



WOW: OCEANS

POST-ACTION 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.

Did the class/team work with any resource experts/specialist or volunteers? () Yes () No

If yes, please list.

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

METRIC REQUIRED FOR DASHBOARD

- How many actions did students take in an effort to improve or support current watershed programs or initiatives?



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TABLE 1. GEOGRAPHIC INFORMATION

<p>1. Confirm your GPS coordinates for your ocean study site by comparing them to your coordinates in your baseline audit. Use your smart phone's GPS or go to: http://www.whatsmygps.com/ to find your coordinates.</p>	<p>Latitude N _____</p> <p>Longitude W _____</p>
<p>2. Again make observations or use Google Earth (for those students who are inland), and describe the ocean study site.</p> <p>Optional, but encouraged. If pictures were taken during the baseline audit, make comparisons to your current view. Note any observed changes to right.</p> <p>Make note if there was a land altering event causing significant change to your study site, such as flooding, hurricane, tornado, fire, drought, etc.</p> <p>_____</p> <p>_____</p>	<p>_____ sandy coastline _____ tide pools</p> <p>_____ rocky coastline _____ dunes</p> <p>_____ white sands _____ coastal grasses/shrubs/plants</p> <p>_____ brown sands _____ mangroves or forests</p> <p>_____ black sands _____ cliffs</p>

Insert photos here.



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TABLE 2. OCEAN CHARACTERISTICS AND BENEFITS

<p>1. What percentage of students can identify the following characteristics that help define an ocean?</p> <ul style="list-style-type: none"> • Salinity • Biodiversity (plants and animals) 	<p>A. ____ 0 elements</p> <p>B. ____ 1 element</p> <p>C. ____ 2 elements</p>
<p>2. An ocean is a system. What percentage of students can identify one or more system benefits oceans provide?</p> <ul style="list-style-type: none"> • Ecosystem benefits and services: biodiversity of plant and animal species • Economic benefits: tourism, fishing, wildlife watching • Physical and mental health benefits: relaxing, happy feelings 	<p style="text-align: center;">____ %</p>

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

1. How has student understanding changed from the baseline audit to the post-action audit or between audit years?
2. What have students learned about different cultures and their local community's connections to the ocean?



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TABLE 3. WATER QUALITY

<p>1. pH</p> <p style="text-align: center;">_____ pH Level</p> <p>_____ Acidic _____ Neutral _____ Basic</p>	<p>2. Temperature</p> <p style="text-align: right;">Test 1 _____ F°</p> <p style="text-align: right;">Test 2 _____ F°</p> <p style="text-align: right;">Test 3 _____ F°</p>
<p>3. Salinity</p> <p>Time of High Tide _____ Time of Low Tide _____</p> <p>Method used: () hydrometer () probe</p> <p>Test 1 Time of day before test _____ _____ ppt (parts/thousand)</p> <p>Test 2 Time of day before test _____ _____ ppt (parts/thousand)</p> <p style="text-align: center;">Test 3 Time of day before test _____ _____ ppt (parts/thousand)</p>	
<p>4. Transparency – Choose method A or B.</p> <p>A1. Secchi disk – distance from observer to:</p> <p>Test 1 _____ m water surface _____ m where disk disappears _____ m where disk reappears</p> <p>Test 2 _____ m water surface _____ m where disk disappears _____ m where disk reappears</p> <p>Test 3 _____ m water surface _____ m where disk disappears _____ m where disk reappears</p> <p>A2. Secchi disk reaches the bottom and does not disappear – distance from observer to:</p> <p>Test 1 _____ m to water surface _____ m depth to the bottom of the water site</p> <p>Test 2 _____ m to water surface _____ m depth to the bottom of the water site</p> <p>Test 3 _____ m to water surface _____ m depth to the bottom of the water site</p> <p>B. Transparency Tube</p> <p>Tube test 1 _____ cm or _____ greater than depth of transparency tube.</p> <p>Tube test 2 _____ cm or _____ greater than depth of transparency tube.</p> <p>Tube test 3 _____ cm or _____ greater than depth of transparency tube.</p>	



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

1. What changes to water quality, if any, have been observed?
2. Do students have a greater understanding how water quality can impact plant and animal life? Explain.

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.

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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. What impacts on wildlife, if any, have been observed during clean-ups?
2. How have student behavior or attitudes changed?
3. Describe one action teams/classes took to improve or support coastal and/or ocean cleanup programs/initiatives.



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TABLE 5. WILDLIFE

<p>1. Collectively, how many different plants and animals are observed on this day?</p>	<p>_____ amphibians _____ birds</p> <p>_____ fish _____ insects</p> <p>_____ mammals _____ reptiles</p> <p>_____ marine or brackish plants</p> <p>_____ coastal plants</p>
<p>2. Percentage of students who can identify more than one local plant and animal who rely on healthy coastal and/or marine ecosystems.</p>	<p>_____</p>
<p>3. MIGRATORY BIRDS</p> <p>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.</p> <p>Research migratory bird species in your community, paying close attention to their migration paths. Use Cornell's <i>All About Birds</i> 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.</p>	
<p>4. List the common and scientific name of the migratory species studied.</p>	<p>Common Name</p> <p>_____</p> <p>Scientific Name</p> <p>_____</p>
<p>5. What is one reason the bird is considered a priority migratory species?</p>	<p>_____</p>
<p>6. Where does the migratory bird spend winter and summer?</p>	<p>Winter _____</p> <p>Summer _____</p>

Continued on the next page.



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TABLE 5. WILDLIFE, CONTINUED

7. Survey teams/classes again. What percentage of student can identify all four habitat elements: food, water, shelter and a place to raise young?	_____
8. Did teams/classes participate in a migratory bird citizen science project?	___ Yes ___ No
9. Did your school construct a new or expand an existing NWF Certified Schoolyard Habitats® as a part of this audit?	___ Yes ___ No
10. Take a student survey. Record the average score. 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 students have a better understanding of the role this specific species plays in a food chain?
2. What did students learn about the bird's specific habitat needs?
3. What are the similarities and differences between where the birds winter and summer?
4. Describe one of the actions teams/students took to improve or support migratory bird habitat and/or migratory bird programs?

Review of All Data

1. Based on what is known and has been learned, and after implementing an action plan, what claims can be made based on the data and other evidence?
2. What patterns have teams/students identified? How have these patterns helped students develop a deeper understanding or to draw conclusions about oceans, litter and/or wildlife?