

Environmental Science

Merit Badge Workbook



Merit badges are earned by doing: reading the pamphlet, practicing the skills, and showing your counselor what you have learned.
This workbook gives you a place to organize your notes and track your progress along the way.
Merit badge counselors may not require the use of this or any similar workbook.
You still must satisfy your counselor that you can demonstrate each skill and have learned the information.
Use the space under each requirement to note what you have done and what you want to talk about, not to write out full answers.
When a requirement says discuss, show, tell, explain, or demonstrate, that is what you must do.
No one may add to or subtract from the official requirements found on scouting.org (Guide to Advancement 7.0.4.8).
Scouting America last updated this badge's requirements page on May 12, 2026.
Requirements change from time to time. Double-check scouting.org before you start.

Scout's name: _____ Unit: _____ Date started: _____

Counselor's name: _____ Phone no.: _____ Email: _____

Links marked "Scouting America resources" are the ones Scouting America shares on its official badge page.
Links marked "ScoutSmarts" open the matching part of Cole's guide. This workbook is unofficial and not endorsed by Scouting America.

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1. Describe the meaning of environmental science in your own words. Explain how you think we can use science to understand, conserve, and improve our environment.

Scouting America resources: What Is Environmental Science? (video) · **ScoutSmarts:** Requirement 1 explained

Environmental science in my own words

How I think we can use science to understand, conserve, and improve our environment

Requirement 1 completed on _____ counselor initials _____

2. Ecology. Do the following and discuss with your counselor:

Scouting America resources: Merlin Bird App Description (app) · INaturalist App Description (app) Observing Nature Through SMELL (video) · **ScoutSmarts:** Requirement 2 explained

(a) Choose an area approved by your counselor and observe (sight, sound, and smell) its ecosystem over a two-day period.

Scouting America resources: Observe Nature Like a Scientist! (video) · Observing Nature (video) · Backyard Nature (video)

Area approved by my counselor _____ Dates _____

My two-day ecosystem observations

Day and time	What I saw	What I heard	What I smelled

(b) Make notes about the living, nonliving (e.g., rocks), and formerly living components. Include information about interactions among the components, including the food chain, predators, native species, and invasive species, and identify how human activities have affected the ecosystem.

Components of the ecosystem

Component	What I found
Living	
Nonliving	
Formerly living	

Interactions among the components

Interaction	What I noted
Food chain	
Predators	
Native species	
Invasive species	

How human activities have affected the ecosystem

Requirement 2 completed on _____ counselor initials _____

3. Air Pollution. Do ONE of the following and discuss with your counselor:

Scouting America resources: Air Pollution (video) · **ScoutSmarts:** Requirement 3 explained

☐ **(a)** Learn what Particulate Matter (PM) is, how PM gets into the air, what the harmful effects of PM are, and what is being done to reduce PM in the air. Then, perform an experiment to test for particulates that contribute to air pollution.

Scouting America resources: Particulate Matter (video)

Particulate matter (PM)

Topic	What I learned
What PM is	
How PM gets into the air	
Harmful effects of PM	
What is being done to reduce PM	

Experiment date _____ Where I did it _____

My particulate experiment: how I set it up and what I found

☐ **(b)** Discuss how air pollution and transportation affect each other by giving at least three examples. Then, compare two modes of transportation (e.g., gasoline-powered vs. electric vehicles, gasoline-powered car vs. bicycle, etc.).

Scouting America resources: Your Car's Exhaust (video) · Air Quality and Transportation (video)

How air pollution and transportation affect each other

Example	How they affect each other

Mode 1 _____ Mode 2 _____

How the two modes compare

☐ **(c)** Learn about the Clean Air Act. Make notes on when it was passed, its environmental goals, what progress has been made and what remains to be done to achieve the law's goals. Describe the impact, benefits, and costs of the law as well as what is required to implement and enforce the law.

Scouting America resources: Clean Air Act (video)

My notes on the Clean Air Act

Topic	My notes
When it was passed	
Its environmental goals	
Progress made	
What remains to be done	
Impact	
Benefits	
Costs	
What it takes to implement and enforce it	

Requirement 3 completed on _____ counselor initials _____

4. Water Pollution. Do ONE of the following and discuss with your counselor:

Scouting America resources: Hydrologic Cycle (video) · **ScoutSmarts:** Requirement 4 explained

☐ **(a)** Identify where your community sources water, how it is treated, and disposed. Obtain and review a water quality report from your area.

Scouting America resources: Understanding a Drinking Water Quality Report (video) · Drinking Water Treatment (video) Waste Water Treatment (video)

My community or water system

My community's water

Topic	What I found
Where our water comes from	
How it is treated	
How it is disposed of	

Water quality report I reviewed (source and year)

What I learned from the water quality report

☐ **(b)** Identify a local or regional area that experiences periodic flooding and/or drought. Collect facts on prior event(s) and investigate the environmental impacts of these extreme events.

Scouting America resources: How to Use FEMA's Flood Search Tool (video) · Watersheds! (video) · US Drought Map (video)

Area I chose

Flooding, drought, or both

Facts on prior events

When	What happened	Environmental impacts

What my investigation found

☐ **(c)** Learn about the Clean Water Act. Make notes on when it was passed, its environmental goals, what progress has been made and what remains to be done to achieve the law's goals. Describe the impact, benefits, and costs of the law as well as what is required to implement and enforce the law.

Scouting America resources: Clean Water Act (video) · Clean Water Act & the Chesapeake Bay (video)

My notes on the Clean Water Act

Topic	My notes
When it was passed	
Its environmental goals	
Progress made	
What remains to be done	
Impact	
Benefits	
Costs	
What it takes to implement and enforce it	

Requirement 4 completed on _____ counselor initials _____

5. Land Pollution. Do ONE of the following and discuss with your counselor:

ScoutSmarts: Requirement 5 explained

☐ **(a)** In an area (yard, park, golf course, farm, etc.) approved by your counselor, make a list of the pesticides, herbicides, and fertilizers used and how often they are applied. Identify the benefits of their use and the environmental impact, including effects on non-target species (including humans), what happens if the chemicals infiltrate into the groundwater, and what happens to any runoff of the chemicals.

Scouting America resources: Do We Really Need Pesticides? (video) · Bald Eagle Study (video)

Area approved by my counselor _____

Chemicals used in this area

Chemical	Pesticide, herbicide, or fertilizer	How often it is applied

Benefits and environmental impact

Topic	What I found
Benefits of their use	
Effects on non-target species (including humans)	
If they infiltrate into the groundwater	
What happens to runoff	

☐ **(b)** Learn about the erosion process and identify an example of where erosion occurs. Determine where the eroded material ends up and how erosion can be minimized.

Scouting America resources: Soil Erosion | Causes, Effects, and Solutions (video) · How Was the Grand Canyon Formed? (video)

Erosion

Topic	What I learned
The erosion process	
An example of where erosion occurs	
Where the eroded material ends up	
How erosion can be minimized	

☐ **(c)** Learn about a land pollution incident that led to a site being listed on Environmental Protection Agency's Superfund National Priority List. Identify what caused the incident, what the effects were on the environment, what remediation has been done, and the current condition of the site.

Scouting America resources: Introduction to Superfund (video)

Superfund site _____ Location _____

What I learned about the site

Topic	What I learned
What caused the incident	
Effects on the environment	
Remediation done	
Current condition of the site	

Requirement 5 completed on _____ counselor initials _____

6. Rare, Threatened, or Endangered Species. Do ONE of the following and discuss with your counselor:

ScoutSmarts: Requirement 6 explained

☐ **(a)** Do research on one endangered species found in your state. Learn about its natural habitat, why it is endangered, what is being done to preserve it, and how many individual species are left in the wild. Prepare a 100-word report about the species and include a drawing or photo. Present your report to your patrol or troop.

Scouting America resources: Endangered Species by US State (video) · Are Endangered Species Worth Saving? (video) Saving Threatened Plants (video)

Endangered species in my state _____

My research

Topic	What I learned
Natural habitat	
Why it is endangered	
What is being done to preserve it	
How many are left in the wild	

My 100-word report

Drawing or photo of the species (draw here or attach)

Presented to (patrol or troop) Date

☐ **(b)** Do research on one species that was endangered or threatened but that has now recovered. Learn about how the species recovered, and what its new status is. Prepare a 100-word report on the species and include a drawing or photo. Present your report to your patrol or troop.

Scouting America resources: 10 Success Stories (video) · Condor Saved! (video) · Whooping Cranes Saved! (video) World Wildlife Fund (website)

Recovered species

My research

Topic	What I learned
How the species recovered	
Its new status	

My 100-word report

Drawing or photo of the species (draw here or attach)

Presented to (patrol or troop) Date

☐ **(c)** With your parent or guardian and counselor's approval, work with a natural resource professional to identify a completed project that has been designed to improve the habitat for a threatened or endangered species in your area. Visit the site and report on what you saw to your patrol or troop.

Scouting America resources: Butterfly Habitat Restoration (video) · Fisheries Habitat Restoration (video) Everglades Restoration (video)

☐ Parent or guardian approved

☐ Counselor approved

Natural resource professional _____ Species helped _____

Project site _____ Date of visit _____

What I saw (notes for my report)

Reported to (patrol or troop) _____ Date _____

Requirement 6 completed on _____ counselor initials _____

7. Pollution Prevention, Resource Recovery, and Conservation. Do ONE of the following and discuss with your counselor:

ScoutSmarts: Requirement 7 explained

☐ **(a)** Determine five ways to conserve resources or use resources more efficiently in your home, school, or camp. Practice at least two of these methods for at least one week.

Scouting America resources: 10 Ways to Take Care of the Environment (video) · Scouts and LNT (video) 10 Easy Ways to Save Water at Home and Help the Planet (video) · The Leave No Trace Basics (video)

Five ways to conserve resources or use them more efficiently

Way	Home, school, or camp	One I practiced?

My one-week practice log

Day	Method 1	Method 2
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		

☐ **(b)** Explain Resource Recovery and why it is important to reduce pollution. Collect samples or take photos of 10 items that can demonstrate the principle of Reduce, Reuse, Recycle. Explain your collection, how these materials are currently handled, and potential improvements.

Scouting America resources: Reduce, Reuse, Recycle (video) · Upcycling Hacks (video) · The 3Rs (video)

What resource recovery is, and why it is important to reduce pollution

My collection of 10 items

Item	Reduce, reuse, or recycle	How it is handled now	Possible improvement

☐ **(c)** Identify five items in your household that will become hazardous waste. Explain how they should be properly stored, what special care is needed for disposal, and proper disposal options available in your area.

Scouting America resources: Household Hazardous Waste Disposal (video)

Five household items that will become hazardous waste

Item	How to store it	Special care for disposal	Disposal options in my area

Requirement 7 completed on _____ counselor initials _____

8. Pollination. Do ONE of the following and discuss with your counselor:

ScoutSmarts: Requirement 8 explained

☐ **(a)** Investigate pollination and its importance to our environment and ecosystems. Make a list of five pollinators and the plants that attract them in your region. Explain the importance of pollinators and what Scouts can do to support pollinators in their area.

Scouting America resources: Is It a Bee, a Wasp, a Fly, or a Moth? (video) · The Power of Pollinators (video) How Pollination Works (video)

What I learned about pollination and its importance to our environment and ecosystems

Five pollinators in my region

Pollinator	Plants that attract it

Why pollinators are important, and what Scouts can do to support them

☐ **(b)** Visit an area with flowering plants during pollination season for an hour to observe pollination. Record which pollinators are attracted to which plant. Explain the importance of pollinators and what Scouts can do to support pollinators in their area.

Scouting America resources: The Beauty of Pollination (video) · Animal Pollinators! (video)

Where _____ Date _____ Time (one hour) _____

Pollinators I observed

Pollinator	Plant it was attracted to	Notes

Why pollinators are important, and what Scouts can do to support them

☐ **(c)** Learn about the importance of pollination to agriculture, including the economic costs and benefits. Identify four crop-pollinator pairs. Explain the relationship of pollinators to agriculture.

Scouting America resources: Pollinators and Agriculture (video) · Honey Bee Pollinator Contract Hives (video) Almond Pollination (video)

Why pollination matters to agriculture, including economic costs and benefits

Four crop-pollinator pairs

Crop	Pollinator

The relationship of pollinators to agriculture

Requirement 8 completed on _____ counselor initials _____

9. Invasive Species. In your community or camp, investigate two invasive plant or animal species. Learn where the species originated, how they were transported to this ecosystem, their life history, how they are spread, how they impact the native ecosystem, and the recommended means to eradicate or control their spread. Discuss what you learned with your counselor.

Scouting America resources: The Threat of Invasive Species (video) · Why We Don't Kill Off Invasive Species (video)
ScoutSmarts: Requirement 9 explained

Two invasive species in my community or camp

Topic	Species 1	Species 2
Name of the species		
Where it originated		
How it was transported here		
Its life history		
How it spreads		
How it impacts the native ecosystem		
Recommended ways to eradicate or control it		

Requirement 9 completed on _____ counselor initials _____

10. Identify the environmental impact topics that would need to be addressed for a construction project such as building a house, adding a new building to your Scout camp, or one you create on your own that is approved by your counselor. Evaluate the purpose and benefit of the proposed project, alternatives (including a no-action alternative), and any environmental consequences. Discuss with your counselor.

Scouting America resources: What Is an EIA? (video) · EIA issues (video) · EIAs-Key to Sustainable Development (video)
ScoutSmarts: Requirement 10 explained

My construction project

Environmental impact topics to address

Purpose and benefit of the project

Alternatives (including no action)

Environmental consequences

Requirement 10 completed on counselor initials

11. Identify three career opportunities that would use skills and knowledge in the environmental science field. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Scouting America resources: EnvSci Future Careers (video) · What Do Environmental Engineers Do? (video)
What Do Environmental Scientists Do? (video) · **ScoutSmarts:** Requirement 11 explained

Three careers in environmental science

Career	How it uses environmental science skills and knowledge

The career I picked

What I researched

Topic	What I found
Training and education	
Certification requirements	
Experience and expenses	
Prospects for employment and starting salary	
Advancement opportunities and career goals	

Might I be interested in this career? Why or why not

Requirement 11 completed on counselor initials

Counselor sign-off

Your counselor signs your blue card or approves the badge in Scoutbook, and your unit records it. This line is for your own records.

Counselor's signature Date completed

Official Scouting America resources

Scouting America resources: Environmental Science merit badge page (requirements and resources)
Environmental Science merit badge pamphlet (free PDF) · All merit badges · **ScoutSmarts:** Environmental Science Merit Badge Guide, Part 1
Environmental Science Merit Badge Guide, Part 2

Made by Cole at ScoutSmarts.com, an Eagle Scout who loves helping Scouts.
Spot an error or a requirement change? Tell me at scoutsmarts.com/contact.
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