

Monday

California Coast

Goal

Campers will begin to explore and connect oceans across the globe, beginning with our home: the California Coast.

Objectives

Campers will be able to:

- Meet and learn about their fellow campers
- Identify the adaptations of giant kelp
- Investigate the local kelp forest habitat.
- Observe how different animals adapt to their habitats.

9:00am - 4:00pm

Time/Duration	Activity
5 min	Greetings
15 min	Intro/game -5 oceans + Kelp Cam Bingo
20 min	Activity - Kelp Forests
10 min	Snack - Find alginate
20min	Craft - Cardboard boat
20min	Encounter/tour - Urchins, snails, sea cucumbers, octopus

Materials:

- ☐ Media Set-up
 - o iPad, Laptop, iPhone, iPad Stand, Extension cord, webcam, headset
- ☐ Welcome, Introductions & Rules
 - o Inflatable globe
 - o [Google Earth](#)
- ☐ Kelp Cam Bingo
 - o Kelp Cam video feed + Bingo Card print out
- ☐ Activity- Kelp Forests
 - o Plastic Kelp
- ☐ Cardboard Boat Craft
 - o [Slideshow](#), Cardboard, Scissors, Glue/tape, Crayons/markers, optional templates ready
- ☐ Animal Encounter
 - o Urchins and snails on back wet table, shark egg cases, live kelp
 - o Urchin test, aristotle's lantern, octopus/squid beak, and snail shell
 - o Diapers
 - o Open baby shark tank

Greetings (5 Min)

Roles:

- Primary Instructor: Welcoming each student, going through rules and possibly a game such as “green glass door”
- Secondary Instructor: Letting students in, changing names, working with camp lead to ID missing students

Intro: Welcome to Birch Aquarium Virtual Camp! *Every day on Sail the Seven Seas we are going to travel to a different part of our ocean planet and explore the unique habitats and animals that live there. Put on your captain hats and get ready for some seafaring!*

- Greet the campers as they are added from the waiting room.
- Introduce the instructors and the daily theme of kelp forests.
- Go over camp rules, zoom instructions, and hand signals.
 - Silent cheer, hand raising, they can use the bathroom but hurry back etc.
- Facilitate campers to introduce themselves with a name game. Go down the list and make sure each camper has a turn.
 - Name, where they’re zooming in from, and somewhere they wish they could take a vacation. Start with yourself!

Introduction and Kelp Cam Bingo - 15 mins

Roles:

- Primary Instructor: Holds up globe and moderates through google earth and Kelp Cam
- Secondary Instructor: Runs google earth and Kelp Cam while muting and unmuting kids

Materials:

- ☐ Globe
- ☐ [Google Earth](#)

Global Ocean:

- First of all, what really is an **ocean**? How do we define one?
- How many oceans are there? (*Point out the labels of each ocean on the shared map*). So, we have the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean, and the Southern Ocean.



- Five! But isn't our camp called "Sail the SEVEN Seas"? The origins of the phrase 'Seven Seas' can be traced to ancient times, when people thought there were just 7 seas because of the areas around Greece.
 - In Greek literature (which is where the phrase entered Western literature), the Seven Seas were the Aegean, Adriatic, Mediterranean, Black, Red, and Caspian seas, with the Persian Gulf thrown in as a "sea."
- Everyone hold out your hand. Your thumb is the **Pacific**. Your index is the **Atlantic**. Your middle is the **Indian**. Your ring is the **Arctic**. And the pinky is the smallest ocean, the **Southern**. Wiggle your fingers! Notice how all five fingers are different but are all connected as well: they are part of the same hand! The same can be said about each ocean: they have their own unique character, but they are all part of the same **global ocean**.

Kelp Forest Bingo

[Kelp Cam](#) and [Bingo Sheet](#) (put in chat)

Today, we'll be exploring the California coast! Let's find California on the map.

- Use google earth to "travel" to the Kelp Forest off of San Diego's coast
- What ocean is it next to? That's right, it's next to the Pacific Ocean!
- The ocean looks blue, but notice the dark patches right off the coast. What could be under the water?
- We'll be exploring a place called the kelp forest! Has anyone heard of it before?
- The Kelp forest is a **habitat**. Can any tell me what a habitat is? That's right, a habitat is a place where plants and animals live.

We'll be taking a look at the Kelp Forest Tank at Birch Aquarium.

- As you observe the kelp forest, use your Bingo Card to try and identify some of the things you see.
- take 5 minutes. Use the mobile cam to show our class Bingo card. Use sticky notes to cover the animals they see.
- *Instructor note: Be sure to point out the animals shown in the live feed to help with identification.*

Activity- Kelp Forests Exploration (20 min)

Roles:

- Primary Instructor: On camera speaking about kelp



- Secondary Instructor: Muting/Unmuting Kids. Jumping in to speak as necessary

Materials:

- Fake Kelp, whiteboard

Kelp Adaptations

- How do the animals use the giant kelp? Why is kelp important?
 - Giant Kelp is something we call an ‘ecosystem engineer’ because they create the home, food, and habitat for a community of organisms. But what really *is* kelp?
 - Kelp is not a plant, it’s a kind of seaweed. The scientific word for seaweed is **algae**.
 - 3 types of algae: brown, green, and red.
 - Giant Kelp is brown algae
 - It grows very tall very quickly! How fast do you think it can grow (take 3 guesses)
 - Up to 2 feet/day!
 - Kelp growing together is called a **kelp forest**.
- Kelp has special parts, called adaptations
 - As we learn about them, I’ll teach you a movement for a game later! (teach each movement as you go over the adaptation)
 - **Holdfast:** Anchors kelp to a rock to keep it from floating away. Looks like roots, but doesn’t draw water or nutrients.
Crouch down into a ball and hold on tight to your knees!
 - **Stipe:** Long and bendy part of the kelp that holds the blades together. Similar to a stem, but more flexible to withstand waves.
Raise your hands up and become long and wavy!
 - **Blades:** Absorbs nutrients and sunlight to turn into energy through photosynthesis. Serrated edges help mix the water!
Open your palms and face them up towards the sun!
 - **Float:** Air filled sacs that allow the kelp to float up toward the ocean surface to obtain sunlight.
Fill your cheeks with air!
- Has anyone heard of **photosynthesis**?
 - Kelp needs **water, nutrients, carbon dioxide, and sunlight** to grow via a process called **photosynthesis**.
 - They create **oxygen** through photosynthesis! How would this help animals?



- How else does kelp help animals in the Kelp forest?
 - They provide food and shelter for animals, and it can be a safe hiding spot for eggs and babies.
 - Show shark eggs and compare the color and texture to the live kelp.

Algae Says

Now that we know the different parts of the kelp, we're going to play a game called Algae Says.

- Like Simon Says, but we are going to be using the moves we learned that match with the parts of the kelp.
- Review movements.
 - **Holdfast:** *Crouch down into a ball and hold on tight to your knees!*
 - **Stipe:** *Raise your hands up and become long and wavy!*
 - **Blades:** *Open your palms and face them up towards the sun!*
 - **Float:** *Fill your cheeks with air!*
- You should only do the movement if I say, "Alge says," before I tell you the kelp part.
- If I don't say that first and you move anyway, or do the wrong movement, you'll be out! Are you ready?

Play for about 5 minutes.

Who Eats Kelp?

- A number of kelp forest residents like urchins and snails eat the kelp!
- Do you eat kelp?
- We'll be having our snack in just a moment, so, if anyone has a wrapper for their snack, we can see if there's kelp in it!
- I'll tell you some of the words used for kelp in our foods, and we can talk about some of them during our snack time!

Snack (10 min)

Use whiteboard feature to write/type Kelp terms

Conversation Options:

- Talk with campers about some words for kelp that can be found in snack packaging: Carrageenan, sodium alginate, alginate, and beta carotene. Have some examples on hand, and talk about what each does
 - **Carrageenan:** thickener/gelling agent
 - **Sodium Alginate/Alginate:** emulsifier ;helps things stay mixed and keep their texture
 - **Beta Carotene:** yellow to orange coloring
- Talk about where each camper is from/where they want to go. Using one for intro and another for snack works well.

Build a Boat Activity (20 min)

Roles:

- Primary Instructor: Narrate conversation on boat types and craft while crafting
- Secondary Instructor: Moderates conversation during craft time, asking kids to show work or leading questions so primary instructor can look at craft
- Transition time: After finishing craft (Keep it simple), secondary instructor will moderate show and tell while primary instructor goes to get animals. Use cart to move animals

Have boat slideshow ready

- Humans have been seafaring for thousands of years.
- There are many different types of ships and boats that exist around the world. Here are some examples of [different types of boats!](#)
- As we look at these boats, ask leading questions: What is it made of? What is it used for? What does it use to propel forward? etc.
 - **The Native American Canoe** - great for traveling on rivers. Long curved shape helps it to be very hydrodynamic.
 - **The Viking Warship** - similar shape to canoe, but much larger. Holes for oars, a sail to help accelerate on the ocean, and a figurehead.
 - **The Chinese Junk** - two sails that can open and close like a fan. Can hold cargo, passengers, troops, etc.
 - **The Polynesian Raft** - the polynesians lived on islands in the middle of the Pacific Ocean. They created sturdy and light rafts to navigate all over the Pacific. Two long parallel rafts were connected and sailors could paddle from 4 different sides, along with sails.
 - **The Modern Cruise ship** - This massive ship is designed to host and entertain guests while they enjoy the ocean. With rooms like hotels, swimming pools, restaurants, and more, this ship has a huge engine to power it.
 - **The Research Vessel** - this ship is specialized to conduct scientific research. It has navigation instruments and all kinds of equipment for collecting data, as well as for hosting a team of scientists.

Cardboard Boat Craft ~20 mins

Materials:

Check	Item	Quantity
	Sheet of cardboard	1
	Glue and scissors	1





	Magazines, brochures, or other colorful scrap papers	
	Coloring items	--

Directions:

1. Decide where your ship is sailing. The tropics? The ice caps?
2. Begin with choosing the body of the boat. Select a layout plan out of the templates provided.
3. Add additional features, such as a sail, engine, periscope, etc. depending on how the boat is powered using the templates provided.
4. Decorate with coloring utensils. Add accessories such as windows, figurehead, etc
5. Give your boat a name.
6. Create the setting of the boat using scraps of paper to make a collage.

Animal Encounter (20 min)

Roles:

- Primary Instructor: Manipulates animals potentially asking leading questions
- Secondary Instructor: Moderates conversation while muting/unmuting, lifts tub if necessary, letting kids know you will be doing that, then return to choose someone to answer.

Animal Adaptations

Now that we have a way to get to the kelp forest, we can go there and meet some of the animals that call it home!

Sea Urchin

- spiny defense
- eats kelp (5 teeth called aristotle's lantern)
- uses tube feet for movement
- can give hugs
- explain that they aren't dangerous to touch gently, but can pack a wallop if bitten/trod upon
- relatives of sea stars
- show test



Brittle Star

- Eat detritus, or leftover bits of algae and animals
- Tiny tube feet
- spines are soft, but look scary!
- mouth on the bottom
- why are they flat

Sea Cucumber

- Another echinoderm! Explain relation to urchin and stars.
- uses tube feet for movement
- eats along bottom, filtering waste
- show gut expulsion video and explain defense
- explain how they are different from sea slugs

Octopus

- try to get him to come out
- show and discuss color change
- show and discuss beak and feeding habits
- Talk about ability to escape and a fun story or two
- use to tie in invertebrate status of all animals shown today
- ink
- 3 hearts

Wrap Up (5 min)

We hope you enjoyed the kelp forest! Review some of the things you did for the day

Ask for a few favorite parts.

We enjoyed exploring the kelp forest with you all. Join us tomorrow to talk about coral reefs! We hope to see you there