Take Home Your Limit of Litter!

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Best Time: At the end of a fishing outing; as an annual community service event.

Best Location: Outdoors.

Time Required: 1-3 hrs.

Objectives:
1. To remove litter and debris along a lake or stream shoreline.
2. To be able to describe the concepts of biodegradability, decomposition and toxicity and relate them to water and soil quality, and aquatic wildlife.
3. To learn how certain waste products can harm the environment and wildlife.
4. To have fun while learning.

Youth Development Objectives:
1. To participate in a community service project.
2. To help youths understand their role in maintaining a clean and healthy environment.
3. To help youths explore their personal conservation ethic toward natural resources as they respond to issues of pollution, consumerism, and responsible waste disposal.

Evaluation Activities/Suggestions:

Have youths write about the litter that they found, including the overall condition of lake or stream site. One good method for gaining perspective of how litter affects wildlife is to write from a specific point of view, for example: how a bluegill, northern pike, turtle, muskrat, or river otter might describe the affects of litter and pollution on their livelihood.

Have youth write a news release describing the event for local print media. Take photos to illustrate the area before and after the project.

Write a journal entry after completing this project. Share thoughts with other club members or family.

Roles for Teen and Junior Leaders:
Pair up with younger members to assist with the removal of large debris and hazardous items such as broken glass and wire.

Have older members invite the local media to the event. Their stories or interviews can provide good public relations for the club and could result in bringing in new members!

Potential Parental Involvement:
Assist with hauling the trash to the proper dump stations: oil, glass and cans to a recycling center, other materials to the local waste management site.

Equipment/Materials:

- heavy duty plastic garbage bags (clear)
- work gloves and/or rubber gloves (surgical gloves are available by the box and are reasonably inexpensive)
- notebook and pencil
- hip boots or waders
- personal floatation devices if the water is fast-moving, deep or has a drop-off
- first aid kit

Safety Considerations: Leader should be familiar with the clean-up site so that they can provide any necessary safety instructions regarding the topography of the area, currents, drop-offs, and any dangerous wildlife or poisonous plants in the region.

Instruct youth to use caution when handling sharp objects such as broken glass or wire. Youths should be cautioned against picking up medical needles.

Leaders should check into any applicable regulations governing the disposal of hazardous or other regulated materials.

References:

- Center for Marine Conservation. (no date). Plastics in the ocean: more than a litter problem. Washington, D.C.
- Edelstein, K.L. and B.E. Matthews. 1993. Aquatic sampling. NY Sportfishing and Aquatic

- Resources Education Program Manual. Cornell U.: Ithaca, NY. 75 pp.
- The Watercourse and Western Regional Environmental Education Council. 1995. Project
- WET. Bozeman, MT.
- Western Regional Environmental Education Council. 1992. Project WILD-Aquatic. Bethesda, MD.

Lesson Outline

Application	**Presentation**
Choose a waterbody to clean	I. Choose a section of stream or lake shore needing cleaning.
Assign teams	- Assign teams of two to sections of the area.
Pick up litter	- Instruct the teams to pick up all litter and put it in the clear plastic bags (clear bags help participants see the litter inside during later inspection).
Assist youths	- Remind youths to ask for adult assistance when they encounter litter that is either too large to remove or is potentially hazardous (e.g. objects with sharp edges such as broken glass and wire; un-identifiable bottles/jugs which may contain harmful chemicals). Advise youths to use common sense while picking up all litter.
Reassemble group	II. Reassemble the group after a designated time
Describe findings	- Ask the group to describe what they found.
Look for clues	- Were there any clues as to who might have been responsible for any of the litter? - What does the litter say about the kind of person who left it there?
Public opinion of anglers	- Discuss impacts of litter on public opinion of those who do the littering.
How does the public feel towards fishing and towards anglers, when the littering is clearly done by anglers?	
Review litter	III. Choose a few bags of litter and open them up.
Empty bags of litter	- Dump the bags on the ground or on a drop cloth (this is safer than reaching into the bags to pull out litter).
List items	- Make a list of the items contained in the bags.
Discussion	- Discuss the concepts of "biodegradability" and decomposition (see narrative for definitions).

Identify and classify items	- Identify those items that do not decompose.
Impacts of litter	- Identify what the potential problems or impacts of each item found might be on the fish or other organisms living nearby. - What if something ate the item of litter, or became entangled in it? - What if the litter contributed some chemical or biological element to the ecosystem? - Think about where the litter might have gone had you not removed it. - When considering the impact on wildlife, think about any possible effects on the wildlife's food, water, shelter and space.
Litter prevention strategies	- Discuss strategies your club might use to prevent the area from being littered again (e.g. provide waste cans; officially "adopt" the site, post a sign with your clubs efforts and or mission to encourage people to follow your clubs lead in environmental stewardship).
Regulations?	- Are there regulations affecting the dumping of garbage in your region? If so, are they enforced?
Conduct an experiment	IV. Set up an experiment to measure decomposition
Choose samples	1. Choose three samples of each item.
Select site for experiment	2. Choose a site that is not likely to be disturbed for several months to a year (the side yard area at either the leader's home or one of the club member's would work well).
Experiment design	3. Place one sample in water, one on top the ground, and bury the last one (6-10 inches or so).
Monitor experiment	4. Monitor the decomposition process. - set up a monitoring schedule:
Records	- record date - record season or weather - record changes observed, if any
Discuss results	5. Discuss the results.

Lesson Narrative:

Years ago, an angler finding litter alongside a stream could reasonably blame it on some thoughtless picnicker or swimmer. Today, the large amount of styrofoam bait containers, plastic lure wrappers and discarded monofilament line provide silent proof that at least some people who fish also litter. This does little to influence folks to think more favorable towards anglers, and a lot to make the rest of the world think that all anglers are slobs.

Non-biodegradable (items that do not break down or decay over time) plastics are among the most damaging kinds of litter. In both marine and freshwater environments, plastic waste

materials can negatively impact wildlife. Aquatic animals often mistake some plastics for food. Plastics have been found in the stomachs of whales, dolphins, fish, birds, manatees and turtles. If these foreign materials aren't passed (eliminated in feces), they can accumulate in the intestines and cause the animal's bowels to become blocked, resulting in death. In other cases, wildlife can become entangled in plastic debris such as fishing line and plastic six-pack carriers. Plastic netting "lost" from commercial fishing fleets may be the greatest hazard to marine life. Because few fish or marine mammals can swim backwards, nearly all those entangled will die.

Some litter can contribute to chemical pollution (introduction of toxic substances) and can be toxic in certain concentrations. Chemicals leak out of discarded containers (such as motor oil jugs) and leach (pass through by percolation or seeping) into the soil making their way to streams, lakes, and groundwater.

A litter cleanup activity not only improves the appearance of fishing sites but also drives home an important environmental and ethical message - each of us is responsible for maintaining a clean and healthy environment. Litter is evidence that someone has been there before. Like the three bears discovering evidence of Goldlilock's trespassing, your club members can use this activity to discover what type of person has been littering in your favorite fishing hole. Your group might find a clue as to who literally, has been dumping garbage. If enough evidence is found, discuss your findings with law enforcement personnel and encourage them to prosecute the offender. Or, if the litter problem appears to be more widespread, brainstorm and identify possible ways to improve the situation.

Summary Activity:
Youths will participate in a shoreline cleanup activity. They will identify different types of waste items and analyze their affect on aquatic wildlife, water and soil quality, as well as aesthetics of the outdoors.

Exhibit or Sharing Suggestions:
Create a display of the trash items that were found. Identify items that are recyclable, biodegradable or toxic and provide information on properly disposing them. Identify where the litter may have come from, or who might have been responsible for the litter. Include information on how the litter affects wildlife in the area.

Write an article describing the cleanup project and send it into the local newspaper. Include photos and a description of the group's primary activities (fishing!).

Create a display demonstrating responsible consumerism: products packaged in recyclable materials, low volume packaging (not using unnecessary packaging such as boxes, wrapping) the use of refillable containers, etc.).

Community Service and Giving Back Activities:
This activity *is* a community service project! Turn it into an annual event and encourage a "Local City" (yours) clean-up day.

Participate in "Adopt-A-Waterbody" programs. If none exist in your area, start one!

If your community does not currently participate in a recycling program, help start one!

Extensions or Ways of Learning More:
Research how your state disposes of hazardous wastes, yard trimmings, and household waste products (states, regions, and cities each may have specific guidelines or regulations for waste disposal).

Identify and examine pollution sites within your region or state. Explore the problem. Look at "Areas of Concern" and examine the environmental impacts of the site. Review the "Remedial Action Plans" drawn up by local committees to help remedy the problem.

Examine and discuss worldwide pollution problems (air, water, acid rain, hazardous waste disposal etc.). Review events such as the Exxon *Valdez* oil spill in Alaska, radioactive leaks (Chernobal, Three Mile Island) and others.

Links to Other Programs:
Check other 4-H projects for activities or concepts that involve litter, trash, or waste disposal. For example, in agricultural practices such as farming, livestock husbandry and other animal husbandry situations, proper disposal of wastes and chemicals such as fertilizers, herbicides, and insecticides must be taken. If there are no related activities within 4-H, see the Project WILD - Aquatic and WET below:

From Project WILD - Aquatic
- "No Water Off a Ducks Back"
- "Plastic Jellyfish"
- "Something's Fishy Here!"
- "Deadly Skies"
- "Deadly Waters"

Project WET
- "Macroinvertibrate Mayhem"
- "No Bellyachers"
- "Poison Pump"
- "The Pucker Effect"
- "Sparkling Water"
- "Sum of the Parts"
- "Super Bowl Surge"
- "Where are the Frogs?"