

Unit 1

In This Unit:

How to Use this Guide

Keeping a Student Journal

Developing a Code of Behavior

Teacher/Leader Checklist for Hatchery Visit

Learning Activities

Taking Note of Fish and Wildlife

Hatchery Manners

Preparing for a Hatchery Visit

How to Use This Guide

Ready to begin your study? This guide is designed to offer you a variety of pre-visit and post-visit activities - in addition to some ways to make the actual visit go well. As it is with all “field activities,” advanced planning makes all the difference.

1. Background Information for each unit for teachers and leaders is in the front of the guide.. May also be used by students.
2. Learning Activities (including teacher/leader directions and additional resources) are in the back of the guide.

The Background Information and Learning Activities are organized in units. Each unit has a “quick reference” box listing the background information and learning activities it covers.

Look at the background information and learning activities in this chapter. They enhance the actual visit to the hatchery site. Then browse through the rest of the guide and decide which activities best fit your curriculum and your learning plan. The activities are purposely not indexed by grade level; the decision to use, alter or ignore them is left up to you - the learning director - and your needs.

Your fish hatchery visit may be part of a unit on watersheds, fish or fish and wildlife management. Your approach may be from a language arts, social studies, science or outdoor recreation point of view. You may be studying government, the community or careers in natural resources. Whatever the need, *The Fish Hatchery Next Door ... A Salmon in the Classroom Educator's Guide* and the hatchery visit can help you meet it.

Some background information and learning activities are recommended as essential to making your hatchery visit productive and safe. These include:

Background Information

- What are Salmonids?
- A Brief History of Salmonids
- A Natural Anadromous Salmonid Life Cycle
- Salmonids at the Hatchery
- The Hatchery Idea
- Keeping a Student Journal
- Developing a Code of Behavior
- Teacher/Leader Checklist for a Hatchery Visit

Learning Activities

- Comparing Natural and Hatchery Raised Salmonids
- Managing for Fish and Fishers
- A Day Working at a Hatchery
- Taking Note of Fish and Wildlife

• Hatchery Manners

If your study of aquatic resources goes beyond the scope of this guide, check pages 227-228 to find out about other WDFW resources for educators.

Look at pages 219-221 to find the nearest fish hatchery to you.

The Fish Hatchery Next Door ... A Salmon in the Classroom Educator's Guide is designed to help you get the maximum benefits out of a study of watersheds, fish and fish hatcheries. Comments regarding the effectiveness of this publication are welcome; suggestions are encouraged. Please feel free to contact:

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

Unit

Background Information

Learning Activities

1. PREPARING FOR A HATCHERY VISIT

- ◆ Keeping a Student Journal
- ◆ Developing a Code of Behavior
- ◆ Teacher/Leader Checklist for a Hatchery Visit

Taking Note of Fish & Wildlife.

Students learn how to design and keep a journal of their study of fish and hatcheries.

Hatchery Manners

Students develop their own code of behavior for the hatchery visit

2. INTRODUCTION TO WATERSHEDS AND

- ◆ A Short Course on Watersheds and Salmonids
- ◆ What Are Salmonids?
- ◆ A Brief History of Salmonids

Water - The Constant Traveler

Students complete a water cycle diagram and a fill-in activity as they read a story about the water cycle.

Finding Your Ecological Address

Students participate in a teacher/ leader led discussion and activity, then draw watershed boundaries on a map of Washington. Using maps of their local area, students find where they live on their watershed (their "ecological address") and investigate pollutants that can move down a watershed. Two readings are provided as student background for the activity. Students develop their own definitions of a "watershed" as a summarizing activity.

Tyee's Magnificent Journey

Students read about the life of a spring chinook salmon, following her on the journey from her home stream to the Pacific Ocean and back again on a map.

Unit	Background Information	Learning Activities
------	------------------------	---------------------

**3.
THE SALMONID
LIFE CYCLE**

- ◆ A Natural Anadromous Salmonid Life Cycle

Comparing Natural and Hatchery Raised Salmonids

Teacher/leaders and students discuss the life cycles of fish raised in streams and fish raised at a hatchery, using diagrams or over-heads to compare the two.

Hooks and Ladders

Students participate in a highly active simulation playing the role of Pacific salmon going through their life cycle.

**4.
FISH HABITAT
NEEDS**

- ◆ Habitat: The Key to Survival in the Wild

Home Wet Home

Students work in small groups to evaluate various stream structures and how they contribute to a healthy environment for fish.

Riffles and Pools

Students complete a reading and worksheet to learn how riffles and pools create healthy habitat for fish.

**5.
DESIGNER FISH
BY
MOTHER NATURE**

- ◆ How Fish "Work"
- ◆ Aquatic Ecosystems

Recognizing Hatchery Fish

Students learn the names and functions and learn to identify hatchery fry using diagrams and fish observation.

Fashion a Fish

Students design fish adapted to various aquatic habitats in small groups.

Fish Lunch Box: Aquatic Insects

Students collect aquatic insects and learn to identify them using a simple key.

Unit

Background Information

Learning Activities

6. FISH CULTURE MEETS HUMAN CULTURE

◆ The Hatchery Idea

Managing For Fish and Fishers

Students read how hatcheries are used in fish management.

A Day Working at a Hatchery

Students read two examples of working at a hatchery and record any questions they have for the hatchery visit.

Getting Fish Out of - and Into the Hatchery

Students read how fish are transported to the hatchery and in streams, lakes and ponds.

Designing Hatcheries With Genes in Mind

Students participate in group problem solving and learn what must be considered when operating a hatchery.

7. AFTER THE HATCHERY VISIT

◆ Some Final Strategies to Enrich Your Study

◆ Extending Your Study

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

Students write stories that might be told in the 23rd Century of how the Columbia River Salmon were saved and tell the stories in a "radio theater."

Hatchery Times

Students develop and produce their own newspaper, writing news and features from what they have learned in their study of fish hatcheries.

Keeping a Student Journal

(Background information for "Taking Note of Fish and Wildlife" learning activity, p. 83)

A student journal is an excellent way of recording the entire experience of studying aquatic resources and visiting related sites, like hatcheries. After all, noteworthy people such as Albert Einstein, Thomas Edison, Henry David Thoreau, and David Douglas all kept personal journals!

A journal is much more than a diary or log. It is a tool for recording what one sees, learns, feels, and dreams. It can capture a student's creative thoughts. It can encourage students to search, see, and think in new ways. It can set students free to express feelings, values, and attitudes that might be difficult to say out loud. And it gives students a way to develop and apply their own creative talents.

Keeping a journal based on an area of study, unit, or year is a good way to start.

- have students use any bound book with blank pages, or have them make their own journal covers and pages.
- have students make a personal bond with their journals by creating a cover of their own design. Have them draw or paint the cover, or glue pictures, objects, or whatever to the cover. There are no limits - have them make it truly theirs.
- let students develop their journals in their own styles, and using their own techniques to make journal entries (it's best to use unruled paper, letting them provide as much structure as they need).

You may want to have students include other things in their journal. Again, there is no limit. For instance, you could have them write their predictions and expectations for the hatchery visit, and then have them validate the predictions and express their view of met or unmet expectations after the visit. The journal may also

be the place for their visit "code of behavior" (see page 12).

Some ideas from experienced journal keepers include:

Vary your entry style. Even changing the color of the pen you're using can change the mood and insights of the writer or reader.

Use pictures, sketches, photographs. Even water color blotches can bring the page (and your thoughts) to life.

Capture those lyrics, titles, quotations, and other meaningful gems that greet you daily but escape if they are not written down.

Grow by taking risks. Your journal is a safe place to risk placing new ideas and new techniques of expressing yourself on the page.

Give your pages special smells by pressing leaves or flowers, or other objects in your journal (smell is the strongest of the senses to key memories).

Write your actual observations on one side, and how you feel about what you saw on the other.

Developing a Code of Behavior

(Background information for "Hatchery Manners" learning activity, p. 87)

Facilitating a code of behavior developed by the students themselves is a good alternative to giving them a list of "do's" and "do not's". And there is a better chance of the students following a code of behavior they developed themselves than one handed down to them "from above".

There are two main areas of concern when on a hatchery tour. Safety is of course at the top of the list-both for the students and teachers, and the fish. The other is creating a suitable learning situation for students, in short, listening carefully and being good observers.

The following is a list of both safety hazards and roadblocks to learning that might be encountered at the hatchery. Using these as guidelines, lead the class in the development of their own code of behavior for each item on the list. You could also assign some or all of the items to small groups of students, to be shared with the rest of the class at the end of the activity. Use "Hatchery Manners" in the Student Material as a handout if needed.

When you have completed the code of behavior, remind the class that it is their job to make sure the code is followed by the entire class. It might be helpful to have one of the students make a master for copying and distribution to the rest of the class. The hatchery staff would also appreciate a copy.

SAFETY HAZARDS !

1. Floors and pond borders are usually wet and slippery. Sometimes there are special non-slip walkways or areas provided.

(code should address: running, wearing non-slip shoes, failing to walk carefully or on non-slip surfaces, etc.)

2. Since hatchery water is cold, so are hatcheries.

(code should address: dressing warmly enough.)

3. Ponds sometimes do not have guardrails.

(code should address: how close to get to ponds without guardrails, as well as staying behind guardrails.)

4. Machinery is part of hatchery operations.

(code should address: keeping hands, feet, and clothing away from machinery.)





5. Hatcheries are operated to keep disease and contamination out of the water in which the eggs and fish are raised.

(code should include: keeping hands out of water, not throwing anything into the ponds or trays, unless feeding is allowed by hatchery personnel.)

6. Hatcheries are big places - it is easy to wander into areas that are off limits.

(code should include: stay in assigned group.)

7. Hatcheries are full of the sound of running water, making it difficult to hear what the tour leaders are saying.

(code should include: staying close to the tour leaders, listening carefully to what is being said; Listening for safety instructions.)

8. Most hatcheries have small restrooms with room for only one person at a time.

(code should include: using the restrooms at school before leaving for the hatchery.)

9. People learn the most when they think about what they want to learn before they come.

(code should include: learning as much as possible about hatcheries before the visit, thinking about or writing a list of questions prior to the visit)



Teacher/Leader Checklist for a Hatchery Visit

- Before Leaving School
- Arrival at the Hatchery
- On the Hatchery Grounds
- Leaving the Hatchery

Teacher/Leader Checklist for a Hatchery Visit

Before Leaving School

- Take an accurate count of the students and chaperones on the tour. One chaperone for every 5-10 students is recommended, depending on student age and maturity.
- Each adult chaperone needs a list of students in his/her group. Each group leader should have a roster of names and emergency phone numbers.
- Mention special medical problems to the chaperones before departure.
- Each chaperone has a copy of tour schedule and any necessary materials.
- Students visit the restroom before they leave school.
- Each student has coat, boots, etc. for weather and hatchery conditions.
- Students and chaperones wear name tags.
- Students know or identify chaperone before getting on the bus.
- Students have pencil, paper, or other necessary materials.
- Put lunches on the bus.

Arrival at the Hatchery

- Unload bus and group students with their chaperones.
- Have each student pick a buddy to be with for the day.

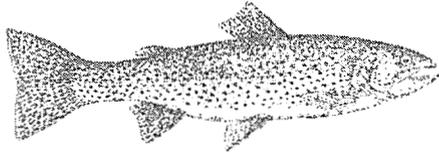
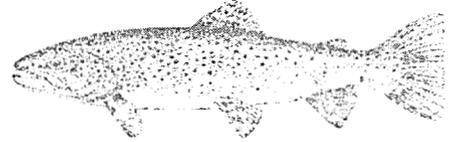
Hint: have adult chaperones get off the bus first and as names of students in each group are read the students line up with the chaperone.
- If not designated, be sure bus is parked where it will not obstruct movement of hatchery vehicles.
- Take an accurate count of the students and chaperones.
- Remind chaperones of time and place to meet for lunch/departure.
- Explain any rules to the students and what is expected in terms of behavior.

On the Hatchery Grounds

- Keep students away from pond edges except where adequate guard rails are placed to allow close access.
- Maintain control over the group at all times. Do not allow students to split off by themselves.
- Please be sure students do not litter. Ask them to pick up other's litter and put it in a garbage can.
- Please be sure students do not throw anything in any pond except fish food, if provided by the hatcheries.
- Pay attention so the hatchery guide does not have to repeat things often. Hatchery employees are not trained public speakers or teachers. Where necessary, explain what is happening or concepts that may be over the student level or understanding. If things begin to drag or students are losing interest, help the hatchery guide regain their attention with questions or some approach that stimulates interest.

Leaving the Hatchery

- Groups meet at prearranged point and board bus.
- Put instructional materials, lunch leftovers, coats, etc. on the bus.
- COUNT YOUR STUDENTS BEFORE DEPARTING!**
- Have students check to be sure their buddy is on the bus.
- Plan on a restroom stop before leaving or on the way home. Allow at least 15 minutes of extra time for this. It will take all of that.

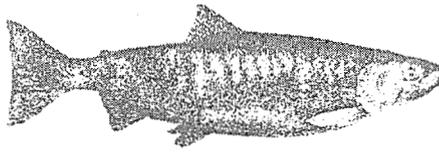
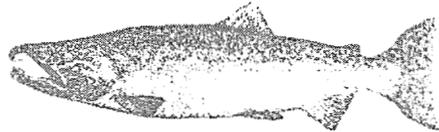


Unit 1

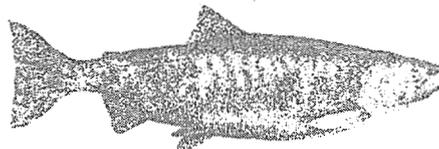
Learning Activities

Taking Note of Fish and
Wildlife

Hatchery Manners



Preparing for a Hatchery Visit



UNIT 1

TAKING “NOTE” OF FISH AND WILDLIFE

This activity was adapted from original material
by Bill Hammond
Director Environmental Education
Lee County Schools
Fort Myers, FL

Key Concepts:

- ◆ A personal journal can record new thoughts and knowledge, and new ways of expression.
- ◆ Writing down new knowledge and descriptions of new experiences, and the personal thoughts and reactions to those experiences, enhances writing skills and improves creativity.



Teaching Information

See information in Unit One, page 11

Materials

As needed, depending on what you want to use for journals (purchased blank , journals spiral notebooks, journals bound by students, or even pages from student-made paper!).

Extensions

Use the Readers' Theater idea from "Columbia River Salmon: Legends and Stories of the 23rd Century" to read journal excerpts in class.

Key Words

None

TAKING NOTE OF FISH AND WILDLIFE

What do the following people have in common?

- ◆ Albert Einstein
- ◆ David Douglas
- ◆ Teddy Roosevelt
- ◆ Lewis and Clark
- ◆ Thomas Edison
- ◆ Charles Darwin
- ◆ Henry David Thoreau
- ◆ Leonardo Da Vinci
- ◆ Ernest Hemingway

All are famous people, of course, but they all did something else that may have contributed to their success - they all kept personal journals.

A journal is much more than a diary or log. It is a tool for recording what you see, learn, feel and dream. It can capture your creative thoughts. It can encourage you to search, see, and think in new ways. It can set you free to express feelings, values, and attitudes that might be difficult to say out loud. And it gives you a way to develop and apply your own creative talents.

You can begin your road to success now by trying your hand at keeping your own journal. A good place to start might be to take note of what you are learning in your study of fish and hatcheries. Or, you could simply write about the wildlife you see around you each day. Here's how to get started:

1) Use any bound book with blank pages for your journal, or you can make one.

2) Make a personal bond with your journal by creating a cover design all your own. Draw on, attach natural objects to, or glue pictures to your cover. There are no limits - make it truly yours.

3) Develop your journal in your own style, and use your own techniques to make journal entries. Some ideas from experienced journal keepers include:

4) Vary your entry style. Even changing the color of the pen you're using can change the mood and insights of the writer or reader.

5) Use pictures, sketches, photographs. Even water color blotches can bring the page (and your thoughts) to life.

6) Capture those lyrics, titles, quotations, and other meaningful gems that greet you daily but escape if they are not written down.

7) Grow by taking risks. Your journal is a safe place to risk placing new ideas and new techniques of expressing yourself on the page.

8) Give your pages special smells by pressing leaves or flowers, or other objects in your journal (smell is the strongest of the senses to key memories).

9) Write your actual observations on one side, and how you feel about what you saw on the other.

Your fish and wildlife journal will give you many pleasant moments and memories. Keeping a journal is a joyful experience, rich in personal rewards and positive feedback.



3/30/96 OBSERVATIONS

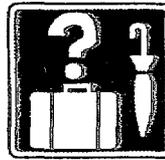
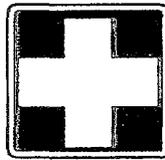
Visited Wizard Falls Fish Hatchery today as part of our study of watersheds and fish. Everything at the hatchery was neat and clean, which is important to the health of the fish being raised there. The ponds were full of very small fish that will someday be released into various nearby streams and lakes. We were able to feed the fish just as they are fed every day. We also saw some really big trout in another pond. These fish were brood stock, fish that are used to supply the sperm and eggs for the hatchery population.

REFLECTIONS

The hatchery grounds is a beautiful place. You can tell that the people that work there are proud of their hatchery by the way they keep it clean and neat. When we threw the fish pellets into the ponds, the surface erupted and reminds me of the ocean surf! These fish must be down hungry, something I have heard my mom say about me. The sound of running water is everywhere. I wonder if the fish notice it?

UNIT 1

HATCHERY MANNERS



Key Concepts:

- ◆ Rules of behavior are necessary in many settings to prevent injuries and allow learning to take place.
- ◆ Everyone benefits from good behavior, and poor behavior can affect everyone.

Teaching Information

See Information in Chapter One, page 12

Materials

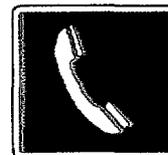
Paper for students to write their code on

Extensions

- ◆ Take a copy of the student code of behavior to the hatchery and share it with hatchery staff. They may want to check it over and emphasize some points.

Key Words

None



HATCHERY MANNERS

You will soon find out that a fish hatchery is a pretty neat place. Running water and fish are everywhere. The men and women that work at the hatchery are pretty neat too! They will help you find out what hatcheries do and how it gets done. They work at the hatchery every day; in fact, they live at the hatchery too. They will have plenty of information and stories to tell you.

The hatchery staff want you to have a SAFE and WORTH-WHILE visit - and this is where YOU come in. Here's what they would like you to do:

1. Read the list of safety hazards and normal conditions of a hatchery below. Discuss it with your classmates.



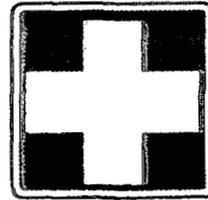
2. Using the list below, develop a “code of behavior” for your hatchery visit. Decide how you and your classmates should act at the hatchery. Your goals should be to make sure everyone has a safe visit, and that everyone has a chance to learn all they can.

3. Once you have finished your “code of behavior”, check with other students to see if your group has missed anything.

Remember:

- Floors and pond edges are usually wet and slippery. Sometimes, there are special non-skid walkways or areas provided.
- Since hatchery water is cold, so are the hatcheries.
- Ponds sometimes do not have guardrails.
- Machinery is used in many areas of the hatchery.
- Hatcheries are operated to keep disease and contamination out of the water and away from eggs and fish.
- Hatcheries are big places - it is easy to wander into areas that are “off limits.”
- Hatcheries are noisy places, full of the sound of running water.

- Most hatcheries have small restrooms; much smaller than those at school.



- People learn the most when they think about what they want to learn before they come to the hatchery.



Finally, determine who should have the job of making sure your code of behavior is followed.

