

Unit 7

In This Unit:

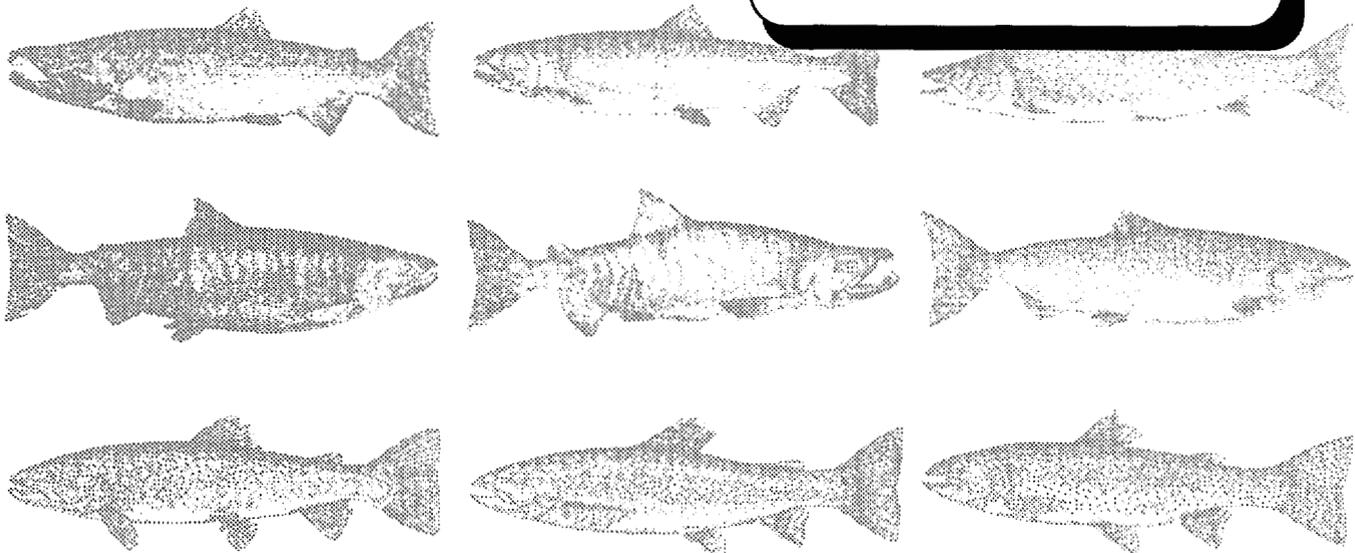
Extending Your Hatchery Visit

Learning Activities

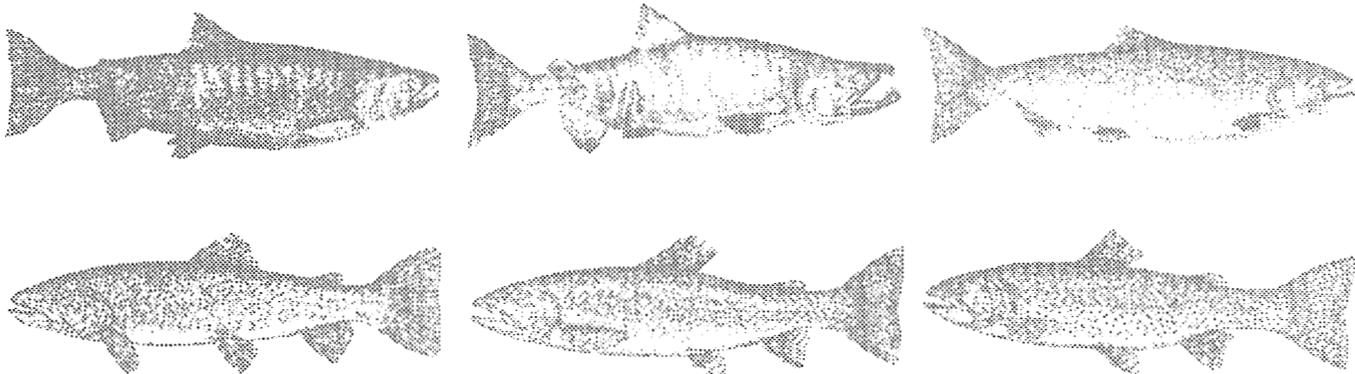
Columbia River Salmon:

Legends & Stories of the 23rd
Century

Hatchery Times



After the Hatchery Visit



Extending Your Hatchery Visit

To summarize and review what has been learned from a hatchery visit, implement one or two post-hatchery-visit activities. This provides an opportunity for students to share the new things that have been discovered and assess the events written about in their journals.

Two activities are suggested to accomplish a comprehensive review. Each is rich in opportunities for students to express their own creativity and their new understanding.

It is the intent that as students learn more about fish management and the role of hatcheries, they will understand that all natural resources need to be valued and conserved. This conservation is part of a vital "stewardship" necessary to ensuring pristine natural resources for future generations to enjoy. Fish hatcheries are part of that stewardship.

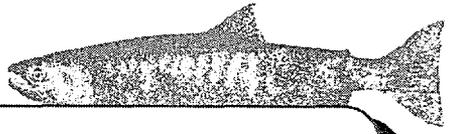
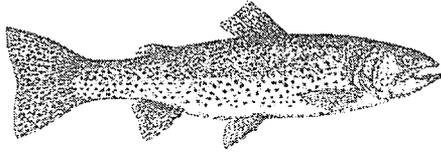
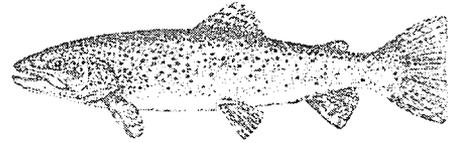
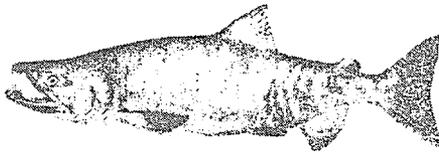
A Word About Stewardship

Natural resources of air, water, soil, forests, wildlife and other elements of the natural world, are not the property of any one government, corporation, individual or any one generation. They form an estate, held in trust under our stewardship, to be used and enjoyed now, and to be passed to future generations undiminished.

Stewardship is defined as "the management of another's property." In the context of natural resources, stewardship may be applied in two ways. First, it may define the role of governments, and their agencies, in fulfilling their obligations and responsibilities for the management and care of natural resources on behalf of the people they represent. Secondly, the term may define the obligations and responsibilities which we assume on behalf of future generations, as individuals and corporate entities, in our use and enjoyment of natural resources.

Responsible stewardship implies that governments, corporations and individuals will, in spirit and in practice, carry out their respective obligations and responsibilities. Conservation is the process through which stewardship responsibilities are implemented and fulfilled. Thus the key to conservation is responsible stewardship.



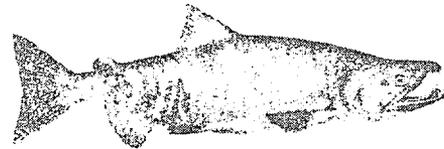
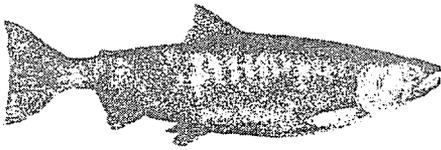
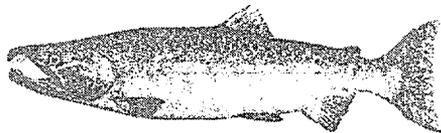


Unit 7

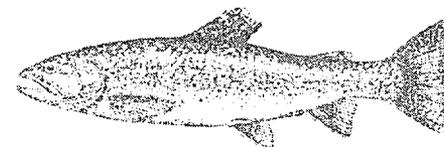
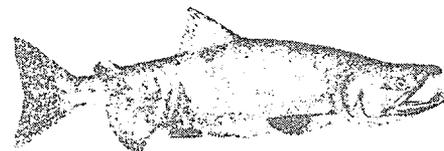
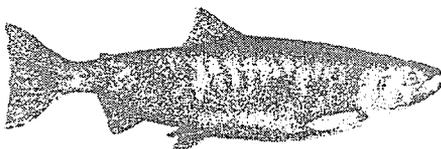
Learning Activities:

Columbia River Salmon:
Legends and Stories of the
23rd Century

Hatchery Times



After the Hatchery Visit



Unit 7

Columbia River Salmon: Legends & Stories of the 23rd Century

This activity was adapted from:

Best of the Best Activity
Kris Pfaff
Puget Sound Marine Habitats Institute.
1992

Used with permission from
FOR SEA - Marine Science Society of the Pacific Northwest
and J.A. Kolb, Poulsbo, WA.

Key Concepts:

- ◆ 1. Hope for the future is often expressed in stories.
- ◆ 2. Facts, knowledge and understanding of natural resources can be used creatively to shape solutions to natural resource problems.



Teaching Information

Many stories and legends have been told about the salmon of the Columbia River. Most of these stories originate with Native Americans of the region. One such story tells how Coyote, the greatest of the animal people, created the Columbia River and "peopled" it with salmon:

How Salmon Come to the Columbia River

From a story recorded in William K. Peery's book *And There Were Salmon*,
Binfords and Mort, Portland, OR, 1949,

Speelyi, the Coyote god, felt sorrow in his heart for the Indian people. They lived along the great Wauna, the river we call the Columbia. They lived too on the bays and small streams along the coast, as well as the inland plains. Coyote was sorry for the Indian people because they spent so much time being hungry.

The Wauna had a stream bed but no water. Coyote asked Neahcanie (who built the world) if he could put water in the dry channel. Neahcanie told him it was perfectly all right. Coyote put water in the river. But this did not satisfy Coyote. Still the people did

not have food. They had no way of saving their food. They could kill game, but the game spoiled.

Coyote thought of these things. Then he thought of salmon. There was the answer. Salmon could be dried. It would keep. The Indians in the hot interior through which flowed the Wauna could pound it with berries to make pemmican on the hot rocks. Yes, salmon was needed by the people. So Coyote put salmon in the river. They swam to all the other rivers and out to the sea and to other bays along the coast. So everywhere there was salmon.

In “Columbia River Salmon: Legends and Stories of the 23rd Century,” students use a “Readers’ Theater” to develop reading and speaking skills. They write original material for the theater, using what they have learned about watersheds and salmon in a highly creative way.

In Readers’ Theater, students are assigned reading parts from a written script. The parts are read rather than memorized. The students sit on stools or stand in front of the class to do this. You could use a microphone as though they were broadcasting the story over the radio. You might consider using props for sound effects, and masks and other props for visual effects, or making actual recordings of their reading.

This activity is designed to be the summarizing event in your study of salmon and watersheds. Students listen to the teacher read a Native American story about how salmon came to be in the Columbia River. They then listen and participate in reading a story designed for Readers’ Theater. Then they are asked to create their own story of the future, about how Columbia River salmon were saved and came back in abundance from present day numbers. Or they could create a story about how all the watersheds became healthy once again, free of pollution, erosion, and home to abundant fish and wildlife. The story could involve real scientists, spirits and imaginary beings, aliens, animals or plants, natural or human-made objects, or ordinary people. The idea is to let them stretch their creative talents to the limit.

Once the story line is developed, have students write it for the Readers’ Theater, using a narrator and any characters they wish. Refer to the example “Why the Salmon Return Each Year”.

Finally, hold a Readers’ Theater. Use props as suggested above, or do it without props.

Materials

For the class:

- ◆ microphone and recorder (or simulated ones)
- ◆ stools for the readers
- ◆ material for props as needed by the students.

Readers' Theater Example

WHY THE SALMON RETURN EACH YEAR

Reading Parts:

- (1) Narrator
- (2) Raven
- (3) The Fog Princess
- (4) Raven's Friend

NARRATOR: Raven liked to eat fish. But in order to eat fish he must first catch them. On this day, Raven is fishing in his canoe with his friend, Gitsanuk.

RAVEN: Look at this, Gitsanuk. Another Bullhead! More bones to choke on! With all the water in this stream, one would hope for better fish.

GITSANUK: Look Raven, the fog approaches quickly. We should head for shore.

RAVEN: It is too late. I cannot see to guide the canoe. The fog surrounds us.

FOG PRINCESS: Do not be afraid. I will see you safely to shore.

RAVEN: Who are you? How did you get in our canoe?

FOG PRINCESS: Give me your hat.

NARRATOR: Raven and Gitsanuk watched in amazement as the Fog Princess (for that is who she was) gathered all the fog in Raven's hat. When the fog was all contained, the sun shone again and Raven beached the canoe safely.

RAVEN: You have saved us with your magical powers. There is no one as good or beautiful as you. Will you stay with us and be my wife?

FOG PRINCESS: Yes, Raven. I will be your wife and my wedding gift to you shall be a new fish so delicious that you have never tasted another like it. Gitsanuk, bring a bucket of water. Now watch as I dip my fingers into it.

GITSANUK: Look, a golden fish. I shall build a fire.

RAVEN: Yes, we must cook it at once.

GITSANUK: See how well the new fish roasts. The smell is truly wonderful.

RAVEN: And the taste is more wonderful still. Wife bring us more of these fish.

FOG PRINCESS: Your hunger is now cared for. I cannot produce that which is not needed.

RAVEN: I said I want more fish! Unless you produce them at once, I shall be angry at you!

NARRATOR: Just then, where the day had been still, a wind rose and shook the leaves from the trees. Raven and Gitsanuk were soon so covered with leaves that they could not see. Then, as quickly as it had begun, the wind stopped and the leaves floated to the ground. When Raven looked up, he saw that the Fog Princess had gone.

GITSANUK: Raven, look to sea. The fog disappears there and the Princess with it. There, she is gone! Your selfishness has cost you dearly.

NARRATOR: And Raven hung his head in shame. But as we know, a wonderful thing did happen! Even today, the salmon return to the Indian streams once each year and it is said that the Fog Princess brings them... just enough each year to keep the tribe from hunger.

The End

Key Words

erosion; pristine

Extensions

1. Have students make masks to use in their Readers' Theater presentations. Hold a presentation for the entire school, or for special community events.
2. Have a professional storyteller come to your school and tell stories to your class, the entire school, or hold a story-telling workshop for the teaching staff.

Columbia River Salmon: Legends and Stories of the 23rd Century

For hundreds of years, people have lived in the watershed of the Columbia River. All that time they have told stories and legends about salmon. What stories and legends will people tell about the salmon in the 23rd century? How will the salmon be saved? Will the watershed once again be as it was? Will it be free of pollution? Will it be full of salmon and other fish?

Writing Your Own Play

Think about these questions. Then, pretending you live in the 23rd century, write a short story about how the salmon and the watershed was saved. Start by

making an outline of your story. Then, make up characters for the story. They can be real or imaginary. They can be animals or plants. They can be magic and powerful beings, or objects that come alive. They can be aliens, scientists, ordinary people, or anything and anyone you can think of. Use your knowledge of salmon and watersheds to guide your imagination.

When you have outlined a story, write it with speaking parts. Use “Why The Salmon Return Each Year” as a guide. Hold a Readers’ Theater to present your stories.



Unit 7

Hatchery Times

Portions of this activity were adapted from:

Project WILD - Aquatic

Western Regional Environmental Education Council; &
U.S. Fish and Wildlife Service, Sport Fish Restoration Program
1983, 1985, 1992

For more information contact Information and Education:
Washington Department of Fish and Wildlife
600 Capital Way N
Olympia WA 98501-1091

Key Concepts:

- ◆ Fish Hatcheries play a big part in managing fish and fisheries.
- ◆ Fish hatcheries are part of a diversity of issues related to salmonids and their habitats.
- ◆ Students can develop their own opinions concerning fish and fish management, and the role of hatcheries.

Teaching Information

In this activity, students produce a newspaper that features their study of fish and fish hatcheries. They use their experiences prior to the hatchery visit, what was learned at the visit, and entries in their journals to produce articles for the paper. They gain experiences at coordinating what they have learned with other students, and recommendations about hatcheries and their role in fisheries.

In any classroom there is a wide range of learning styles and skills that include art ability, graphic sense, design capabilities, creative writing, composition, research and decision making. This means that such an effort has a high likelihood of addressing many of the diverse skills possessed by various classmates.

1. Using an actual newspaper as a model, discuss the various parts of a newspaper. Help the students recognize that in addition to news articles, many special interests, departments and various formats exist in most newspapers. Comics, sports reports editorials, commentary, home making articles, want ads, political cartoons, food and nutrition features, entertainment information, business columns, weather predictions, daily horoscopes, advertisements and many other sections are available. Ask each student or group of students to choose and write a section.

As an alternative, you could modify the activity to develop a television news broadcast where the students are all a part of oral and visual reporting.

2. To begin the research phase, ask the students to gather information and ideas for their

chosen section. Be sure to remind them of the areas you want to cover in the newspaper; these may include articles about fish and fish hatcheries, fish habitat, water, and related topics and issues. Show students how to credit sources they use. Each section should include a combination of information and the students' opinions, based on what they learned in their study of fish and hatcheries, the hatchery visit, and any research they do. Note: The use of tape recorders, word processors, software, cameras, and other equipment is encouraged.

3. Try to set the stage for both serious and playful reporting. For example:
 - ♦ Fingerlings "On Hold" in Hatchery Ponds
 - ♦ Water Quality Critical to Hatcheries
 - ♦ Living with the Fish-At Home at the Hatchery
 - ♦ Fish Race Back to Hatchery
 - ♦ Walking on Eggs (Fish Eggs, That Is!)
 - ♦ Catching is Believing
 - ♦ Annual Fish Run Waits for Competitors
 - ♦ Fish Rhymes (regular column featuring poetry)
 - ♦ Interviews with grandparents about the way fishing use to be
 - ♦ Humorous stories in first person form, from the point of view of the fish
 - ♦ Fish recipes and so on.
4. Once the information accumulates and writing begins, encourage students to share their work with each other. In this way, interests can merge and different talents can be called on. Keep the students on track, making sure their writing is accurate even though they may have chosen humor or satire as their approach.
5. When enough work is completed, begin the production phase of the paper (or preparation for the news broadcast). At this point, artwork can be done to accompany the stories. The artwork can be in color or black and white and can involve computer graphics. If possible, the stories should be typed or written neatly in a specific column format (3-1/2 or 4-inches wide works well).
6. The next step is the layout and design. A small group should be assigned the responsibility but with input from everyone.
7. Once the newspaper is complete, you may investigate the possibility of having copies made for each student, and of course the staff at the hatchery. Most communities have fast copy facilities that can print oversized papers (It might be useful to check ahead of time to be sure the format can be copied).
8. Culminate the activity with discussion of each article or feature, emphasizing what can be learned about fish and fish hatcheries from its content. Circulate the finished newspaper - for example, by posting copies on school or organizational bulletin boards.

Extensions

1. Establish a current events corner about fish and fish issues.
2. Visit a local newspaper; offer your articles for their use.

Washington State Department of Fish and Wildlife Hatcheries

Arlington Fish Hatchery
17619 McGovern Rd
Arlington WA 98223
(360) 435-3206

Chelan Fish Hatchery
80 Fish Hatchery Rd
Chelan WA 98816
(509) 682-5514

Elochoman Fish Hatchery
1318 Elochoman Valley Rd
Cathlamet WA 98612
(360) 795-3608

Baker Lake Spawning Beach
PO Box 117
Concrete WA 98237
(360) 853-8341 ext 2071

Columbia Basin Fish Hatchery
6785 Road K NE - #A
Moses Lake WA 98837
(509) 765-7714

Elwha Channel Fish Hatchery
326 Crown Z Water Rd
Port Angeles WA 98362
(360) 457-2630

Barnaby Slough Pond
PO Box 35
Rockport WA 98283
(360) 873-2000

Colville Fish Hatchery
390 N Hofstetter
Colville WA 99114
(509) 684-7424

Fallert Creek Fish Hatchery
1404 Kalama River Rd
Kalama WA 98625
(360) 673-4400

Beaver Creek Fish Hatchery
28 Beaver Creek Rd
Cathlamet WA 98612
(360) 795-3620

Coulter Creek Fish Hatchery
E 41 Coulter Creek Rd
Belfair WA 98528
(360) 275-5712

Ford Fish Hatchery
PO Box 70
Ford WA 99013
(509) 258-4269

Bellingham Fish Hatchery
1700 Silver Beach Rd
Bellingham WA 98226
(360) 676-2138

Cowlitz Salmon Hatchery
2284 Spencer Rd
Salkum WA 98582
(360) 985-7424

Forks Creek Fish Hatchery
1986 State Route 6
Raymond WA 98577
(360) 934-5457

Bingham Creek Fish Hatchery
W 3914 Fish Hatchery Rd
Elma WA 98541
(360) 426-2369

Cowlitz Trout Hatchery
1182 Spencer Rd
Winlock WA 98596
(360) 864-6121

Roaring River Fish Hatchery
42255 Fish Hatchery Dr.
Scio, OR 97374
(503) 394-2496

Bogachiel Fish Hatchery
2944 Bogachiel Way
Forks WA 98331
(360) 374-6232

Dungeness Fish Hatchery
1261 Fish Hatchery Rd
Sequim WA 98382
(360) 683-4255

Fox Island Pens
335 Island Blvd
Fox Island WA 98335
(253) 549-2861

Cedar River Fish Hatchery
PO Box 829
Ravensdale WA 98051-0829
(425) 432-3478

Eastbank Fish Hatchery
13246 Lincoln Rock Rd E
E Wenatchee WA 98802
(509) 884-8301

Garrison Fish Hatchery
Drwr A-9601 Steilacoom Blvd
Tacoma WA 98498-7213
(253) 589-7246

Chambers Creek Fish Hatchery
8315 Phillips Rd SW
Tacoma WA 98498
(253) 589-7234

Eells Springs Fish Hatchery
W 7570 Eells Hill Rd
Shelton WA 98584
(360) 427-2188

George Adams Fish Hatchery
W 40 Skokomish Valley Rd
Shelton WA 98584
(360) 427-2161

Goldendale Fish Hatchery
130 Hatchery Lane
Goldendale WA 98620-9802
(509) 773-4422

Grays River Fish Hatchery
PO Box 129
Grays River WA 98621
(360) 465-2446

Hoodsport Fish Hatchery
PO Box 606
Hoodsport WA 98548
(360) 877-5222

Humptulips Fish Hatchery
PO Box 129
Humptulips WA 98552
(360) 987-2215

Hupp Springs Fish Hatchery
13827 124th Ave Ct NW
Gig Harbor WA 98329
(253) 857-5011

Hurd Creek Fish Hatchery
911 Fasola Rd
Sequim WA 98382
(360) 683-1738

Issaquah Salmon Hatchery
125 W Sunset Way
Issaquah WA 98027
(425) 391-9094

Kalama Falls Fish Hatchery
3900 Kalama River Rd
Kalama WA 98625
(360) 673-4825

Kendall Creek Fish Hatchery
6263 Mt Baker Hwy
Deming WA 98244
(360) 599-2841

Klickitat Fish Hatchery
301 Fish Hatchery Rd
Glenwood WA 98619-9102
(509) 364-3310

Lake Aberdeen Fish Hatchery
4203 Aberdeen Lake Rd
Aberdeen WA 98520
(360) 533-1663

Lake Wenatchee/Chiwawa
Fish Hatchery
2640 Kinnikinnick Dr
Leavenworth WA 98826
(509) 763-2828

Lake Whatcom Fish Hatchery
3918 South Bay Dr
Sedro Woolley WA 98284
(360) 595-2411

Lakewood Fish Hatchery
7723 Phillips Rd SW
Tacoma WA 98498
(253) 589-7016

Lewis River Fish Hatchery
4404 Lewis River Rd
Woodland WA 98674
(360) 225-7413

Lyons Ferry Fish Hatchery
PO Box 278
Starbuck WA 99359-0278
(509) 646-3454

Marblemount Fish Hatchery
8319 Fish Hatchery Lane
Marblemount WA 98267
(360) 873-4241

McAllister Fish Hatchery
10119 Steilacoom Rd SE
Olympia WA 98513-9622
(360) 459-6325

McKernan Fish Hatchery
W 411 Deyette Rd
Shelton WA 98584
(360) 427-2163

Merwin Fish Hatchery
111 Merwin Hatchery Crt
Ariel WA 98603-9727
(360) 225-6201

Methow Fish Hatchery
44C Wolf Creek Rd
Winthrop WA 98862
(509) 996-3144

Minter Creek Fish Hatchery
12710 124th Ave Ct KPN
Gig Harbor WA 98329
(253) 857-5077

Mossyrock Fish Hatchery
249 Fish Hatchery Rd
Mossyrock WA 98564
(360) 983-3486

Naches Fish Hatchery
3410 S Naches Rd
Naches WA 98937
(509) 965-1495

Naselle Fish Hatchery
270 N Valley Rd
Naselle WA 98638-8534
(360) 484-7716

Nemah Fish Hatchery
415 N Nemah Rd E
South Bend WA 98586
(360) 875-6147

North Toutle Fish Hatchery
PO Box 73
Toutle WA 98649
(360) 274-7757

Omak Fish Hatchery
PO Box 32
Omak WA 98841
(509) 826-0200

Palmer Ponds
32915 SE 309th St
Palmer WA 98051
(360) 886-2221

Priest Rapids Fish Hatchery
PO Box 937
Mattawa WA 99349
(509) 932-4481

Puyallup Fish Hatchery
1416 14th St SW
Puyallup WA 98371
(253) 840-4593

Reiter Ponds
45300 Reiter Rd
Goldbar WA 98251
(360) 793-0475

Ringold Springs Fish Hatchery
1871 Ringold River Rd
Mesa WA 99343
(509) 269-4448

Samish Fish Hatchery
555 Old 99
Burlington WA 98233
(360) 724-3131

Shale Creek Fish Hatchery
1423 Pavel Rd
Beaver WA 98305
(360) 327-3246

Sherman Creek Fish Hatchery
3825 Mellenberger Rd
Kettle Falls WA 99141
(509) 738-6971

Similkameen Pond
PO Box 1665
Oroville WA 98844
(509) 476-3130

Skamania Fish Hatchery
391 Steelhead Rd
Washougal WA 98671
(360) 837-3131

Skookumchuck Fish Hatchery
10500 Skookumchuck Rd SE
Tenino WA 98589
(360) 264-2112

Sol Duc Fish Hatchery
1423 Pavel Rd
Beaver WA 98305
(360) 327-3246

Soos Creek Fish Hatchery
13030 Auburn-Blk Diamond
Rd
Auburn WA 98092
(253) 931-3950

Speelyai Fish Hatchery
11001 Lewis River Rd
Ariel WA 98603
(360) 231-4210

Spokane Fish Hatchery
W 2927 Waikiki Rd
Spokane WA 99208
(509) 625-5169

Tokul Creek Fish Hatchery
37501 SE Fall City-
Snoqualmie Rd
Fall City WA 98024
(425) 222-5464

Tucannon Fish Hatchery
2303 Tucannon Rd
Pomeroy WA 99347
(509) 843-1430

Tumwater Falls Fish Hatchery
114 Deschutes Way SW
Tumwater WA 98501
(360) 586-2801

Turtle Rock Fish Hatchery
13246 Lincoln Rock Rd
E Wenatchee WA 98802
(509) 664-2894

Vancouver Fish Hatchery
12208 SE Evergreen Hwy
Vancouver WA 98683-6632
(360) 892-2581

Voights Creek Fish Hatchery
19112 Pioneer Way
Orting WA 98360
(360) 893-6440

Wallace River Fish Hatchery
14418 383rd Ave SE
Sultan WA 98294
(360) 793-1382

Washougal Fish Hatchery
15632 Washougal River Rd
Washougal WA 98671
(360) 837-3311

Wells Fish Hatchery
HC 88 Azwell Rt Box 2A
Pateros WA 98846
(509) 923-2728
(509) 923-2471

Whitehorse Pond
PO Box 430
Darrington WA 98241
(360) 436-1259



More Resources

Classroom Presentations or Hatchery Tours

In the Seattle area, there are two facilities which offer classroom presentations or hatchery visits:

Friends of Issaquah Salmon Hatchery (F.I.S.H.)
125 West Sunset Way
Issaquah WA 98027

(for classroom presentations or to schedule hatchery visits in the fall, call (206) 834-6099.)

Portage Bay Hatchery (University of Washington)
University of Washington School of Fisheries
Seattle WA 98195
www.fish.wa.edu/sic/

(to schedule a hatchery tour, call (206) 685-4891.)

In Clark County, the WDFW Salmon in the Classroom Program is administered by Clark Public Utilities. To participate and arrange classroom support, call (360) 992-8576 or contact:

Clark Public Utilities
Environmental Svcs/Salmon in the Classroom
PO Box 8900
Vancouver WA 98668

Other Valuable Resources

Now, let's say that you've got your fish hatchery visit planned and scheduled, you've done some pre-visit activities with your students or group, and you have already decided that you want to do more. **NO PROBLEM!** Below are several resources that will help you enrich, extend and enlarge your study of Washington's watersheds and aquatic resources.

SALMON IN THE CLASSROOM PROGRAM

This program helps educators raise fish right in their own classrooms! Raising fish is one of those magical activities that facilitates interdisciplinary learning and catches kids' interest in the real world. The Salmon in Your Classroom manual includes: who to contact to get started, incubator designs, monitoring egg development, releasing the fry, and much more. For further information, visit the WDFW website at www.wa.gov/wdfw/. Click on Educator Resources, then Salmon in the Classroom. Scroll down and click on "application to obtain salmon eggs" to submit a program application. The Program Manager can be contacted at (360) 586-3106.

PROJECT AQUATIC WILD

Aquatic WILD is a grade K-12 curriculum that is time-tested in Washington. Units include: awareness and appreciation of aquatic wildlife, wildlife values, ecological principles, aquatic management and conservation, aquatic trends and issues, and responsible human actions (stewardship). Workshops are held periodically throughout the state. For information, contact WDFW at (360) 586-3105.

DISCOVER WETLANDS: A CURRICULUM GUIDE

The Washington State Department of Ecology produces this excellent collection of activities focused on Washington's wetlands and their value, plus human impacts to them. Includes field studies and illustrated plant and animal identification cards. For more information on this and other DOE publications, contact Jean Witt in the Publications Office at (360) 407-7472.

WASHINGTON PROJECT WET: CURRICULUM AND ACTIVITY GUIDE

Project WET is a collection of innovative, water-related activities that are hands-on, easy to use and fun! Activities incorporate a variety of formats: large and small group learning, whole-body activities, laboratory investigations, discussion of local and global topics, and involvement in community service projects. Project WET is available only through teacher workshops. Workshops are watershed specific, tailored to local needs, and aligned with the state Essential Academic Learning Requirements. For more information about workshops, contact Rhonda Hunter at (360) 407-6147.

WATER YOU DOING? CD, VIDEO, TEACHER'S MANUAL

This is a creative and eye-catching water quality education program designed by Seattle Public Utilities for the students and teachers of Seattle middle schools. For more information or to order, call (206) 386-9746.

THE STREAM SCENE: WATERSHEDS, WILDLIFE AND PEOPLE

Stream Scene is a nationally known curriculum produced by ODFW that enables educators to do a complete study of a stream, from classroom work to in-stream surveys. Designed for grades 6-12, it has been used successfully at all grade levels. Units include: water cycle, riparian areas, stream hydrology, water quality, aquatic organisms, and many appendices. Stream Scene can be purchased from ODFW. Workshops are held and presentations given regularly.

KIDS IN THE CREEK

The "Kids in the Creek" Aquatic Macroinvertebrate Survey and Stream Study provides information that is intended to be used on a stream field trip to find pollution tolerant and intolerant macroinvertebrates. The Classroom Exercise section contains fun activities to reinforce field trip learning. A Student Work Book, entitled "Stream Environments: Correcting damaged fish habitats," is also included. For this free curriculum, call Bonneville Power Administration's Portland office at 1-800-622-4520. Additional resource materials are available.

HYDROMANIA: SUMMER SCIENCE CAMP CURRICULUM

Another very well done Bonneville Power Administration educational product. The activities and experiments are simple, yet they introduce students to the *amazing world of science*. Very "Hands On," this guide has won praise from parents and teachers alike. For more information, call 1-800-622-4520.

NATUREMAPPING FOR FISH AND STREAMS

NatureMapping workshops, written guidelines, and data collection forms are available through WDFW. For information or to order, call (360) 586-3107.

FOR SEA INSTITUTE OF MARINE SCIENCE

This organization produces some excellent educational materials with strong local emphasis. "Discovery Puget Sound" is directed at grades 4-6; "A Salmon in the Sound," at grades 6-8; and "The Changing Sound," grades 9-12. For more information, call (360) 779-5122.

THE SEATTLE AQUARIUM

Located at 1483 Alaskan Way, Pier 59, on the Seattle waterfront, the Seattle Aquarium has long been a leader in developing and presenting educational materials.

THE ESTUARY GUIDE

ANGLER EDUCATION PROGRAM

WDFW-sponsored Angler Education courses are taught statewide by volunteer instructors. Some courses are offered through school programs, while most are held during evenings or on weekends. For information, contact the Angler Education Program at (360) 586-3104.

YOUR LOCAL STREAM TEAM

REGIONAL FISHERIES ENHANCEMENT GROUPS

To find out more about these and other resources, contact your local WDFW office, or...

Washington Department of Fish and Wildlife
Aquatic Education
600 Capital Way N
Olympia WA 98501-1091
(360) 586-3106

Your Impact on Salmon/Fish A Self-Assessment



Washington
Department of
**FISH and
WILDLIFE**

How do your personal actions, *at home, at work or anywhere in your community*, affect salmon and your quality of life?

Your Impact on Salmon/Fish A Self-Assessment

Protecting Salmon/Fish by your choices.

Every household and property owner is responsible for our land and water. Consider how you manage your home and property to make it a healthy living space for you and your family; a valuable asset; and a place which protects your fish and wildlife legacy.

Your Goal:

Your goal is to protect your land and quality of life while helping salmon. This assessment guides your choices to achieve this goal.

Why should you be concerned?

Salmon and other fish are in decline in the Northwest. We must act now to save salmon and protect our lifestyle. Salmon are one link in a complex food chain and depend on a healthy environment to maintain their populations. If salmon disappear, so will other species, and our quality of life will change. The decline of salmon is a warning to us to act now to maintain and restore the natural environment which sustains us.

What can you do?

This assessment has been designed to make you aware of your practices that increase the risk of hurting salmon and degrading our quality of life.

Take action now by completing the "Action Plan" worksheet located at the end of this booklet.

*"It isn't just our salmon that are in trouble—
it's our Northwest quality of life that is in trouble.
We're all connected by our land and water.
When rivers flood and our lakes are polluted,
people and fish are hurt."*

—Governor Locke, February 1998

Assessing Your Impact on Salmon/Fish

How do your personal actions, *at home, at work or anywhere in your community*, affect salmon and your quality of life?



Use this guide to look at the effects your lifestyle has on salmon and other fish. Check what best describes your actions in each category.



Enter the number of checks for each risk factor.

- Saver
(low risk to salmon)
- Friend
(moderate risk to salmon)
- Threat
(high risk to salmon)

Example: # of
Activities Checked

- 3 Saver
- 2 Friend
- 1 Threat



Fill in the planning chart on page 18 with your identified high risk activities which can degrade salmon.

Example: 1 Threat Drive to work alone



Develop a plan to reduce your high risk activities.

Example: Action possible: Take bus or carpool

Definitions:

A Salmon Saver Activity is one that helps salmon and protects our quality of life.

A Salmon Friendly Activity is one that has a neutral effect on salmon and quality of life.

A Salmon Threatening Activity is one that harms salmon and degrades quality of life.

Note: If you have checked activities which harm salmon, you can learn how to do things differently through the "Get Help" groups listed.

Salmon Saver Rating Chart

Household Water Use

Get help from:

- ◆ Cooperative Extension
- ◆ Public Utility Districts
- ◆ City Water Utilities

Garden/Lawn Water Use

Get help from:

- ◆ Conservation District
- ◆ Cooperative Extension

Landscaping

Get help from:

- ◆ WDFW Backyard Sanctuary Publications
- ◆ Cooperative Extension
- ◆ Local plant nurseries
- ◆ Conservation Districts often have an annual native plant sale at wholesale prices.
- ◆ City water utilities
- ◆ County Environmental Departments

See pg. 17 for information on native plants.

As a Salmon Saver You

*A basic need
of fish
is water.*

*The more water
you take from
streams and
groundwater,
the less is
available for
fish passage
and habitat.*

- Look at household water use to find ways to use less. Ideally use less than 20 gallons of water per day per person.
- Install low flow toilets and *save up to 34,000 gallons of water per year.*
- Install low flow shower-heads *and reduce water use by 70%.*

- Minimize water use on gardens. Reduce lawn watering during summer. Use drip irrigation in garden.
- Maintain an organic lawn or reduce the size of your lawn.
- Grow native plants that use less water.

*Mow it high
and let it lie.*

*Lawns do not
absorb rain well.*

*Native plants
absorb rain,
reducing the
amount
of runoff*

- Keep surface areas natural where possible: poke holes in ground to increase water absorption.
- Maximize use of native plants in landscaping and reduce lawn size. Enjoy the benefits of native plants which attract wildlife, do not need fertilizers or pesticides, are drought resistant and need little maintenance.
- Make sure rainwater drains to yard, not street or septic drain field.
- Use efficient watering system; don't over-water.

*As a Salmon
Friend You*

*As a Salmon
Threat You*

*Your Impact
Activities Checked*

- Use as little household water for washing, cleaning, flushing, etc. as possible.
- Limit bath and shower time.
- Reduce toilet flush volume by installing a displacement device and save up to 12,000 gallons of water per year.

- Do not take into account household water use.
- Use more than 60 gallons per person per day.
- Take long showers at full blast

- Saver
- Friend
- Threat

- Minimize water use on gardens and lawns.
- Water lawn and plants early morning and evening when more water is absorbed.
- Turn off water at first sign the ground is saturated to allow time for water to be absorbed.

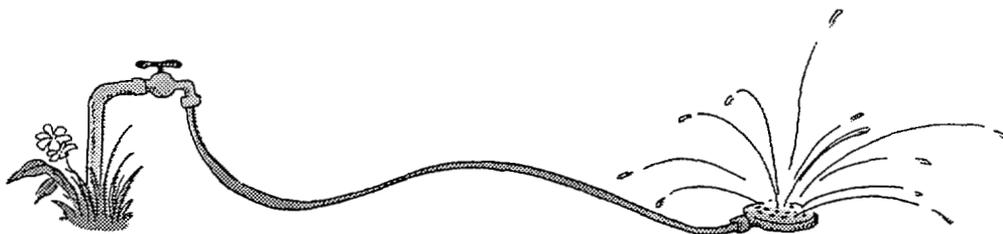
- Use more water than necessary on your garden.

- Saver
- Friend
- Threat

- Use some native plants in landscaping.
- Use mulching lawn mower.
- Set lawnmower to 2-3" height to get deeper healthier grass roots which retain moisture.

- Remove native plant species and plant lawns.
- Apply lots of water to landscape plants.

- Saver
- Friend
- Threat



Salmon Saver Rating Chart

As a Salmon Saver You

Electricity Consumption

Get help from:

- ◆ Local utilities can survey your energy use and make suggestions to reduce it.
- ◆ Local non-profit groups e.g. Energy Outreach Center
- ◆ Energy Extension at Cooperation Extension

In the Northwest electricity is largely generated through hydroelectric dams. Some dams block fish passage.

Using less electricity reduces the need for dam-generated power, and leaves more water to carry young salmon to sea

Turn lights off and help save a salmon.

- Survey household electrical use and follow family plan to reduce.
- Schedule electrical use for non-peak periods.

Pesticides and Weed Killers

Get help from:

- ◆ Cooperative Extension
- ◆ Conservation District
- ◆ The Toxics Coalition
- ◆ Local weed board
- ◆ 1-800-RECYCLE (to find out how to dispose)

Reduce your use

Fact: The cumulative effects of household use are 70 times more than agricultural use.

These are hazardous wastes that can poison fish, wildlife and vegetation, and eventually affect human health.

- Use Integrated Pest Management. (Get help from cooperative extension or conservation district.)
- Be happy with less-than-perfect plant specimens and lawn.

Use:

- Avoid use of weed killers. Pull weeds by hand.
- Use natural substitutes

Storage:

- Store chemicals where there's no chance for them to pollute surface or ground water.
- Store chemicals in original containers which are sealed and covered.

Disposal:

- Dispose of chemicals at designated hazardous waste sites.

As a Salmon Friend You

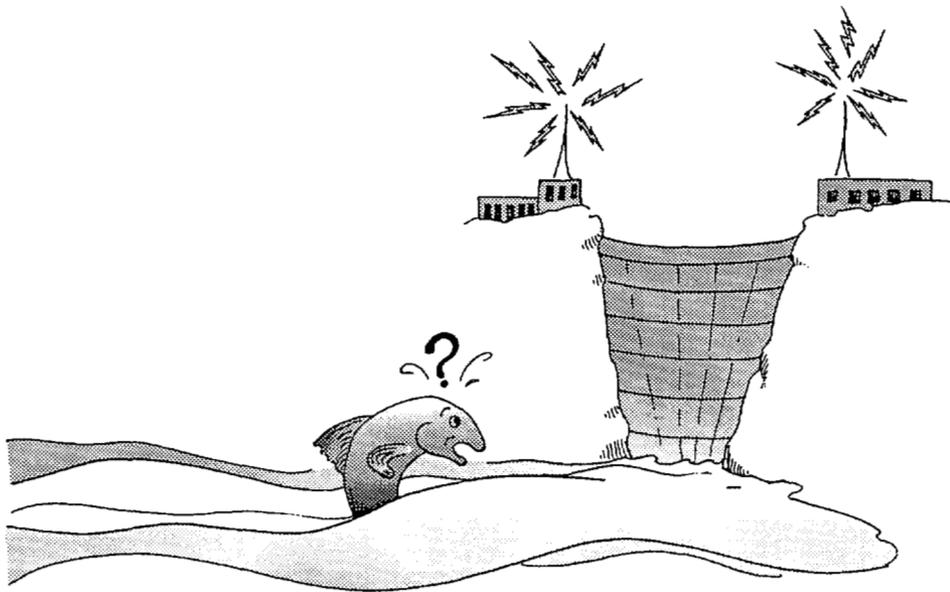
As a Salmon Threat You

Your Impact
Activities Checked

- Minimize electricity use.
- Buy energy efficient electrical appliances.

- Make no effort to reduce electricity use.
- Leave lights on in unoccupied rooms.

- Saver
- Friend
- Threat



Use:

- Seldom use pesticides and weed killers.
- Follow label instructions carefully.
- Use pest-resistant plants in landscaping.

Use:

- Do not follow chemical application guidelines.
- Use weed killers to control weeds.

- Saver
- Friend
- Threat

Storage and Disposal:

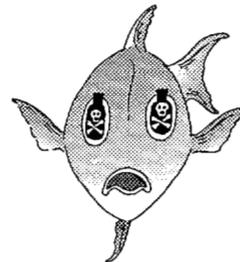
- Never put left-over chemicals down drain.

Storage and Disposal:

- Do not follow storage and disposal guidelines.

Integrated Pest Management Hints:

- ◆ Monitor pest populations and use pesticides as a last resort after first trying all other methods.
- ◆ Plant pest resistant varieties.
- ◆ Maintain healthy plants and full ground cover to minimize pests and weeds.



Salmon Saver Rating Chart

As a Salmon Saver You

Fertilizers

Get help from:

- ◆ Cooperative Extension
- ◆ Conservation District

Natural Use

Fertilizers reduce good fish habitat by promoting excessive growth of aquatic plants that deplete oxygen for fish.

- Use home compost on garden, instead of commercial fertilizers.
- Keep use of nitrogen fertilizers to a bare minimum.
- Test soil to make sure you use appropriate fertilizer.
- Use slow release natural fertilizers.

Phosphates in Detergents

- ◆ Hint: Usually liquid detergents contain less phosphate than powders.
- ◆ Hint: Electric dishwashing detergent often contains high phosphorus.

Reduce your use

Phosphates reduce good fish habitat by promoting excessive growth of aquatic plants that deplete oxygen for fish.

- Use only low phosphate detergents for all household purposes.
- Provide suggestions to grocery stores to stock low phosphate detergents.

Septic Systems

Get help from:

- ◆ City and County Health Department on septic system maintenance

In septic drainfields that fail the waste products percolate through the soil into the ground water, reaching streams & wetlands with pollution that depletes oxygen needed by fish.

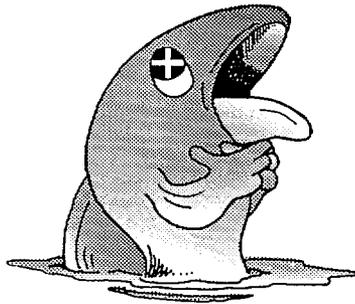
- Pump septic tank every 2-3 years.
- Inspect annually when indicated, and avoid flushing non-biodegradable items and toxics. Avoid "drowning" the system with too much water at once.
- Prevent compacting soil over drainfield by vehicles and large animals.
- Don't use garbage disposal—or you don't have one.
- Don't use chemical additives that are sold to improve septic function.

*As a Salmon
Friend You*

*As a Salmon
Threat You*

*Your Impact
Activities Completed*

- Seldom use fertilizers.
- Follow label instructions carefully.

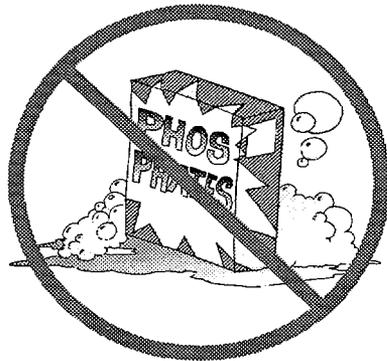


- Pay little attention to fertilizer application guidelines.
- Use petroleum-based fertilizers.

- Saver
- Friend
- Threat

- Look for detergents labeled low phosphate at local grocery store and buy when available.

- Disregard phosphate content of detergents.



- Saver
- Friend
- Threat

- Pump every 3-5 years.
- Inspect every few years.
- Use garbage disposal on a limited basis.
- Keep deep rooted plants off septic drainfield.

- Unsure when (or if) last pumping occurred or where drainfield is located.
- Use garbage disposal regularly.
- Pour hazardous chemicals down household drains.

- Saver
- Friend
- Threat

Salmon Saver Rating Chart

As a Salmon Saver You

Storm Drains

Get help from:

- ◆ City & County Stormwater Department
- ◆ Cooperative Extension

Reduce Runoff from Property.

Get help from:

- ◆ Conservation Districts
- ◆ Cooperative Extension
- ◆ Stormwater/surface water authority



Runoff from urban/suburban property mainly goes to storm drains.

Most storm drains go directly to streams, wetlands & lakes - the wastes and runoff water entering the drain do not go to the sewage treatment plant.

These hazardous wastes poison fish, wildlife and their habitat.

- Never dump waste materials in storm drains – especially oils, paints, antifreeze, or household chemicals of any kind.
- Take hazardous waste to local hazardous waste disposal facility.

- Drain rainwater from roof to yard where it is absorbed and kept off street or drainfield.
- Sweep driveways and sidewalks with a broom, not the hose.
- Maintain your neighborhood stormwater pond (in newer housing developments).

Cars/Trucks

Get help from:

- ◆ Regional Transit Authorities
- ◆ State Department of Transportation
- ◆ Stormwater/surface water authority



Washing driveways & sidewalks sends car-generated pollutants into the stormwater drains which go directly to streams and wetlands and poison fish.

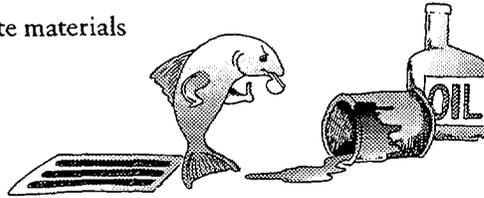
- Wash car on lawn; so water won't drain to street or storm drains. Or go to a commercial car wash where waste water is recycled.
- Check for oil & radiator leaks often and repair them at once.
- Use mass transit, car pools, walking or bicycling as often as possible.
- Use telecommuting when possible.

*As a Salmon
Friend You*

*As a Salmon
Threat You*

*Your Impact
+ Activities Checked*

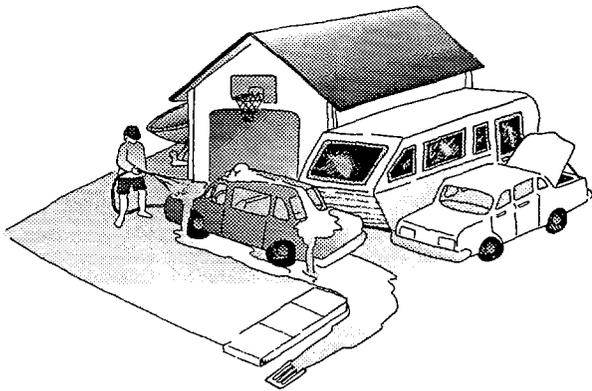
- Prevent, where possible, waste materials from reaching storm drains.



- Dispose of oil, paint and household waste down storm drains.

- Saver
- Friend
- Threat

- Minimize paved area on property.
- Limit size of your driveway and patio to no bigger than necessary.



- Cover property with lawn or leaves bare soil.
- Remove native vegetation.
- Maintain wide concrete or asphalt driveway.
- Spray and wash away driveway and sidewalk debris.
- Put in a tennis court and extra paved parking for RV's, boats, and guests.

- Saver
- Friend
- Threat

- Have mechanic check for oil & radiator leaks when car is serviced.
- Car pool or use mass transit sometimes. Or drive fuel-efficient car.
- Keep your vehicle(s) tuned for maximum efficiency.

- Wash vehicle in driveway or on street.
- Do not check vehicle for leaks.
- Drive to work alone.
- Drive a gas guzzler.

- Saver
- Friend
- Threat

Salmon Saver Rating Chart

As a Salmon Saver You

Living Near Water

Get help from:

- ◆ Conservation Districts
- ◆ WDFW
- ◆ Watershed Councils
- ◆ Cooperative Extension
- ◆ DOE

*Waterfront owners
have the greatest
opportunity as
stewards to manage
their property for
salmon survival.*



*Wetlands and
estuaries are the
nurseries that keep
young salmon safe*

- Maintain native streamside vegetation –the riparian zone– as habitat for fish and wildlife, to filter pollutants and minimize erosion.
- Replant with native plants if streamside plants have been removed –as wide a buffer as possible.
- Use natural ground cover or porous materials such as gravel or bark instead of asphalt and concrete for paths and drivesways.
- Ensure roof runoff soaks into the ground. Avoid piping to ravines or streams as it causes erosion.
- Minimize steep slope and bank erosion by leaving trees and shrubs.

Managing Large Animals

Get help from:

- ◆ Cooperative Extension
- ◆ Conservation District
- ◆ City and County Utilities

*Waste from
livestock and pets is
a major source of
water pollution,
degrading water
quality and the
supporting habitat
for fish.*

- Fence livestock away from stream, wetlands or lakes.
- Consult local government recommendations on Best Management Practices to handle animal waste.
- Use best management practices for pastures and livestock facilities to minimize erosion and runoff

Managing Small Animals

Get help from:

- ◆ Cooperative Extension have suggestions for pet waste disposal.
- ◆ City & county Environmental Health



- Scoop up all pet feces and flush down toilet.

As a Salmon Friend You

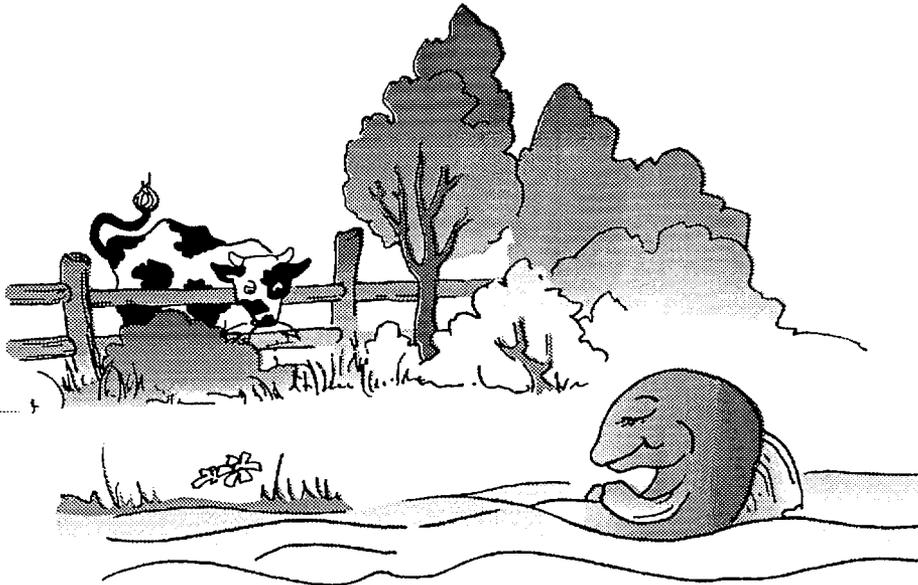
As a Salmon Threat You

Your Impact
Activities Checked

- Maintain native vegetation at stream side.
- Check often for signs of erosion and pollution -follow up with remedies if possible.
- Keep lawn and grass clippings off waterway banks and buffers. Use curbside pickup or compost clippings away from streams and ravines.

- Landscape right up to the stream side, wetland or lake shore.
- Remove native plants along shore line.
- Pave paths leading to and around streams, wetlands and lake sides.

- Saver
- Friend
- Threat

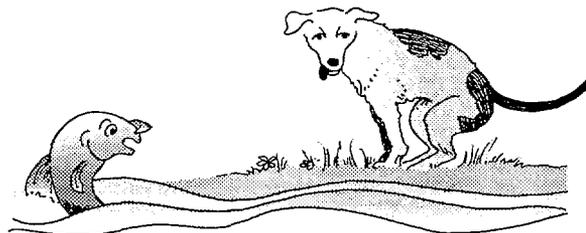


- Minimize animal access to streams.
- Allow livestock to stand in stream.

- Saver
- Friend
- Threat

- Clean up pet feces on sidewalks, driveways and other impervious areas and throw in unused part of yard.
- Leave pet feces where deposited.

- Saver
- Friend
- Threat



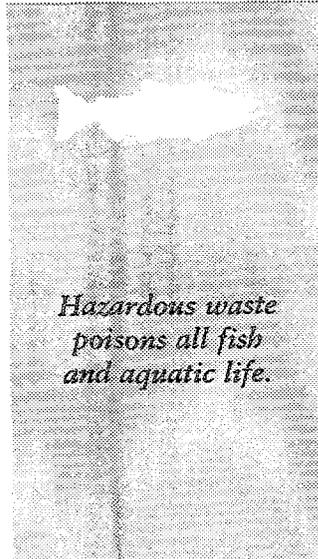
Salmon Saver Rating Chart

As a Salmon Saver You

Hazardous Waste

Get help from:

- ◆ All Department of Ecology regions have a 24 hour response line.
Central WA, Yakima:
(509) 575-2490
Eastern WA, Spokane:
(509) 456-2926
Northwest WA, Bellevue:
(425) 649-7000
Southwest WA, Lacey:
(360) 407-6300

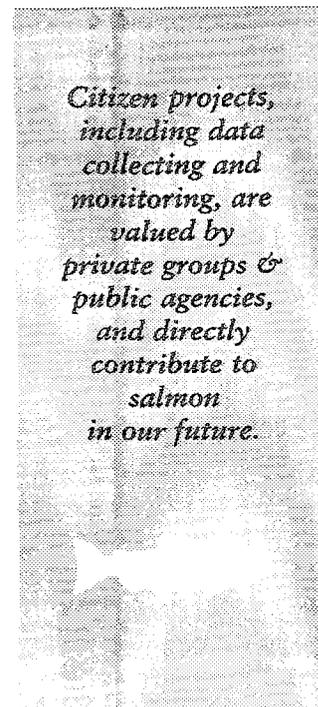


- Keep a close watch for evidence of oil and other contamination in waterways, and report such occurrences to authorities.

Becoming a Salmon Steward

Get help from

- ◆ WDFW publication: "NatureMapping for Fish and Streams" and "Restoring the Watershed."
- ◆ Conservation Districts
- ◆ Watershed Councils
- ◆ Local Stream Team
- ◆ Adopt-A-Stream
- ◆ Cooperative Extension Volunteer Programs, 4H, Master Watershed Stewards



- Take stewardship classes and volunteer on stewardship projects.
- Assess the health of streams, wetlands or lakes.
- Report data.
- Volunteer in the community to do projects that help salmon such as:
 - Riparian area planting
 - Water and habitat monitoring
 - Aquatic insect surveys
 - Giving presentations to schools and adults on how they can make a difference.
 - Helping with stream, wetland or lake enhancement projects
 - Instream restoration with permits and technical expertise creating habitat in streams for fish using logs and gravel

◆ Websites:

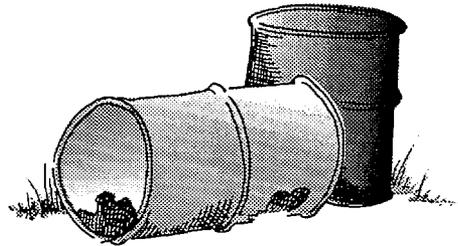
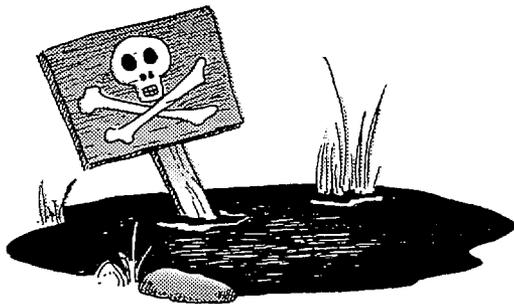
<http://salmo.cqs.washington.edu/~wagap/nm> (Nature Mapping)
<http://www.wa.gov/ecology/wa/wow> (Watch Over Washington)

*As a Salmon
Friend You*

*As a Salmon
Threat You*

*Your Impact
Activities Checked*

Report spills.



Saver
 Friend
 Threat

Ignore neighbor pouring oil or chemicals into streams.

Ignore evidence of spill, expecting someone else to report.

Seek assistance to assess the health of local watershed for salmon.

Know where the streams are located and what fish use them. Periodically walk the stream to check on water level and the presence of fish, and to look for anything unusual.

Know where water from property drains.

Watch for environmental changes in your community.

Minimize your impact outdoors when recreating. Do not ride through streams on bikes. Stay on trails and do not trample streamside plants.

Avoid vehicle travel off road and on muddy roads.

Believe salmon/fish are someone else's problem.

Are unaware of local streams; their location, or the fish that use them.

Do not know where water drains from property.

Do not know what a watershed is.

Saver
 Friend
 Threat

Salmon Saver Rating Chart

As a Salmon Saver You

Volunteering

Get help from

- ◆ WDFW publication on “Restoring the Watershed”
- ◆ Watershed councils
- ◆ Salmon Enhancement Groups
- ◆ Sportsman groups
- ◆ Cooperative Extension Volunteer Programs (see website)
- ◆ Adopt-A-Stream Foundation
- ◆ Local Stream Teams
- ◆ Save Our Stream & other organizations
- ◆ Regional Fisheries Enhancement Groups
- ◆ WDFW Website <http://www.wa.gov/wdfw>
- ◆ Conservation Districts “Earth Team,” etc.

*Saving
salmon/fish
begins
with you.*

*Your personal
actions will make
a measurable
difference.*

- Assess community practices according to these guidelines.
- Educate your community by offering training on what to do.
- Get out on the streams and restore the habitat.
- Regularly contribute volunteer hours to a project that improves the environment.
- Participate in the running of a volunteer organization.

Getting Involved

Get help from:

- ◆ Department of Community Trade and Economic Development
- ◆ Check local city and county growth management plans for ordinances which affect salmon.

*Local county
commissions and
city councils are
deciding the future
of fish, wildlife and
salmon recovery
through growth
management
plans.*

Your input counts.

- Check local growth management plans for policies that reflect good practices.
- Seek changes in plans to make streams safe for fish.
- Keep neighborhood associations informed on watershed health & neighborhood practices that could improve it.

As a Salmon Friend You

As a Salmon Threat You

*Your Impact
Activities Checked*

- Hope to find more time to volunteer for local groups saving the salmon.
- Contribute a few volunteer hours or money to a project that improves the environment.

No Action is An Action!

- Saver
- Friend
- Threat



- Read the growth management plans and support local officials in developing policy which positively affects the environment.
- Participate in a neighborhood association.

No Action is An Action!

- Saver
- Friend
- Threat



Beneficial Plants

*Native and other plants recommended for your property
that enhance salmon and wildlife habitat:*

Western Washington

Trees:

Sitka spruce
Red Alder
Black Hawthorn
Oregon Ash
Black cottonwood
Western hemlock
Douglas fir
Western Red Cedar
Grand Fir
Aspen
River Birch

Shrubs:

Serviceberry
Red-osier dogwood
Ninebark
Snowberry
Tall Oregon-grape
Oceanspray
Red-flowering current
Evergreen huckleberry
Salmonberry
Hazelnut
Vine Maple
Nootka Rose
Hardhack
Black twinberry
Red Elderberry

Eastern Washington

Trees:

Ponderosa pine
Douglas fir
Englemann Spruce
Black Cottonwood
Western Red Cedar
Quaking Aspen
Oregon White Oak

Shrubs:

Douglas hawthorne
Serviceberry
Woods rose
Chokecherry
Golden currant
Elderberry
Willow
Red-osier dogwood
Snowberry
Rabbitbush
Mock Orange
Bitterbrush

Grass cover:

Upland grass mix for Eastern WA.
Blue fescue
Great Basin wild rye
Idaho fescue

*For information on tree and shrub species and planting guidelines:
Contact the Community Forestry Program: 1-800-523-TREE,
or Washington Dept. of Natural Resource Urban,
and WDFW Urban Wildlife Program 425-775-1311 Ext. 110*

Central Contact Numbers

Washington Department of Fish and Wildlife (WDFW)

360- 902-2200

Website: <http://www.wa.gov/wdfw>

Department of Ecology

360-407-6000

Department of Transportation (DOT)

360-705-7000

For an Environmental Emergency call Ecology 24-hour Emergency Spill Response Line: 360-407-6300

For information on Growth Management Planning in your area call: 360-753-2222

To Find a Conservation District in Your Area call:

Conservation Commission: 360-407-6200

Website: <http://www.conserver.org/wcc.html>

To Find a Cooperative Extension Office in Your Area call:

Washington State University: 509-335-2811

Website: <http://ext.wsu.edu> - Link to CSANR and Master Gardeners

For Information on Disposal of Pesticides, Herbicides and other Hazardous Wastes call:

Ecology Hazardous Waste Hotline: 1-800-RECYCLE

For Landscape Information call:

Washington Native Plant Society: 1-888-288-8022

For Information on local City and County Sewer and Water Districts call:

253-872-4063

For Information on Public Utility Districts in your area call:

Washington PUD Association: 206-682-3110

Washington Toxics Coalition:

1-800-844-SAFE

Washington Dept. of Natural Resources Forest Stewardship Program

(Technical and Financial assistance to forest owners for forestry, fish and wildlife practices): 1-800-527-3305.

Website: <http://www.wa.gov/dnr>. E-mail: forest_stewardship@wadnr.gov

*Many individuals from the above groups were involved in the development and review of this document.
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