



SCHOOLYARD HABITATS®

BASELINE AUDIT, GRADES 9-12

The Schoolyard Habitats audit was developed as a tool for students to investigate the school ground's use and to be used as the basis for improving native wildlife habitat and outdoor learning on the school site. Some of the questions may require the assistance of school staff, including facility managers, or require students and staff to perform additional research.

Identify and list below any resource specialists and/or volunteers who can assist with the audit and/or share their gardening/wildlife habitat expertise.

One of the first things you will want to do is to create a base map of the school site. The team is asked to upload an example in Table 3. Students can create this map or you can obtain one from school administration. Make sure the site map has an appropriate scale, includes all borders of the property (property lines, roads, sidewalks) and any large permanent features such as the school and other property buildings. This base map can be given to students to assist them in marking specific vegetation, water, cover and places to raise young that already exist on the school site.

A good way to document wildlife, plants and habitat components is to take pictures and attach them to the audit or keep them in a file for later. It will help you to remember details that might otherwise be lost. The full Schoolyard Habitats® How-To-Guide is available at <https://www.nwf.org/sitecore/content/Home/Garden-for-Wildlife/Create/Schoolyards/Resources>

Before starting the Schoolyard Habitats® Audit or going further, survey your students. Insert the average student response. On a scale of 1-10, where 1 is least important and 10 in most important, how important is:

1. Wildlife to people and my community? _____
2. It to know the history and culture of the school site and surrounding area when conducting the audit? _____



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



TABLE 1. SITE HISTORY

Knowing the site’s history is an important part in the planning of the site’s future. For example, if the site is located near an industrial center, soils may contain residues of chemicals generated by the adjacent industry. Generate a list of questions about the site and a list of people you think might be able to help you answer them. Some suggestions are provided below.

1. What year was the site developed?	
2. What type of ecosystem was here before the school was built?	
3. In the past, were any industrial centers near or on the school site? If yes, explain.	
4. What is the cultural history of the school site?	

Who Can Help? Long-time town residents • Historical Society • Principal • Local farmer • Local Businesspeople • Long-time teacher • Librarian • County Planning Office • Conservation District staff



Schoolyard Habitats[®]

BASELINE AUDIT, GRADES 9-12



TABLE 2. DEFINING THE STUDY SITE

<p>1. What are the GPS coordinates for the study site? Use your smart phone's GPS or go to: http://www.whatsmygps.com/ to find the site's coordinates.</p>	<p>Latitude N _____ Longitude W _____</p>
<p>2. In what watershed is the study site located? https://cfpub.epa.gov/surf/locate/index.cfm</p>	
<p>3. What are the land use types surround the study site? Check all that apply.</p>	<p>_____ Residential _____ Commercial _____ Park _____ Undeveloped land _____ Other</p>
<p>4. Is the school a National Wildlife Federation Certified Schoolyard Habitat[®]?</p>	<p>_____ Yes _____ No _____ Unsure</p>
<p>5. Are the school grounds certified or maintained through another local, state or national program or citizen science project?</p>	<p>_____ Yes _____ No _____ Unsure If yes, please list. _____ _____</p>
<p>6. How many square feet of wildlife habitat does the school currently maintain?</p>	<p>_____ ft²</p>
<p>7. What is the average number of minutes students spend in the garden or outdoor learning space each week?</p>	



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



TABLE 3. TOPOGRAPHY

Ask a team/class activity, have students draw an aerial map of the school grounds and denote the following. Choose one student or team map and insert as a .jpg or .png image file below.

1. School building	2. Man-made structures other than the school building	3. Location of hills valleys and slopes
4. Rainfall or sprinkler run-off paths and low lying areas that hold water	5. Sprinkler systems, storm drains, or sewer markers	6. Existing natural areas
7. Trees	8. Wind breaks	9. Hours of direct sunlight/full shade
10. Natural and man-made walkways	11. Cardinal directions	12. Key

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Schoolyard Habitats[®]

BASELINE AUDIT, GRADES 9-12



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

1. How could or how will the shape of the site affect habitat plans?

TABLE 4. TEMPERATURE AND PRECIPITATION

<p>1. For today's date, collect the weather data listed to the right. Use your local weather website, application or use the following:</p> <ul style="list-style-type: none"> • http://www.weatherbase.com/weather/state.php3?c=US • www.weather.com 	<p>_____ _____ Temperature in degrees Fahrenheit and Celsius</p> <p>_____ _____ Precipitation in inches and centimeters</p>
<p>2. In what season is data being collected?</p>	<p>_____ Summer _____ Fall</p> <p>_____ Winter _____ Spring</p>
<p>3. In what plant hardiness zone does the school reside? https://planthardiness.ars.usda.gov/PHZMWeb/</p>	
<p>4. What are the average annual minimum winter temperatures for this zone?</p>	<p>_____ °F _____ °C</p>
<p>5. What is the average annual rainfall? https://www.usclimatedata.com/</p>	<p>_____ inches _____ cm</p>

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



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

1. What might the weather be like when the post audit is conducted? Consider setting a date for the post-action audit now.
2. How do changes in weather impact vegetation, animal behavior and soil?
3. What are some of the relationships between weather and the Schoolyard Habitat site?



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



TABLES 5 and 6. Consider contacting a habitat steward, parks department, college or university, or local gardening/native plants non-profit. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise.

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 5. SOIL QUALITY

<p>1. Soil Temperature</p> <p>Test 1 _____ °F _____ °C</p> <p>Test 2 _____ °F _____ °C</p> <p>Test 3 _____ °F _____ °C</p>	<p>2. Soil pH</p> <p>Test 1 _____ pH level</p> <p>Test 2 _____ pH level</p> <p>Test 3 _____ pH level</p> <p>() Acidic () Neutral () Basic</p>	<p>3. Iron</p> <p>Test 1 _____ Fe ppm (parts/million)</p> <p>Test 2 _____ Fe ppm (parts/million)</p> <p>Test 3 _____ Fe ppm (parts/million)</p>
<p>4. Nitrogen</p> <p>Test 1 () low () medium () high</p> <p>Test 2 () low () medium () high</p> <p>Test 3 () low () medium () high</p>	<p>5. Phosphorus</p> <p>Test 1 () low () medium () high</p> <p>Test 2 () low () medium () high</p> <p>Test 3 () low () medium () high</p>	<p>6. Potassium</p> <p>Test 1 () low () medium () high</p> <p>Test 2 () low () medium () high</p> <p>Test 3 () low () medium () high</p>



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



TABLE 6. WATER QUALITY (OPTIONAL-CONDUCT IF APPLICABLE)

<p>1. Water Temperature</p> <p>Test 1 _____ °F _____ °C</p> <p>Test 2 _____ °F _____ °C</p> <p>Test 3 _____ °F _____ °C</p>	<p>2. Water pH</p> <p>Test 1 _____ pH level</p> <p>Test 2 _____ pH level</p> <p>Test 3 _____ pH level</p> <p>() Acidic () Neutral () Basic</p>	<p>3. Salinity</p> <p>Test 1 _____ ppt (parts/thousand)</p> <p>Test 2 _____ ppt (parts/thousand)</p> <p>Test 3 _____ ppt (parts/thousand)</p>
<p>4. Dissolved Oxygen</p> <p>Test 1 _____ ppm (parts/million)</p> <p>Test 2 _____ ppm (parts/million)</p> <p>Test 3 _____ ppm (parts/million)</p>	<p>5. Nitrates</p> <p>Test 1 _____ ppm (NO₃ parts/million)</p> <p>Test 2 _____ ppm (NO₃ parts/million)</p> <p>Test 3 _____ ppm (NO₃ parts/million)</p>	
<p>6. Is it raining or has it rained in the last 24 hours? Stormwater runoff from surrounding areas can impact watershed quality and appearance, including temperature and pH.</p>		<p>() Yes () No</p>
<p>7. List the potential point sources of pollution.</p>		
<p>8. List the potential non-point sources of pollution.</p>		

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



Think about the following questions as you summarize the data in Tables 5 and 6.

1. Why is it important to observe and test soil and water in and around potential habitat sites?
2. How can run-off impact wildlife habitat?
3. What actions can the team/class take to improve soil and water quality? Use this information to inform the Eco-Action plan.

The key to attracting wildlife to the Schoolyard Habitat is to have all the essential elements including food, water, cover and places to raise young. The following charts will help to assess these habitat elements on the school site. To populate the tables, students can be placed in teams or work in pairs. Students are encouraged to collect data in their science notebook and then transfer the compilation of their data to Table 7 and Charts 1 through 6.

TABLE 7. WILDLIFE

1. Are there currently animals present at the study site?	___ Yes ___ No
2. Check the families of animals observed at the study site, then continue to Chart 1. Animal Observations	___ amphibians ___ birds ___ fish ___ insects ___ mammals ___ reptiles

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 1. WILDLIFE – ANIMALS

Identify what teams/classes observe today.

Birds, Mammals, Insects, Reptiles, Fish, Amphibians	# of Animals Observed	Animal Evidence (tracks, burrows, nests, scat, etc.)	Notes
Example Birds – Robins and Chickadees	2 Robins and 3 Chickadees	Robin nest, physical sighting	Robin nest had a broken egg. Chickadees back and forth between the bird feeder and a nearby branch.

CHART 2. HABITAT ELEMENTS - FOOD AND VEGETATION

Vegetation Type	Species or Description	Percent Coverage*	Native or Non-Native	What Wildlife Prefers this Food Source?
Trees (over-story canopy)	Example: sugar maple	5%	native	red squirrels, deer

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 2. HABITAT ELEMENTS - FOOD AND VEGETATION, CONTINUED

Vegetation Type	Species or Description	Percent Coverage*	Native or Non-Native	What Wildlife Prefers this Food Source?
Shrubs (mid-story canopy)	Example: blackberries	1%	native	raccoons, red foxes
Flowers (herbaceous)	Example: asters	.3%	native	bumblebees, Sulphur butterfly
Other (fungi, mosses, grasses)	Example: oyster mushrooms	.5%	native	mice, slugs and snails
Man-made Structures	Example: bird feeders	.75%	Non-native	Local songbirds and squirrels

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



Think about the following questions as you summarize the information in Chart 1 and 2.

1. What do you want to know about the vegetation that you've found here?
2. How many of the plants listed above are native to the area? Why are native plants important to the Schoolyard Habitat® site?
3. Which plants feed which wildlife species? How can the team/class find out?
4. How diverse (how many different types) are the plant food sources? A higher level of diversity will attract more wildlife species.
5. Are there existing natural areas on the school grounds? Landscaped areas? How might they provide examples of how to enhance the Schoolyard Habitat® site for native wildlife?



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 3. HABITAT ELEMENTS – WATER

1. Are there water sources on the school site?	() Yes () No
2. What are the natural water sources? Select all that apply.	() stream () pond () lake () wetland () puddles _____ other
3. Does the site have seasonal pools of water (vernal pools)? Vernal pools are important nurseries for many amphibian species.	() Yes () No () Unsure
4. Does the site include manmade water structures?	() bird baths () rain garden(s) () puddling containers _____ other

Think about the following question as you summarize the information in Chart 3.

1. What types of local animals will benefit from natural and man-made sources of water?



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 4. HABITAT ELEMENTS – COVER

<p>1. Our school provides places for wildlife to find cover from the weather and predators. (brush piles, rock walls, dense vegetation, trees)</p>	<p>() Yes () No</p>
<p>2. List the sources of available cover on the school site.</p>	
<p>3. List the manmade structures on the school site that provide cover for wildlife such as bird houses, toad houses, bat house, bug houses, etc.</p>	

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

1. How is vegetation (ground cover, shrubs, and trees) arranged on the Schoolyard Habitat site? Why might the arrangement of the vegetation impact cover?
2. Does vegetation range in size and density?
3. Why might it be important to have a variety of vegetation sizes and density in terms of cover?



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 5. HABITAT ELEMENTS – PLACES TO RAISE YOUNG

1. Our school provides places for wildlife to raise their young.	() Yes () No
2. List the natural sources of available places for wildlife to raise their young on the school site (host plants for larvae, trees/bushes for nests, water features for amphibians, etc.).	
3. List the manmade structures on the school site that provide places for wildlife to raise young such as bird houses, bat houses, etc. There may be similarities between Chart 5 and 6.	

CHART 6. HABITAT ELEMENTS – OTHER CONSIDERATIONS

1. Check all that apply. What types of sustainable practices are used on the school site?	<input type="checkbox"/> organic fertilizers and herbicides <input type="checkbox"/> mulching <input type="checkbox"/> remove invasive species <input type="checkbox"/> xeriscaping <input type="checkbox"/> drip irrigation <input type="checkbox"/> native plants <input type="checkbox"/> compost <input type="checkbox"/> reduced lawn _____ other
2. Does the school site include vegetable, fruit and/or herb gardens?	() Yes () No
3. Does the school site include pollinator gardens?	() Yes () No
4. Are the school grounds used for teaching and learning?	<div style="text-align: center;">() Yes () No</div> If yes, please briefly describe how:

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Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



CHART 6. HABITAT ELEMENTS – OTHER CONSIDERATIONS, CONTINUED

5. Does the garden(s) meet the American with Disabilities (ADA) accessibility standards?	() Yes () No () Unsure
6. Does the garden(s) include interpretive signage that is multi-lingual?	() Yes () No
7. Are there existing places/structures on the school site that serve as an outdoor classroom where students can gather, listen, dialogue and learn?	() Yes () No

Think about the following questions as the Eco-Action Team/students summarize the information from the above charts and tables:

1. Does the school contain all five wildlife habitat requirements in a natural urban, suburban or rural setting – food, water, cover, places to raise young, and a healthy, sustainable habitat?
2. Are there any protected plant or animal species in or around the study site that are threatened or endangered?
3. What role might a food garden (vegetable/fruit/herb) play in the Schoolyard Habitat®? What role might a pollinator garden or native plantings play?
4. What are some stewardship actions the team/class can take to improve wildlife habitat in the Schoolyard Habitat study site?
How can the school make the Schoolyard Habitat® more inclusive?



Schoolyard Habitats®

BASELINE AUDIT, GRADES 9-12



Review of All Data

1. Based on what is known and has been learned, what does the team/class need to create or extend wildlife habitat on the school grounds?
2. Be prepared in the post-audit to explain **cause and effect** relationships students have identified through their investigations.
3. Be prepared in the post-audit to explain the role **systems and system models** play in the development and maintenance of wildlife habitat.
4. Be prepared in the post-audit to explain how **stability and change** impact wildlife habitat.