

DRAWING THE LOW TIDE

Participants will:

- Explore, discuss, and make observations of a local shoreline.
- Create a drawing with their findings and predict how the environment changes during extreme low tide to high tide during King Tides.
- Connect with the natural world and practice sharing observations.
- Optional: Participants may compare and contrast their predictions with community science photos at www.coastal.ca.gov/kingtides.

Audience: For a group such as a troop, outdoor education class, camp, or group of informal youth. Ideally for a small group of up to 8 participants depending on youth: adult ratio. The target audience is 4th/5th grade students.

Time: Low tide, which is in the afternoon during winter King Tides. Activity will take 45 minutes or up to 60 minutes if optional instructions are added.

Location: A local shoreline

Tools: Pencils, colored crayons/pencils, something flat to write on, paper, and access to King Tide photos (if possible).

Arrive on the shoreline at low tide during King Tides. Typically, within a 24-hour period, we see two high and two low tides. Roughly seven hours after the peak high tide, you can head to a shoreline near you.

This year California's King Tides are on Dec 23-24th, 2022, and Jan 21-22nd, 2023. Find your local low tide time at [Tide Predictions - NOAA Tides & Currents](https://www.noaa.gov/tides-currents)

Safety:

- Check tides and confirm there is an open area easy to see all participants and away from cars, off walkways, and on flat surfaces. Be aware that if the group arrives after the lowest tide, the tide will be rising.
 - Wear warm clothes as appropriate for the weather and closed-toed shoes.
 - Make sure the group is in a safe and dry area.
 - Spot needs to be easily accessible to avoid injury and to allow space for all bodies to explore.
 - Area can be in an urban area but ensure participants can hear and see leader(s).
 - Explain to participants *“never turn your back to the water, the waterline should always be visible”*.
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1. Find a safe and dry area and invite participants to sit down or circle up. Check that participants are away from water, roads, and are respectful of areas that may house animals.
2. Remind participants that the goal is to explore the environment and their surroundings during the extreme LOW TIDE that occurs during KING TIDES and use that information to predict what the HIGH TIDE will look like. Using their findings during the exploration of the local shoreline, they will create a drawing that will show the predicted change between low and high tide.
3. Ask participants, "*what do you think is different about King Tides as opposed to regular daily tides?*". King Tides are one to two feet above the highest water level reached at high tide on an average day. On these same days, we experience extreme low tides as well. King Tides happen when the orbits and alignment of the Earth, moon, and sun combine to produce the greatest tidal effects of the year (2 dates above).
4. Create safe and visible boundaries using landmarks and explain to participants that they will explore within those boundaries to make observations. These observations will be used to create a pictorial depiction of their observations found during this activity and support a prediction of what the shoreline will look like when the tide changes.
5. Remind participants of ways they can use their observation skills. Participants will focus on their sight and hearing senses in this activity. Examples of leading questions to help guide participants in their journey include: "*Where does the water meet the land? Do you see sand, rocks, seawalls, or cliffs? Do you see roads, buildings, bridges, piers, staircases, or other landmarks? Do you see animals? What are the animals doing? Do you see places where animals might live? What is the weather like? Do you notice the wind? Are the waves loud? Quiet? If you see rocks or a seawall, do you see evidence of the water level changing?*"
6. Inform participants that they will have **5 minutes to find a partner and walk (within the boundaries) with their partner to make 2-5 observations**. Let participants know that they will be called back to the same group meeting spot. Each participant (within the pair) should collect at least 2 observations, for a total of at least 4 observations.

7. Call participants back to the group meeting spot and allow for a big group share-out. Participants will describe their observations with the group. Model observation if needed.
8. Explain that they'll be creating a drawing of what they observed during the partner exploration. Answer any clarifying questions they may have now.
9. Have participants pick a spot that is comfortable and safe but close enough for an adult to walk around and help/answer questions for them. This is where participants will sit to draw. They may sit with their partner, but every person should have their own sketch.
10. Instruct participants: "*Draw a vertical line splitting the page in half, one side will be titled **LOW TIDE** and the other **HIGH TIDE**".*
11. Ask them to use the LOW TIDE to sketch in-the-moment observations, such as rocks, kelp, birds, etc. Avoid made-up or hypothetical environments, animals, or landmarks. *Refer to the guiding questions above if needed as a refresher.*
12. Tell participants to spend some time drawing and clearly labeling arrows to show what participants are seeing in real time. Add detail and color. They may also write questions on the side of the sketch. Tell them to "*draw as if you were showing this picture to someone who is not here, so the sketch would allow them to find your current location.*"
13. Bring the group back together to share in a bigger group setting. This is a good time to have students share one observation they drew with the group. (*Do we notice similarities?*).
14. Ask the students to think about how this place may differ during a King Tide high tide. Now that participants have created a LOW TIDE picture, the second part of the paper will be a prediction of how the HIGH TIDE will change the environment and surroundings. Here are some leading questions to facilitate predictions: *If the high tide is 8 feet higher than it is now, what do you think this spot will look like during high tide? Are there areas you predict will be covered by water? Will the same wildlife be present? Less or more of them? Will the tides wash anything away? Will this area flood? Are there any human-made objects such as roads, seawalls, pillars, or sidewalks that will look different?*

15. On the HIGH TIDE side, have participants draw their predictions. Check in with groups and support by asking questions to encourage them to add more detail.

16. **Optional:** Have participants return to the circle and create a gallery of the groups' drawings. Participants may lay out the drawing for a show and tell. As participants walk around and look at others' findings, pose these questions: *"Do you have questions about any of the predictions? Do you notice similarities? Did anyone make an observation that you did not notice?"*

17. **Optional:** Return to this spot during the next high King Tide. How does it compare to the prediction sketches? If your group cannot return, compare participant sketches to the [photos of King Tides](#), submitted by community members. Note that your specific location may not have already been photographed. If you want to submit your photos of King Tides, learn how at www.coastal.ca.gov/kingtides.