Track 3: Nature and Conservation

SESSION 4: WATERWAYS AND WETLANDS

Overview: Waterways and Wetlands introduces youth to the importance of aquatic ecosystems and the role they play in supporting biodiversity, filtering pollutants, and preventing erosion. This session encourages youth to explore local water sources—such as creeks, ponds, rivers, or wetlands—and understand how human activity affects water quality and aquatic life. Through observation, testing, and stewardship activities, youth gain a deeper appreciation for protecting water resources.

Objectives

- Understand the ecological importance of waterways and wetlands.
- Learn how to observe and test basic water quality indicators.
- Explore how pollution and runoff affect aquatic ecosystems.
- Participate in a water-focused conservation activity.

Supplies

- Water testing kits (pH, turbidity, temperature, etc.)
- Buckets or sample containers
- Nets or magnifying glasses for aquatic life observation
- Clipboards and water observation sheets
- Trash bags and gloves (for optional cleanup)
- Maps or diagrams of local watershed

Advisor Notes

- Choose a safe, accessible water site for exploration.
- Review water safety rules before the activity.
- Encourage respectful observation of aquatic life.
- Optional: Partner with a local watershed or conservation group.

SESSION OUTLINE

Welcome and Icebreaker Activity: Water Detective (10-15 min)

- Youth guess what types of animals or plants live in different water habitats.

Safety Moment: Water Safety Basics (2-3 min)

- Stay away from deep or fast-moving water. Rivers, streams, and lakes can look calm but may have strong currents.
- Never enter water without adult supervision.
- Know your surroundings. Watch for slippery banks and uneven ground.
- Avoid standing too close to edges.
- Use the buddy system. Always stay with a partner near water.
- If someone falls in, call for help—do not jump in unless trained.
- If you see someone struggling, alert an adult immediately.
- Know where the nearest adult and first-aid kit are.
- Wear proper gear. Life jackets for boating or near deep water. Sturdy shoes for wet or muddy areas.

Waterway Exploration (20-30 min)

- Youth observe a local water source and record findings. Use Waterway Exploration Activity and Handout.

Water Quality Testing and Stewardship (20-30 min)

- Youth test water samples and discuss results.
- Optional: Conduct a mini cleanup or create a poster.

(Optional) Waterways and Wetlands Debate Challenge (20-30 min)

- Engage youth in critical thinking and discussion about water issues while keeping it fun and interactive.
- See Waterways and Wetlands Debate Challenge for more information.

Resources and Notes

- Handout: Water Quality Basics
- Optional: Link to local watershed or EPA water education resources

REFLECTION SECTION

Advisor note: These are sample questions. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own questions.

Focusing Questions

- What did you discover in the water today?
- What was the most surprising part of the exploration?

Analysis Questions

- How do water quality results affect aquatic life?
- What signs showed the water was healthy or polluted?

Generalization Questions

- Why is clean water important for people and animals?
- How can you help protect water in your community?

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ICEBREAKER: WATER—FACT OR FICTION

Instructions

- Tell participants you'll read statements about water, wetlands, and conservation.
- They must decide if each is Fact or Fiction.

Play:

- Read a statement aloud.
- Youth respond by raising a hand for Fact or keeping hands down for Fiction (or move to one side of the room for Fact, the other for Fiction for more movement).
- Reveal the correct answer and share a quick explanation.

Wrap-Up Discussion:

- Which facts surprised you?
- Why are wetlands important for people and wildlife?

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PRINTABLE HANDOUT: 25 FACT OR FICTION STATEMENTS

- Wetlands help prevent flooding.
  Fact. Wetlands absorb excess water and reduce flood risk.
- Oceans contain about 97% of Earth's water.
  Fact. Most of Earth's water is in oceans.
- All wetlands are freshwater.
  Fiction. Some wetlands are saltwater or brackish.
- Beavers create wetlands by building dams.
  Fact. Beaver dams slow water flow and form wetland habitats.
- Recycling plastic has no impact on water pollution.
  Fiction. Recycling reduces plastic waste that can pollute waterways.
- Mangroves grow in saltwater coastal areas.
  Fact. Mangroves thrive in brackish and saltwater environments.
- Wetlands are home to more species than rainforests.
  Fiction. Rainforests have greater biodiversity, but wetlands are still rich ecosystems.
- Groundwater is stored in underground aquifers.
  Fact. Aquifers hold water beneath Earth's surface.
- Coral reefs are found in freshwater lakes.
  Fiction. Coral reefs exist only in saltwater oceans.
- Water lilies can grow in ponds and wetlands.
  Fact. They are common in shallow freshwater habitats.
- Polluted water can harm fish and wildlife.
  Fact. Pollution disrupts ecosystems and kills aquatic life.
- Wetlands act as natural water filters.
  Fact. They trap sediments and remove pollutants.
- All rivers flow north.
  Fiction. Rivers flow downhill, not based on compass direction.
- Estuaries are where rivers meet the ocean.
  Fact. Estuaries mix freshwater and saltwater.
- Dams always improve water quality.
  Fiction. Dams can disrupt ecosystems and reduce water quality downstream.
- Amphibians like frogs depend on wetlands for survival.
  Fact. Wetlands provide breeding and feeding habitats.
- Wetlands store carbon and help fight climate change.
  Fact. Wetlands capture and store carbon in plants and soil.
- Plastic bags break down quickly in water.
  Fiction. Plastic bags can take hundreds of years to decompose.
- Rainwater harvesting can reduce stormwater runoff.
  Fact. Collecting rainwater helps manage runoff and conserve water.
- All fish lay eggs in saltwater.
  Fiction. Many fish species lay eggs in freshwater.
- Wetlands only exist in tropical regions.
  Fiction. Wetlands occur worldwide in many climates.
- Water pollution can lead to harmful algal blooms.
  Fact. Excess nutrients cause algae growth, harming ecosystems.
- Drinking water comes only from rivers.
  Fiction. It also comes from lakes, reservoirs, and groundwater.
- Wetlands provide habitat for migratory birds.
  Fact. Many birds rely on wetlands for nesting and feeding.
- Saltwater wetlands are called marshes.
  Fiction. Saltwater wetlands are often called tidal marshes or mangroves, not all marshes are saltwater.

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WATERWAY EXPLORATION ACTIVITY

Objective
- Guide youth in observing a local water source to learn about its characteristics, wildlife, and human impact.

Preparation
- Select a safe waterway (stream, pond, wetland, or riverbank).
- Review safety guidelines:
- Stay away from deep or fast-moving water.
- Use the buddy system.
- Wear appropriate footwear.

Gather materials:
- Clipboards, pencils, and observation sheets or journals.
- Optional: magnifying glasses, binoculars.

Introduce the Activity (2-3 min)
- Explain that participants will observe and record details about the water source and surrounding habitat.
- Emphasize safety rules before starting.

Observation Time (15-20 min)
- Encourage youth to spread out in pairs or small groups.

Use prompts:
- Water clarity (clear, cloudy, polluted?)
- Wildlife (fish, birds, insects)
- Plants (near or in water)
- Human impact (trash, pipes, trails)
- Sounds and smells

Group Discussion (5-7 min): Gather everyone and share observations. Ask:
- Why is this water source important?
- What could harm it?
- How can we protect it?

Tips
- Encourage curiosity and detailed notes.
- Take photos if allowed for later discussion.
- Reinforce stewardship values throughout the activity.

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PRINTABLE HANDOUT: WATERWAY EXPLORATION ACTIVITY SAMPLE OBSERVATION SHEET

Date: _____

Location: _____

Weather: _____

Water Characteristics (clarity, color, odor): _____

Wildlife Observed: _____

Plants Observed: _____

Signs of Human Impact: _____

Sounds and Smells: _____

Notes: _____

_____

_____

_____

_____

_____

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WATER QUALITY TESTING AND STEWARDSHIP ACTIVITY

Objective:

- Teach youth how to assess water health and encourage actions to protect waterways.

Prepare Materials:

- Water testing kits (pH, turbidity, temperature, nitrate strips)
- Clear containers for samples
- Gloves for safety
- Clipboards and recording sheets

Explain the Process:

- Demonstrate how to collect a sample safely.
- Show how to use each test (pH, clarity, etc.).
- Emphasize safety: no drinking or touching water with bare hands.

Conduct Testing (15–20 min):

- Youth work in small groups.
- Record results on observation sheets.
- Compare findings to healthy water standards.

Discuss Results (5–10 min):

- What do the results tell us about water quality?
- How does pollution affect wildlife and people?
- What actions can improve water health?

Optional Stewardship Actions

- Mini Cleanup: Collect litter near the waterway (with gloves).
- Poster Creation: Design posters with messages like: "Protect Our Waterways," "Clean Water = Healthy Life," or "Reduce Pollution, Save Wetlands"

Cleanup Activity Ideas

- Shoreline Sweep: Youth collect litter along the edge of the waterway using gloves and trash bags, then sort items into recyclables and trash for proper disposal.
- Micro-Trash Hunt. Focus on small items like bottle caps, straws, and cigarette butts. Use a "scavenger hunt" approach—give points for each type collected.
- Recycling Relay. Teams race to sort collected items into correct bins (plastic, metal, paper). This adds a fun competitive element while reinforcing recycling habits.

Before and After Photo Challenge

- Take a photo of the area before cleanup and after.
- Share results on a community board or social media to inspire others.

Trash Art Project

- Use clean, safe items collected to create an awareness poster or sculpture.
- Display as part of the stewardship discussion.

Data Collection

- Record types and amounts of trash found.
- Discuss patterns (for example, lots of plastic bottles) and brainstorm solutions.

Eco-Pledge Wall

- After cleanup, have youth write one pledge to reduce waste and protect waterways.
- Display pledges on a poster or digital board.

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WATERWAYS AND WETLANDS DEBATE CHALLENGE

Advisor Instructions

- Objective: Engage youth in critical thinking about water conservation and wetlands protection.
- Divide participants into teams (2–4) and assign each a debate scenario.
- Allow 5 minutes for preparation and 10–15 minutes for debate. Each team presents their case in 1–2 minutes. Opposing teams respond with counterpoints.
- Encourage respectful discussion and ensure all voices are heard.

10 Debate Scenarios

- Should cities ban single-use plastics to protect waterways?
- Is building dams good or bad for wetlands?
- Should we prioritize clean drinking water over wetland conservation?
- Are invasive species a bigger threat than pollution in rivers?
- Should farmers be required to reduce fertilizer runoff?
- Is restoring wetlands worth the cost?
- Should industries pay higher fines for water pollution?
- Is bottled water worse for the environment than tap water?
- Should communities invest in rainwater harvesting systems?
- Are laws protecting endangered aquatic species strict enough?

Wrap-Up Discussion

- What did you learn about water issues?
- How do these decisions affect wildlife and communities?
- What actions can we take locally?

Tips for Guiding Respectful Discussion

- Listen actively to others without interrupting.
- Focus on ideas, not individuals.
- Encourage everyone to share their perspective.
- Use positive language and avoid personal attacks.
- Summarize key points before moving to the next topic.