# WOW: OCEANS

## BASELINE AUDIT, GRADES K-2

It is understood that not all schools will be able to conduct coastal and marine studies. However, all waters inland flow downstream and eventually lead to an ocean. Therefore, if you are not able to conduct your studies along the coast, coastal plain or bar-built estuary, or offshore, then it is expected you will conduct your studies at a waterway within your watershed. Your reflections and summarizations will allow you to make connections between what you find and their potential impacts along the coast and into the ocean.

Consider contacting local, regional or state non-profits, NOAA office, or U.S. Fish and Wildlife Service Center for assistance conducting your audit. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise. If you cannot conduct a study at the coast and/or offshore, please determine the best way to gather the data, using technology such as Google Earth, phone calls, emails, SKYPE or Google Hangouts with resources specialists are both beneficial ways to collect information from a distance.

Invite parents and community members to participate in the auditing process. Students can take on the role of educator by working with volunteers on citizen science projects. This experience is a great way to build community.

**Before starting the ocean audit or going further, survey your students.**
On a scale from 1-10, 10 being the most important and 1 being the least important,

- How important is clean water to ocean plants and animals? _____
- Litter hurts ocean plants and animals? _____ True _____ False
- Do you think you can help ocean plants and animals? _____ Yes _____ No

# WOW: Oceans

BASELINE AUDIT, GRADES K-2

## TABLE 1. GEOGRAPHIC INFORMATION

| | |
|---|---|
| 1. What is the name of your watershed? https://cfpub.epa.gov/surf/locate/index.cfm | |
| 2. What are the GPS coordinates for your study site? Use you smartphone's GPS or go to: https://www.whatsmygps.com to find the coordinates. | Latitude N _____<br>Longitude W _____ |
| 3. The ocean study site is... | ☐ on the coast/beach<br>☐ on land or inland<br>other _____ |
| 4. Eventually water running over your watershed empties into an ocean. Identify the ocean. | ☐ Pacific<br>☐ Atlantic (Gulf of Mexico)<br>☐ Atlantic (East Coast)<br>other _____ |
| 5. Using observations or Google Earth (for those students who are inland), describe the ocean study site. Check all that apply.<br><br>**Optional, but encouraged:** take a screen shot, a set of 4 in person shots (N, S, E and W) or a panoramic, in-person picture and include the images below this table. | ☐ sandy coastline<br>☐ rocky coastline<br>☐ white sands<br>☐ brown sands<br>☐ black sands<br>☐ tide pools<br>☐ dunes<br>☐ coastal grasses/shrubs/plants<br>☐ mangroves or forests<br>☐ cliffs |

**Insert photos here.**

## TABLE 2. OCEAN CHARACTERISTICS AND BENEFITS

| | |
|---|---|
| 1. What percentage of students can identify the following characteristics that help define an ocean? These are not the only characteristics, but important for students to identify at this age.<br>• Salinity<br>• Biodiversity (plants and animals) | A. _____ 0 elements<br>B. _____ 1 element<br>C. _____ 2 elements |
| 2. An ocean is a system. What percentage of students can identify one or more system benefits oceans provide?<br>• Ecosystem benefits and services: **biodiversity** of plant and animal species<br>• Economic benefits: **tourism, fishing, wildlife watching**<br>• Physical and mental health benefits: **relaxing, happy feelings** | _____ % |

**Think about the following question as you summarize the data in Table 2.**

1. Why is it important to understand how the ocean works or how people use the ocean, if we want to help wildlife?

## TABLE 3. WATER QUALITY

| | |
|---|---|
| **1. pH**<br><br>_____ **pH Level**<br>☐ Acidic ☐ Neutral ☐ Basic | **2. Temperature**<br><br>Test 1 _____F°<br><br>Test 2 _____F°<br><br>Test 3 _____F° |

**3. Salinity**

Time of High Tide _____ | Time of Low Tide _____

Method used: ( ) hydrometer ( ) probe

Test 1 | Time of day before test _____ | _____ ppt (parts/thousand)

Test 2 | Time of day before test _____ | _____ ppt (parts/thousand)

Test 3 | Time of day before test _____ | _____ ppt (parts/thousand)

**4. Transparency – Choose method A or B.**

**A1. Secchi disk** – distance from observer to:

Test 1 _____ m water surface | _____ m where disk disappears | _____ m where disk reappears

Test 2 _____ m water surface | _____ m where disk disappears | _____ m where disk reappears

Test 3 _____ m water surface | _____ m where disk disappears | _____ m where disk reappears

**A2. Secchi disk reaches the bottom and does not disappear** – distance from observer to:

Test 1 _____ m to water surface | _____ m depth to the bottom of the water site

Test 2 _____ m to water surface | _____ m depth to the bottom of the water site

Test 3 _____ m to water surface | _____ m depth to the bottom of the water site

**B. Transparency Tube**

Tube test 1 _____ cm or _____ greater than depth of transparency tube.

Tube test 2 _____ cm or _____ greater than depth of transparency tube.

Tube test 3 _____ cm or _____ greater than depth of transparency tube.

**Think about the following questions as you summarize the data in Table 3.**

1. Why is it important to observe and test water quality?
2. How does water quality impact plant and animal life?

**TABLES 4 and 5**. Consider contacting a coastal/ocean outreach coordinator (local non-profits) college or university. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise. If you cannot conduct a study along the coast/shore/beach please determine the best way to gather the data, i.e. a phone call, an email or ideally a SKYPE, Zoom or Google Hangout with someone who works as a biologist, ecologist, volunteer, etc. at the nearest water quality monitoring station. Contact your regional EPA, NOAA and/or state-based fish and wildlife office for resource specialist contacts, resources or recommendations.

Invite parents and community members to participate in the auditing process. Students can take on the role of educator by working with volunteers on citizen science. This experience is a great way to build community.

## TABLE 4. LITTER

| | |
|---|---|
| 1. Percentage of students who know litter in our oceans is a problem. | _____ % |
| 2. Percentage of students who know plastic pollution is the most common type of litter found in the ocean. | _____ % |

3. Conduct a litter audit using the items most commonly found in and around coastal and marine ecosystems. First weigh the collection of litter. Next sort the collection by type and insert the total number of each item found. Safety is of utmost importance. Please ensure teams have access and use/wear proper safety gear, including, but not limited to gloves, litter grabbers/pinchers and appropriate recycling and trash receptacles.

Total weight to the nearest pound and kilogram, diverted from coastal and marine ecosystems. _____ pounds

| | | | |
|---|---|---|---|
| _____ cigarette butts | _____ fishing line/nets | _____ can tabs | _____ tires |
| _____ bottle caps | _____ balloons | _____ lighters | _____ straws |
| _____ 6-pack rings | _____ cans | _____ plastic bottles | _____ Styrofoam |
| _____ sandwich bags | _____ plastic ware | _____ plastic lids | _____ grocery sacks |
| _____ micro-plastics | _____ _____ | _____ _____ | _____ _____ |

**Think about the following questions as you summarize the information in Table 4.**

1. How does litter impact marine and coastal wildlife (both plants and animals)?
2. How does litter impact people who go to the beach and use the ocean for recreation activities, such as swimming, diving, boating, etc.?
3. What are some of the actions the Eco-Action Team/class can take to improve or support current coastal and/or ocean cleanup programs/initiatives? Use these actions to support the Eco-Action Plan?

## TABLE 5. WILDLIFE

| | |
|---|---|
| 1. Collectively, how many **different** plants and animals are observed on this day? | _____ amphibians _____ birds<br>_____ fish _____ insects<br>_____ mammals _____ reptiles<br>_____ marine or brackish plants<br>_____ coastal plants |
| 2. Percentage of students who can identify **more than one local** plant and animal who rely on healthy coastal and/or marine ecosystems. | _____ |
| 3. MIGRATORY BIRDS<br><br>Depending on the age and abilities of your students, you as the teacher should structure this learning opportunity in a way that best meets the needs of your students. Take time to look at the Audubon site, read the WOW-Oceans post audit and work with your librarian to find age appropriate print and digital resources.<br><br>Research migratory bird species in your community, paying close attention to their migration paths. Use Cornell's *All About Birds* to begin researching. http://www.birds.cornell.edu. This research can be conducted as a class/team, in small groups or individually. **Before beginning the study**, have the team look at the questions being asked in the post-audit, which will include data collected from bird observations. | |
| 4. Migratory birds in the United States use one of four main flyways. Identify the flyway migratory birds use in your state. https://tpwd.texas.gov/huntwild/wild/birding/migration/flyways/ | ◯ Pacific Flyway ◯ Central Flyway<br>◯ Mississippi Flyway ◯ Atlantic Flyway |
| 5. Use Audubon's, The Flyways, http://www.audubon.org/central-flyway, to locate specific species considered "priority birds". In the space to the right, add the four priority species listed. The team will need to pick one of the four migratory species to study (or another state migratory species). | 1. _____<br>2. _____<br>3. _____<br>4. _____ |
| 6. All wildlife require four basic habitat elements. What percentage of student can identify all four habitat elements: food, water, shelter and a place to raise young? | _____ |
| 7. Do team members or other grade levels participate in any migratory bird citizen science projects, such as eBird, Neighborhood Nestwatch, GLOBE's Arctic Bird Migration and/or Journey North's Hummingbird Migration? https://www.fws.gov/birds/get-involved/citizen-science.php | ☐ Yes ☐ No |

**Continued on the next page.**

## TABLE 5. WILDLIFE, CONTINUED

| | |
|---|---|
| 8. Our school has 1 or more National Wildlife Federation Certified Schoolyard Habitats®. | ☐ Yes ☐ No |
| 9. Our school has garden(s) and design features that support migratory birds, but is not certified as a National Wildlife Federation Schoolyard Habitats®. | ☐ Yes ☐ No |
| 10. Take a student survey. **Record the average.** On a scale from 1-10 where 10 is very important and 1 is not important, how important are is it for migratory bird species to have clean water and clean beaches? | ____ |

**Think about the following questions as you summarize the data in Table 5.**

1. Do migratory birds belong to a food chain?
2. What are some of the actions that can be taken to improve or support migratory bird habitat and/or migratory bird programs? Use these actions to support the Eco-Action Plan.

**Review of All Data**

1. Based on what is known and has been learned, what claims can be made based on the data and other evidence?
2. Be prepared in the post-audit to explain **patterns** students have identified through their investigations.