Fin Matching

Updated: September 9, 2016

NOAA FISHERIES
West Coast Region

Audience

- Outreach, all ages

Objectives

Participants will learn:

- How to identify individual killer whales by their saddle patches and fin characteristics.
- How to determine the sex of a killer whale by their size and genital patch.

Required Materials

Included in this document

- ☐ Identifying Killer Whales (pg. 3-4)
- ☐ Saddle patch photos (pg. 5-20)
- ☐ Individual descriptions (pg. 21-28)

Not included in this document

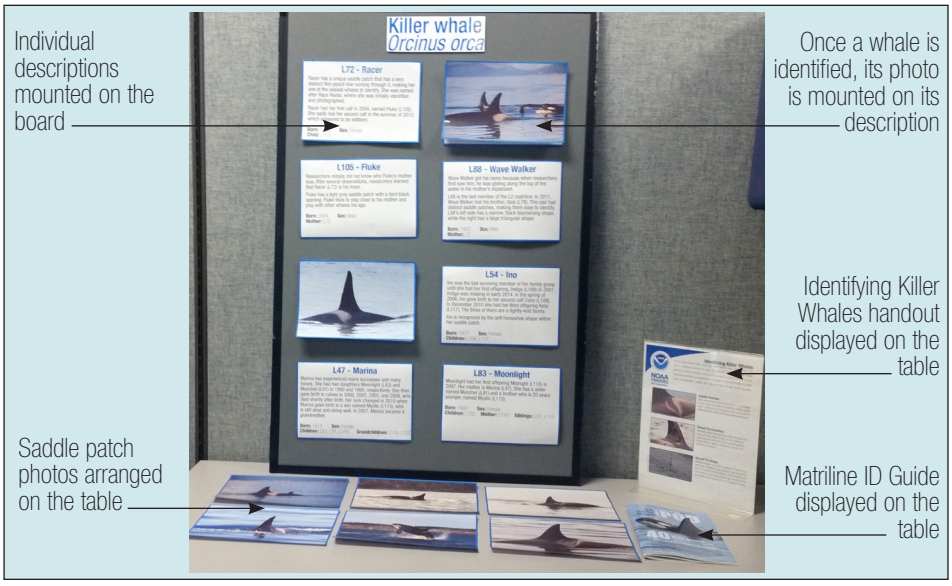
- ☐ 2016 Matriline ID Guide

Optional Materials

- ☐ Velcro tape
- ☐ L Pod Matrilines (pg. 29)
- ☐ Orca trading cards
- ☐ Marine Mammals placard
- ☐ Be Whale Wise brochures
- ☐ Report Entangled Whales brochures
- ☐ 10 Years of Research and Conservation report

Overview

In the early 1970's, Michael Bigg established photo-identification techniques for killer whales. By identifying individual killer whales, researchers can better understand population sizes, movement patterns, social structure, and birth and death rates. In this activity, participants identify individual killer whales in the L Pod by matching their saddle patches and dorsal fins to a matriline guide.



Preparation

1. Print the Identifying Killer Whales handout (pg. 3-4) double-sided. Display it on a table.
2. Print the saddle patch photos (pg. 5-20) double-sided; flip on short edge. Cut along the border. If you plan to use this activity frequently, laminate the photos and attach Velcro tape to the back. Arrange the photos face-up on a table.
3. Print the individual descriptions (pg. 21-28) single-sided. Cut along the border. If you plan to use this activity frequently, laminate the descriptions and attach Velcro tape to the front. Mount the descriptions on a board/trifold or arrange them on a table.

Hook

1. Ask participants one or more of the following questions:
   - What do killer whales look like? Do they have any distinguishing characteristics?
   - What do you know about the killer whales in our region?
   - How can scientists identify individual killer whales?

Activity

1. Tell participants that the Southern Resident killer whales are a large extended family comprised of three pods: J, K, and L. Each of the individual whales can be identified using different visual techniques.

Vocabulary

Matriline—A line of descent traced through the maternal side of a family.

Saddle patch—A grey or white marking on the back of a killer whale that wraps around the dorsal fin. Each saddle patch is unique like a human fingerprint and occurs on both sides of the body.

Slipstream—A type of hydrodynamic wake that develops as a whale swims. Slipstreams help calves swim with less energy and enables a mother and her calf to keep up with the pod.

Ventral—Underside or abdomen.

More Information

For questions or comments about this activity, contact wcr.education@noaa.gov.

2. Walk through both sides of the Identifying Killer Whales handout with participants.
3. Demonstrate the matching game. Pick up a photo and show how the saddle patch and dorsal fin can be matched in the 2016 Matriline ID Guide. Once you have found the right match, place the photo on top of the individual description.
4. Encourage participants to identify the rest of the individuals. Provide positive feedback when they successfully find a match. If participants struggle to find the right match, help them narrow down their choices.
5. As participants work, share facts about the whale's age, matriline, and pod. The Center for Whale Research, Orca Network, and Whale Museum provide up-to-date facts on the Southern Resident killer whales.

Discussion Questions

1. How can individual killer whales be identified? *Saddle patches, dorsal fin conditions, and dorsal fin shapes.*
2. Why is it important to be able to identify individual killer whales? *Researchers can better understand population sizes, movement patterns, social structure, and birth and death rates. By understanding the population of pods, researchers can understand whether or not recovery efforts are working.*
3. What was the hardest thing about identifying individuals? The easiest?
4. Why might it be harder to identify whales in real life, rather than in photos? *It can be harder to identify whales in real life because they are moving and diving in and out of water.*
5. Why is it easier for researchers to identify the mother of a new calf, rather than the father? *Calves stay close to their mothers, especially during the first year of their life.*

Sustainability Connections

If time allows, try to engage participants in conversations about sustainability.

1. Tell participants that the Southern Resident killer whales are endangered and among the most contaminated marine mammals in the world.
2. Ask participants to describe what might be leading to the decline and contamination of these whales. *Pollution from homes, businesses, and farms; boat noise and traffic; and the decline of prey, such as salmon.*
3. Ask participants what they can do at home to ensure toxins are not entering local waterways. *Maintain vehicles, dispose of waste properly, practice natural landscaping, and wash vehicles at commercial car washes.*
4. Tell participants that Natural Yard Care, Puget Sound Starts Here, and Seattle Aquarium provide more information about protecting waterways from common toxins.

IDENTIFYING KILLER WHALES

In the Puget Sound region, there are three resident killer whale pods: J, K, and L. Individual members of each pod can be identified by their saddle patches, dorsal fin conditions, and dorsal fin shapes. By identifying and tracking individuals, scientists can determine the population size and trends of a pod, track an individual's health, and observe behavior and social structure.

Credit: Andrew Reding, Flickr

Saddle Patches

Killer whales have a whitish-grey patch of pigmentation on their back, just behind the dorsal fin called a saddle patch. Just like a human fingerprint, each saddle patch is different and these differences help us tell the whales apart.

Credit: Ravi Mandalia, Techienews

Dorsal Fin Condition

Individual whales have distinctive nicks and scars that may come from boats or other animals. Nicks and scars may also come from tooth scratching, which is used within a pod for disciplinary reasons or to establish dominance.

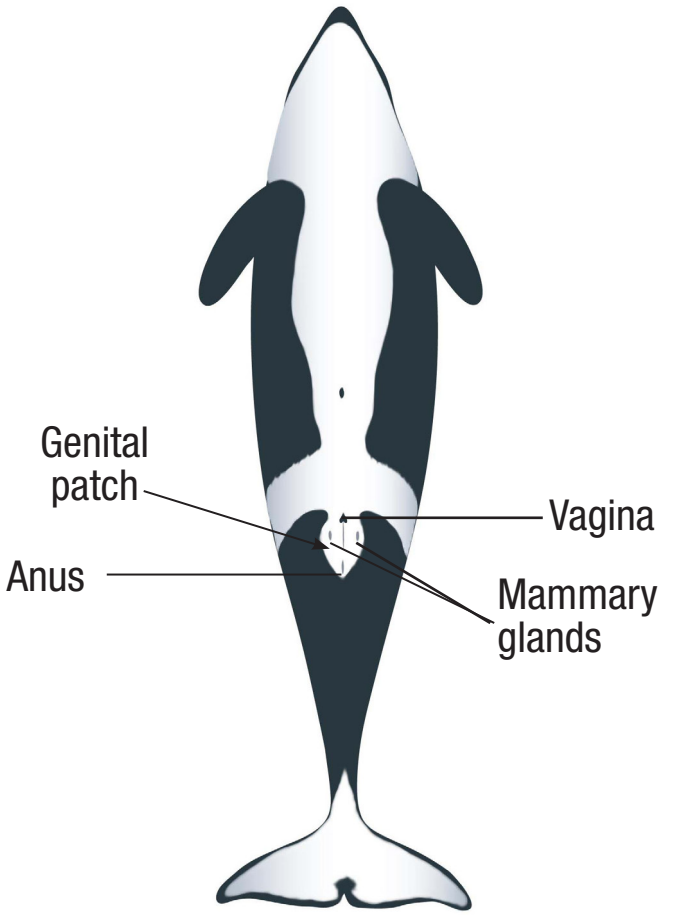
Credit: Lynne Barre, NOAA Fisheries

Dorsal Fin Shape

Individual whales have slight variations in their fin size and shape. Resident orcas generally have dorsal fins that are rounded at the tip and are more curved overall than transient orcas, who generally have dorsal fins that are pointed at the tip and are more triangular in shape.

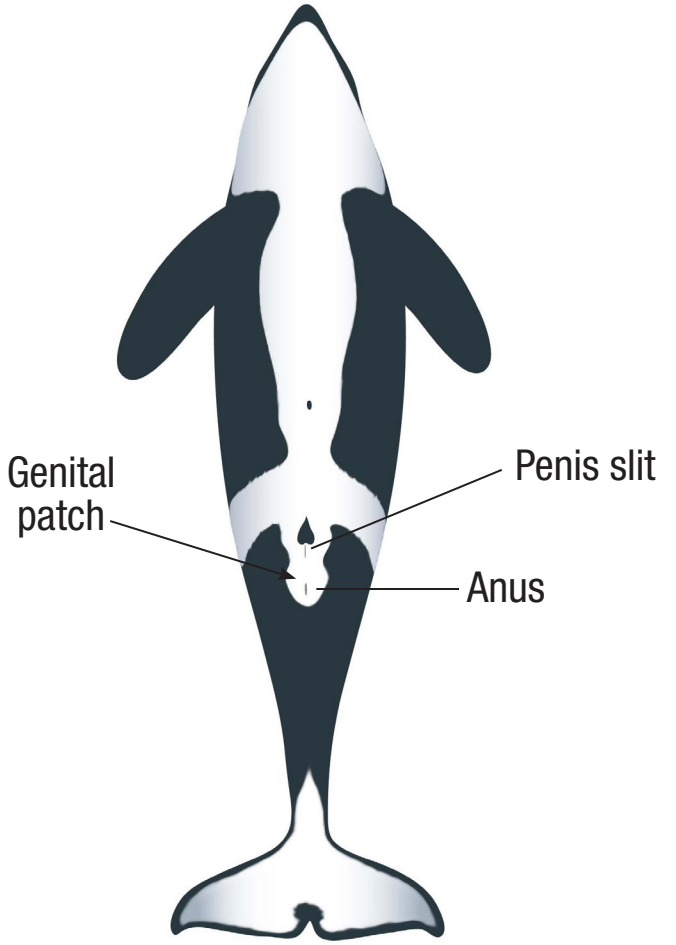
FEMALES

Overall size: smaller body, fins, and flukes
Dorsal fin: backward-bending, up to 4 ft (1.2 m)
Genital patch: oval-shaped with three black spots
Length: up to 28 ft (8.5 m)
Weight: up to 16,500 lbs (7,500 kg)



MALES

Overall size: larger body, fins, and flukes
Dorsal fin: tall and triangular, up to 6 ft (1.8 m)
Genital patch: elongated with a single black slit
Length: up to 32 ft (9.8 m)
Weight: up to 22,000 lbs (10,000 kg)



Illustrations courtesy of Uko Gorter

L72 - Racer

L91 - Muncher

L105 - Fluke

L88 - Wave Walker

L41 - Mega

L54 - Ino

L47 - Marina

L83 - Moonlight

L72 - Racer

Racer has a unique saddle patch that has a very distinct thin pencil-line running through it, making her one of the easiest whales to identify. She was named after Race Rocks, where she was initially identified and photographed.

Racer had her first calf in 2004, named Fluke (L105). She sadly lost her second calf in the summer of 2010, which appeared to be stillborn.

Born: 1986 **Sex:** Female
Child: L105

L91 - Muncher

Muncher is an adolescent female who spends a lot of time with her brother Mystic (L115). Muncher's family has experienced many losses, with the death of four younger siblings from 2000-2008. Her mother is Marina (L47), and her sister is Moonlight (L83). Muncher became an aunt in 2007 when Moonlight had her son Midnight (L110).

Born: 1995 **Sex:** Female
Child: L122 **Mother:** L47 **Siblings:** L83, L115

L105 - Fluke

Researchers initially did not know who Fluke's mother was. After several observations, researchers learned that Racer (L72) is his mom.

Fluke has a light grey saddle patch with a faint black opening. Fluke likes to stay close to his mother and play with other whales his age.

Born: 2004 **Sex:** Male
Mother: L72

L88 - Wave Walker

Wave Walker got his name because when researchers first saw him, he was gliding along the top of the water in his mother's slipstream.

L88 is the last member of the L2 matriline. In 2011, Wave Walker lost his brother, Gaia (L78). This pair had distinct saddle patches, making them easy to identify. L88's left side has a narrow, black boomerang shape, while the right has a large triangular shape.

Born: 1993 **Sex:** Male
Mother: L2

L41 - Mega

Mega is the oldest male Southern Resident killer whale. Mega has a very tall dorsal fin with two nicks out of the back edge, one large nick in the middle, and one closer to the bottom.

Mega can be seen swimming with his sisters Matia (L77) and Calypso (L94). Mega and his sisters were very close with their grandmother, Alexis (L12), who died during the winter of 2011-2012.

Born: 1977 **Sex:** Male
Siblings: L77, L94

L54 - Ino

Ino was the last surviving member of her family group until she had her first offspring, Indigo (L100) in 2001. Indigo was missing in early 2014. In the spring of 2006, Ino gave birth to her second calf Coho (L108). In December 2010 she had her third offspring Keta (L117). The three of them are a tightly-knit family.

Ino is recognized by the soft horseshoe shape within her saddle patch.

Born: 1977 **Sex:** Female
Children: L108, L117

L47 - Marina

Marina has experienced many successes and many losses. She had two daughters Moonlight (L83) and Muncher (L91) in 1990 and 1995, respectively. She then gave birth to calves in 2000, 2002, 2005, and 2008, who died shortly after birth. Her luck changed in 2010 when Marina gave birth to a son named Mystic (L115), who is still alive and doing well. In 2007, Marina became a grandmother.

Born: 1974 **Sex:** Female
Children: L83, L91, L115 **Grandchildren:** L110, L122

L83 - Moonlight

Moonlight had her first offspring Midnight (L110) in 2007. Her mother is Marina (L47). She has a sister named Muncher (L91) and a brother who is 20 years younger, named Mystic (L115).

Born: 1990 **Sex:** Female
Children: L122 **Mother:** L110 **Siblings:** L91, L115

L Pod Matriline