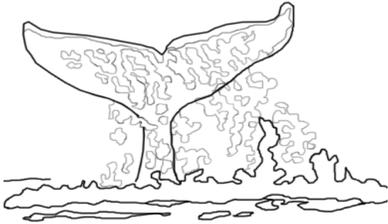


Breeding Behaviors in Hawai'i



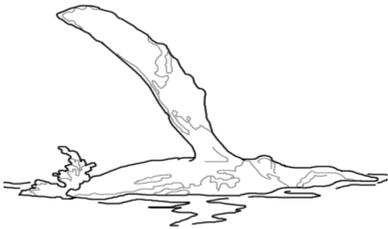
Name of behavior: *Head Lunge*

The humpback whale lunges forward with its head raised above water. This could be a behavior used by males to compete for a female. Sometimes, the males will fill their ventral pleats with water to make them look larger, called an inflated head lunge.



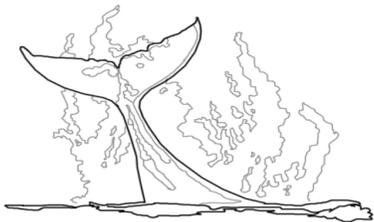
Name of behavior: *Tail Slap*

The humpback whale raises its flukes out of the water and slaps them forcefully on the surface of the water, probably to communicate a warning to other whales in the area.



Name of behavior: *Pec Slap*

The humpback whale rolls onto its side and raises its long pectoral fin out of the water, then slaps the surface of the water. This could be a behavior to signal other whales.



Name of behavior: *Peduncle Throw*

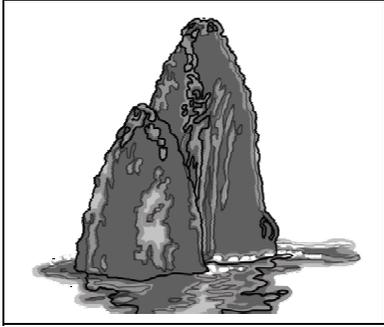
This is a very aggressive behavior. The whale raises the last third of its body (peduncle and fluke) out of the water, then whips it from side to side slapping the surface of the water, or bashing other whales. Probably used to scare off other males that are competing for the same female.



Name of behavior: *Breach*

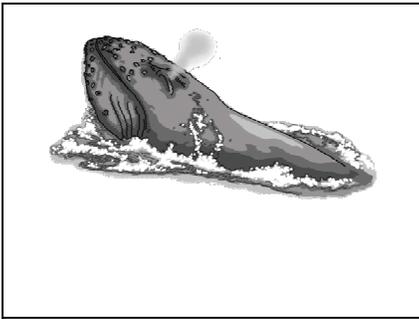
The humpback whale uses its tail to launch itself out of the water, then lands on its back with a huge splash. Researchers believe this is to communicate their location to other whales, or knock off barnacles and whale lice from their skin.

Breeding Behaviors in Hawai'i



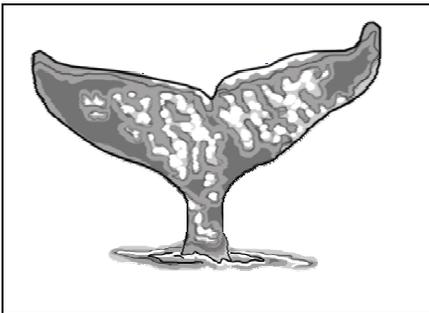
Name of behavior: *Spyhop/Head Rise*

The whale rises vertically with its head above the water. Some believe this behavior allows the whale to look around at activities going on above the surface of the water. Also called a Head Rise.



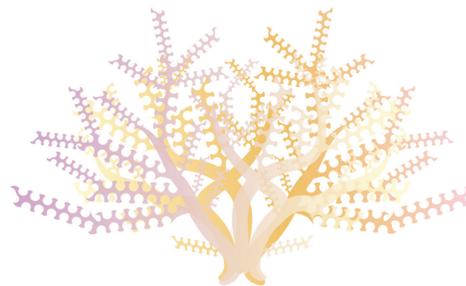
Name of behavior: *Blow*

The whale rises to the surface and exhales before taking in a breath of air. The exhaled air condenses into water vapor which looks like a puff of white smoke. The blow can reach up to 20 feet in the air. On average, an adult whale breathes every 10–15 minutes, but can hold its breath for up to 45 minutes. Calves have smaller lungs and must surface more often, usually approximately every 3–5 minutes.



Name of behavior: *Fluke Up Dive*

As the whale begins to dive down, it arches its peduncle muscle, and slowly raises its flukes into the air.



LESSON 3

Humpbacks' Behavior in Hawai'i

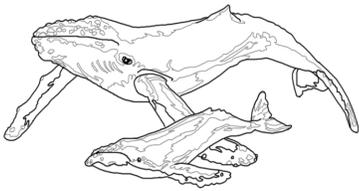
Name: _____ Date: _____

Directions:

1. Write the name of each behavior in the space provided.
2. Draw a picture for the behaviors that are missing a picture.
3. Read the description for each behavior.
 - a. For each behavior observed in the *breeding grounds* underline the observations.

Grouping Behaviors in Hawai'i

Humpback whales interact with each other more in their Hawaiian breeding and nursery grounds during the winter months. They form the following groups:



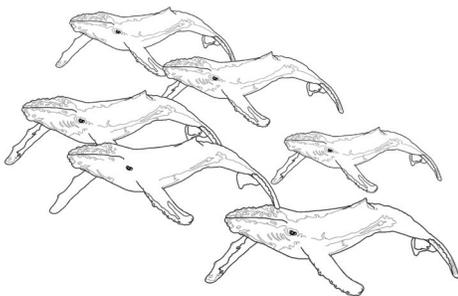
Name of behavior: _____

A female whale is a cow. A baby whale is a calf. The calf swims very closely to its mother for protection, to nurse rich milk, and to learn how to behave by mimicking her actions.



Name of behavior: _____

A female whale and her calf swimming together in the breeding grounds are sometimes joined by a male whale. The male is called an escort. He may be guarding Mom and calf, or interested in mating with Mom.

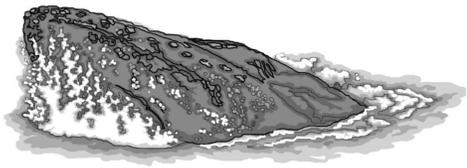


Name of behavior: _____

A female whale is joined by more than one male. The males are competing to mate with the female. The males will show off for the female, or try to hurt each other to prove who will be the best mate. They can be very rough, sometimes injuring other males.



Breeding Behaviors in Hawai'i



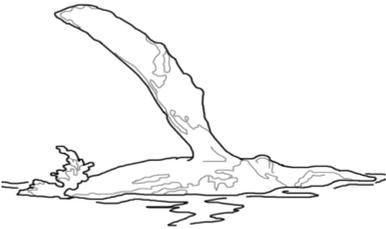
Name of behavior: _____

The humpback whale lunges forward with its head raised above the water. This could be a behavior used by males to compete for a female. Sometimes, the males will fill their ventral pleats with water to make them look larger, called an inflated head lunge.



Name of behavior: _____

The humpback whale raises its flukes out of the water and slaps them forcefully on the surface of the water, probably to communicate a warning to other whales in the area.



Name of behavior: _____

The humpback whale rolls onto its side and raises its long pectoral fin out of the water, then slaps the surface of the water. This could be a behavior to signal other whales.



Name of behavior: _____

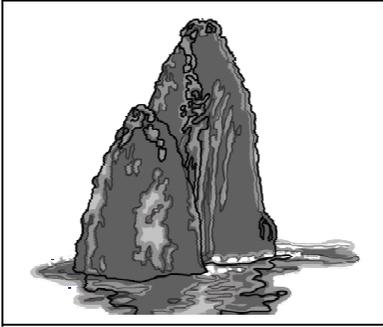
This is a very aggressive behavior. The whale raises the last third of its body (peduncle and fluke) out of the water, then whips it from side to side slapping the surface of the water, or bashing other whales. Probably used to scare off other males that are competing for the same female.



Name of behavior: _____

The humpback whale uses its tail to launch itself out of the water, then lands on its back with a huge splash. Researchers believe this is to communicate their location to other whales, or knock off barnacles and whale lice from their skin.

Breeding Behaviors in Hawai'i



Name of behavior: _____

The whale rises vertically with its head above the water. Some believe this behavior allows the whale to look around at activities going on above the surface of the water. Also called a Head Rise.



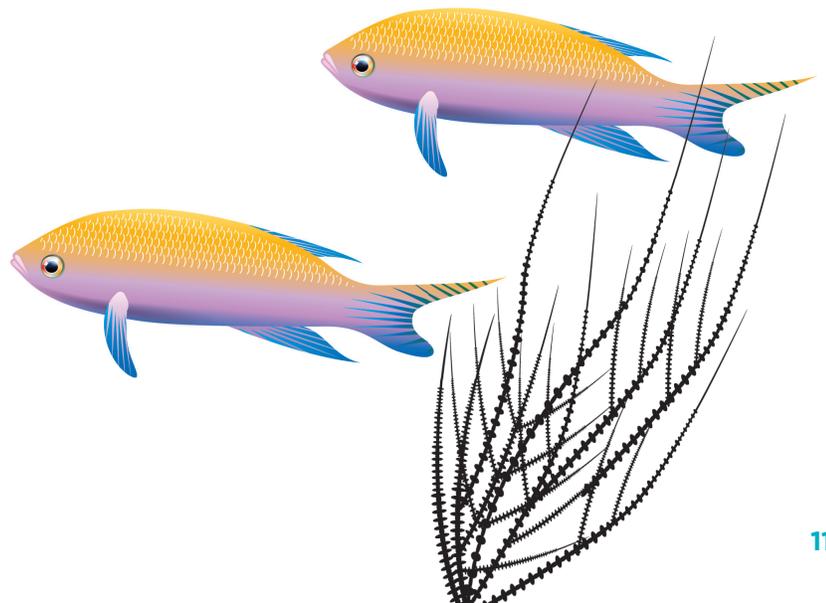
Name of behavior: _____

The whale rises to the surface and exhales before taking in a breath of air. The exhaled air condenses into water vapor which looks like a puff of white smoke. The blow can reach up to 20 feet in the air. On average, an adult whale breathes every 10–15 minutes, but can hold its breath for up to 45 minutes. Calves have smaller lungs and must surface more often, usually approximately every 3–5 minutes.



Name of behavior: _____

As the whale begins to dive down, it arches its peduncle muscle, and slowly raises its flukes into the air.



LESSON 3 Behavior Cards

SPY HOP	HEAD LUNGE	HEAD SLAP
PEC SLAP	PEDUNCLE SLAP	TAIL SLAP
BREACH	BLOW	FLUKE UP DIVE

FLUKE DOWN DIVE	BARNAACLE	WHALE LICE
TUBERCLE	BALEEN	INFLATED HEAD LUNGE
COW-CALF PAIR	ESCORT	COMPETITION POD

WHALE RESEARCHER	BUBBLE NET FEEDING	GULP FEEDING
CALF	VENTRAL PLEATS	DORSAL FIN