



GRADES

3-5

Resilient Rockaway

What the Dunes Teach Us



The big idea: Coastal communities like Rockaway have unique ecosystems that help protect the coastline from storm surge; however in the face of climate change, humans have an important role to play to keep the environment strong.

LESSON OVERVIEW

In this lesson, students will learn about the unique ecosystem of the Rockaway, as well as the challenges faced by Rockaway that are being exacerbated by climate change. Through this lesson, students will better understand the environment they live in, and the role they play as stewards of this environment.

MATERIALS

- Projector & screen
- Writing utensils (pens, pencils, markers, colored pencils, and/or crayons)
- Printed copies of the Rockaway Map (1 per student)

PREPARATION

In preparation for this lesson, you'll need access to some form of projection or screen to display the provided presentation, and access to internet to play videos. You will also need the materials listed above, including writing and drawing utensils for the Rockaway Ecosystem Map.

KEY DETAILS

ESSENTIAL QUESTION

What is unique about the ecosystem in Rockaway, and what challenges is it facing due to climate change? What role can I play in keeping the environment healthy?

LEARNING OBJECTIVES

- Students will learn about the unique ecosystem of Rockaway
- Students will understand climate change challenges faced in Rockaway, and possible solutions to make the peninsula more resilient
- Students will reflect on their own relationship to the place they live, and their role in caring for the environment

CONCEPTS

Peninsula, ecosystem, dunes, flooding, storm surge, climate change, resilience, stewardship

ACTION STEPS

1. Start the Presentation

Start the presentation, and introduce the piping plover, Piper, who will be our "guide" during this lesson. Explain that in this lesson we will be learning about what makes Rockaway's environment special, what challenges we face as a coastal community, and what it means to us to care for our environment.

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2. Mapping Rockaway

Explain that to begin this lesson, we will be creating maps of Rockaway. Make sure each student has a printed Rockaway Map, and pens/pencils, as well as coloring utensils (crayons, markers, and/or colored pencils). Begin by moving through slides 5-8 (“Did you know...?”), which introduce some fun facts about Rockaway. If time, you may ask students to share any fun facts they know about Rockaway.

Follow slides 9-28 to introduce each feature on the map one by one. Then prompt students to color and/or label this feature on their map.

Once you have defined and labeled each of the five key features, give students 5-10 minutes to personalize their maps. They can add landmarks and features that are important to them, and otherwise decorate their creation.

Notes:

- There are two versions of the blank Rockaway Map included on pages 4-5. The first map is more detailed and may be better suited to older students. Use whichever version you think will work best for your students.
- If you are doing other mapping in your curriculum, you could introduce a legend or other map elements.
- Students may add elements in the areas around the peninsula and indicate them



Rockaway Map

with lines or arrows.

- For a more extended activity, you could have students search for different landmarks using Google Maps or Google Earth, and place elements as accurately as possible.

3. Climate Resilience in Rockaway

Progress through slides 32-50 explaining climate change challenges in Rockaway and potential solutions. Follow the prompts on the slides to allow students to reflect on the challenges and strategies.

Notes:

- If desired, you could use post-its or a whiteboard/chalkboard to list out examples and ideas during this reflection.
- If time, you may show videos to further explain climate challenges and solutions, including videos titled “USACE Restoration” and “Sea Level Rise” in the Resources box on the following page.

4. What are Dunes?

Explain that now that we’ve learned that dunes play an important role in keeping Rockaway resilient to storms and sea level rise, we will learn more about what dunes are and the role they play in coastal environments.

Progress through slides 52-69, starting with the dune guessing game, and moving through informational slides explaining what dunes are and the important role they play in Rockaway.

Note: If time allows, you could show the optional video “Sand Dunes: They Protect Us, Let’s Protect Them,” linked in the Resources box on the following page.



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Caring for Our Peninsula

5. Local Stewardship

Play the two videos (links on slides 71-72) to introduce the concept of stewardship. Use the following slides to define stewardship. Ask students to share examples of stewardship they have seen or participated in. If you used post-its or a whiteboard/chalkboard in the previous step, add to it here.

6. Reflection

Follow the prompts on the slides to lead students through a “think-pair-share” style reflection. First, have students reflect on the questions quietly. Then, have them discuss with a partner or in small groups. Finally, ask each pair or group to share out the big ideas from their conversation with the whole class.

Notes:

- *If you have extra time, move through the optional virtual tour/scavenger hunt on slide 78. This can also be assigned as homework or an optional outside of class activity.*
- *There is a list of key terms on slides 2 and 79. You may refer to these terms throughout, or take time at the start of the lesson to review the key terms.*

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ADDITIONAL RESOURCES

Reading

Curriculum about barrier beach ecology: https://wetlandsinstitute.org/wp-content/uploads/2020/06/Barrier_Beach_Ecology_TeacherInformation-Activities.pdf

Exploring Rockaway story map: <https://storymaps.arcgis.com/>

Ocean Conservancy article, “What is a Sand Dune?”: <https://oceanconservancy.org/blog/2023/12/07/what-sand-dune/>

Videos

RISE dune restoration: https://www.youtube.com/watch?v=PGYd1nBKenA&ab_channel=ioby

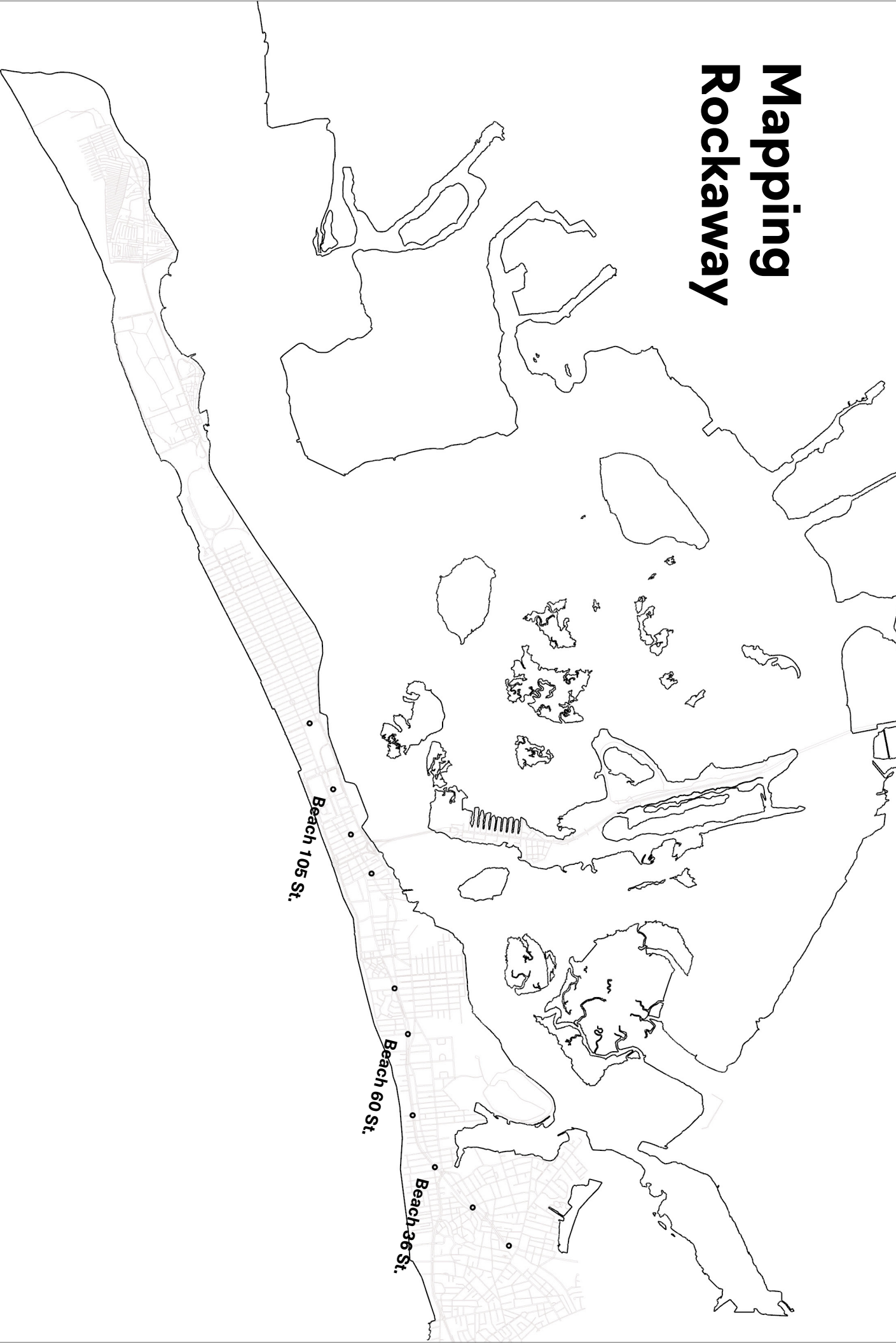
Sand Dunes “They Protect Us, Let’s Protect Them”: https://www.youtube.com/watch?v=K0cQ_G6lj4&ab_channel=CAROASBN

Sea Level Rise (NASA): https://www.youtube.com/watch?v=QH-KYmRAzOA&ab_channel=NASASpacePlace

USACE restoration (ABC7 story): https://www.youtube.com/watch?v=34XnMfiiXK0&ab_channel=EyewitnessNewsABC7NY/7085ac0cde0c4ed09b48cbe8ff9d5cc2

Ocean Conservancy: <https://oceanconservancy.org/blog/2023/12/07/what-sand-dune/>

Mapping Rockaway



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