



# The Year of Decision

Renewing the Northwest Power Planning Council's Fish and Wildlife Program

## It's Your Money

The steps the Power Planning Council is taking to bring **accountability** and balance to fish and wildlife spending



## Independent Science, Sound Decisions

Why the Council's new **analytical** system will lead to **decisions**



## The Future of the Columbia Basin

The Multi-Species Framework Project's alternatives **balance** the choices



From the Desk of  
Council Chair  
**Larry Cassidy**



February 2000

Council Members



Eric Bloch, Oregon



John Brogotti, Oregon



John Etchart, Montana



Mike Field, Idaho



Stan Grace, Montana



Tom Karier, Washington



Todd Maddock, Idaho

PHOTOS:  
RICHIWASAKI

Dear Fellow Citizen:

As we begin the 21st Century, the Northwest Power Planning Council marks an important end — and an important beginning.

We recently came to the end of an annual fish and wildlife project selection process that brought an unprecedented level of independent scientific review to our recommendations. Using this rigorous analysis in our decision making should increase the confidence of stakeholders and the public in the effectiveness of hundreds of millions of dollars of public investment.

At the same time, we are embarking on a year that will bring dramatic changes to our efforts to protect and restore fish and wildlife in the Columbia River Basin. We will refine the Multi-Species Framework Project, amend our fish and wildlife program and improve our project funding process to make our decision-making more clear, effective and accountable. Most important, the amended program will provide a resource that can help all the region's stakeholders coordinate their efforts and investments in a way that will significantly improve results.

A vital tool in changing our way of doing business will be the Multi-Species Framework Project.

The Multi-Species Framework Project is an attempt to bring the highest level of data-based analysis together with an inclusive and participatory look at the different alternatives available to the region as we make choices about how to protect and restore our fish and wildlife. What is exciting about the Framework is that its extraordinary scope and detail holds an important promise: action based on a solid scientific foundation and a clear focus on measurable results.

The Council included the entire range of Northwest constituent interests in defining the possible approaches to fish and wildlife recovery. When it's complete, the Framework will offer a comprehensive analysis of the ecological and human effects of these approaches. With this information in hand, we will be able to make on-the-ground decisions that have the best chance of protecting the values and achieving the results we share.

What follows is an overview of the Multi-Species Framework and the steps the Council will take to refine it and to amend our fish and wildlife program. Over the next year, the Northwest Power Planning Council looks forward to working with all the region's stakeholders to update and improve the region's fish and wildlife plan and to move from discussion to decisive action.

Sincerely,



PHOTO:STEPHENSASSER,NWPPCSTAFF

# Taking the Next Step for Fish and Wildlife

Left to right: Governor Gary Locke of Washington, Governor Marc Racicot of Montana, Governor John Kitzhaber of Oregon and Governor Dirk Kempthorne of Idaho. The four Northwest governors appoint members of the Northwest Power Planning Council. They are shown at a briefing on the Framework Project where they directed the Council to improve the scientific credibility, accountability and results of fish and wildlife investments.

"We simply must find a way to save our wild salmon. This is not just about fish. It's about saving the quality of life that makes the Northwest unique."

**Governor Gary Locke, Washington**

"The framework will provide us with a fresh start in finding solutions. It is a chance to get everyone on the same page so we can work toward the same goals and measure progress in the same way."

**Governor Marc Racicot, Montana**

"I am looking to the Northwest Power Planning Council to provide the meaningful and effective regional input that is essential for these issues to be resolved in ways that benefit the Northwest."

**Governor John Kitzhaber, Oregon**

"The salmon will be restored only by addressing each portion of their habitat during each phase of their life cycle. Each sector will have to make concessions, and each state will have to do its part."

**Governor Dirk Kempthorne, Idaho**

Fish and wildlife protection and recovery are not new issues in the Pacific Northwest. People used to believe that our salmon runs were a vast, inexhaustible resource. It's become clear that isn't the case.

As long ago as the late 1800s, declines in numerous stocks of fish were beginning to be noticed. Around the turn of the century, the first measures for protecting fish and wildlife were proposed. But even with all the efforts undertaken, challenges have continued to mount even faster.

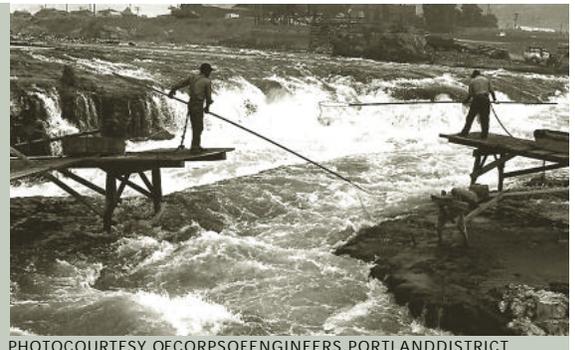
Few issues facing our region are as important, complex and emotional as protecting and restoring our fish and wildlife. Fish and wildlife are important resources in the Northwest, but also hold a far greater significance than other resources because they are intrinsic to our regional character. They are a living link with our natural heritage, and part of what makes us unique as a region and a people.

At the same time, the things that pose a threat to the survival of our fish and wildlife also make important contributions to our quality of life: urban development, recreation, logging, agriculture, shipping and the hydroelectric power that helped transform the Pacific Northwest into the vital, dynamic place it is today.

Few would argue with the need to protect and restore our fish runs and other wildlife. However, that work must be accomplished while being respectful of the effects on our communities, people and other values. That commitment has led to a tremendous amount of dedicated work and investment from every corner of the region. But beyond that, there has been precious little effective collaboration among the collection of agencies, organizations and sovereign interests.

Problems arise from these divergent efforts. In some cases, useful projects have worked at cross-purposes. An example would be one agency investing in a project to release fish upriver, while an irrigation diversion downriver created by another agency makes it impossible for these same fish to pass to the ocean. Even more typically, fragmented research and differing perspectives have created a sort of fish and wildlife recovery "paralysis." This has had a damaging effect on the confidence and support of policy makers and the public.

The Northwest Power Planning Council has a special position and a unique perspective on all of this. Created by Congress as a regional compact, the Council is the region's public voice in key fish and wildlife decisions. The Council seeks to find the balance that best serves the



PHOTOCOURTESY OF CORP SOF ENGINEERS, PORTLAND DISTRICT

► "Taking the Next Step" continued from page 3

broad public interest while keeping an eye on how public and electricity ratepayer dollars are spent.

The Council has a keen understanding of the competing interests involved in this problem. But at this juncture, the Council has come to realize that this competition can no longer be an excuse for endless process and debate.

With guidance from Congress, the Council identified several elements necessary for the region to move forward. One was to demonstrate that public and ratepayer dollars spent on fish and wildlife recovery efforts are used accountably and effectively.

As a result, 1999 saw an extraordinary use of independent scientific review to help formulate project funding decisions. In addition, the entire project review and selection process is being reformed to be more rational, coordinated and cohesive, while bringing a longer-term perspective to bear.

Another important need is to establish a comprehensive scientific and policy structure that can be used by all those involved in fish and wildlife recovery to ensure the highest possible level of scientific credibility, fiscal accountability and cooperation.

That requires creating a base of information that has heretofore been lacking: a single analysis that encompasses a full spectrum of alternative approaches to restoring fish and wildlife, while clearly outlining both the expected environmental effects and the human and community impacts. And it is vital that this analysis be "transparent" in its methodology, so that the assumptions, the science and the calculations are there for all to see.

That analysis is the Multi-Species Framework. And it promises to be a valuable tool in the coming year's effort to transform the Northwest's fish and wildlife recovery efforts. ■

## The Northwest Power Planning Council:

### A Public Voice for Balanced Policy

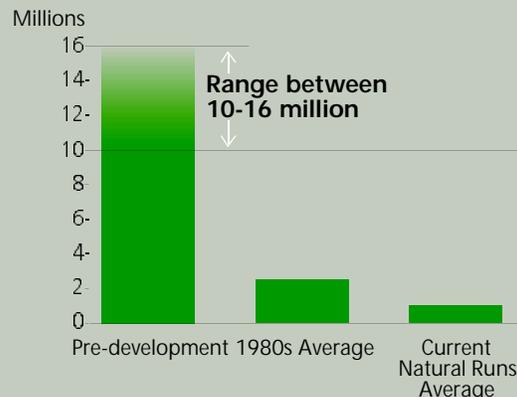
Authorized by the U.S. Congress in 1980, the Northwest Power Planning Council is an interstate compact among the states of Idaho, Montana, Oregon and Washington. The Council is charged by Congress with bringing balance to critical decisions facing the Northwest: the need to provide for the region's power needs while developing a program to "protect, mitigate and enhance" fish and wildlife populations affected by hydroelectric development in the Columbia Basin.

The Council is also required to make an extensive effort to involve the public in its decision-making process. The Council is designed to be a publicly accountable body to give Northwest citizens a stronger voice in determining the future of these common resources.

The governors of Idaho, Montana, Oregon and Washington appoint the Council's eight members. The Council solicits the participation of all stakeholders in the work it does, including state, federal and tribal agencies, local governments, environmental advocacy groups, industry, the scientific community and all other citizens in the Pacific Northwest.

In a sense, it is the Council's role to be an "honest broker" among a complex galaxy of legitimate interests — developing scientifically credible policies and recommendations that best serve the broad public interest. ■

### Salmon Runs: A Historical Perspective





# Framework

# The Multi-Species Framework Project:

## A More Balanced, Comprehensive Approach to Fish and Wildlife Recovery

The people of the Northwest want healthy fish and wildlife. At the same time, they're frustrated that recovery efforts spawn more controversy than fish. Too often, the debate focuses on one group promoting its recovery strategy while criticizing other strategies as radical, costly or ineffective. Citizens and policy-makers have a difficult time sorting through the claims and counterclaims. Progress is stalled.

Meanwhile, two panels of independent scientists recently concluded that the region's fish and wildlife recovery efforts could be greatly improved if they went beyond the Endangered Species Act's limited approach of looking at individual species in isolation. Instead, the scientists said, our work should aim to restore and protect the entire community of plants, animals, and people in the Columbia Basin of which individual species are a part.

The scientists' advice pointed to a new way to analyze the problems created by competing fish and wildlife recovery proposals — a way to decrease the rhetoric and increase the results.

### Analyzing the Effects of Change on all Species, Including Humans

From the start, the Multi-Species Framework Project was conceived and designed to be different. The Framework Project looked at the entire system: at the humans, salmon, steelhead, bull trout, bears, beavers and other species that share the Columbia Basin.

The Northwest states and tribes, along with a host of federal agencies, created the Framework Project. They shared the responsibility for managing the project. And unlike most planning processes, where a single agency manages a decision process that affects a single species, the Framework Project brought all the players together in a single, comprehensive effort.

Jointly, they created a common understanding of the ecological problems facing fish and wildlife. Together, they defined a broad range of alternatives for the future management of the Columbia River. In short, the Framework Project created a system in which everyone's proposal can be tested against the same criteria. It provides a cohesive, comprehensive context for all of the plans.

### The Multi-Species Framework Project:

Involving People to Make Progress

The following organizations were re-presented at the original Framework Project conference. Many organizations have followed the project since then, and additional groups have participated as well.

#### Environmental Groups

- 1000 Friends of Oregon
- Audubon Society
- Blue Mountain Native Forest Alliance
- Bonneville Environmental Foundation
- Center for Watershed and Community Health
- Defenders of Wildlife
- Ducks Unlimited
- For the Sake of Salmon
- Foundation for Water and Energy Education
- Friends of Columbia Gorge
- Friends of the Earth
- Idaho Rivers United
- Inland Empire Public Lands Council
- Izaak Walton League of America
- Keep Oregon Green Association
- Kettle Range Conservation Group
- Montana Environmental Information Center
- National Association of Conservation
- National Wildlife Federation
- Natural Resources Defense Council
- Northwest Coalition for Alternatives to Pesticides
- Northwest Ecosystem Alliance
- Northwest Energy Coalition
- Northwest Environmental Strategies
- Oregon Environmental Council
- Oregon Water Trust
- Pacific Rivers Council
- Save Our Wild Salmon
- Sierra Club
- The Nature Conservancy
- Wilderness Society

#### Utilities

- Avista Corporation
- Benton County Public Utility District
- Columbia River Alliance
- Franklin County PUD
- Northwest Irrigation Utilities
- Pacific Northwest Utilities Conference Committee
- Public Power Council
- Seattle City Light
- Warm Springs Power Enterprise
- West Extension Irrigation District

#### Agriculture and Livestock Organizations

- Berry Botanical Garden
- Columbia-Snake Rivers Irrigation Association
- Idaho Dairyman's Association
- Idaho Water Users Association
- Intermountain Grass Growers Association
- Oregon Cattleman's Association
- Oregon-Washington-North Idaho Hereford Association
- Oregon-Washington Pea Growers Association
- Oregon Water Coalition
- Northwest Food Processors
- Pacific NW Project
- Pasco Farmer's Market
- Washington State Farm Bureau
- Walla Walla Sweet Onion Growers Association
- Washington-North Idaho Seed Association
- Washington Association of Apple Growers
- Washington Association of Conservation

Districts  
 Washington Association of Wheat Growers  
 Washington Mint Growers Association  
 Washington-Oregon Asparagus Growers Association  
 Washington Poultry Industry Association  
 Washington State Beef Commission  
 Washington State Cattleman's Association  
 Washington State Dairy Federation  
 Washington State Dairy Herd Improvement Association  
 Washington State Jersey Cattle Club  
 Washington State Pork Producers  
 Washington State Council of Farmers Co-op  
 Washington State Farm Bureau  
 Washington State Grange  
 Washington State Horticultural Association  
 Washington State Potato Commission  
 Washington Women for Agriculture  
 Washington Wool Growers Association

**Government Agencies**

Alaska Department of Fish and Game  
 Animal and Plant Health Inspection  
 Association of O&C Counties  
 Bonneville Power Administration  
 Bureau of Indian Affairs  
 Bureau of Land Management  
 Bureau of Reclamation  
 City of Boardman, Oregon  
 City of Portland, Oregon  
 City of Umatilla, Oregon  
 Columbia Basin Fish and Wildlife Authority  
 Corps of Engineers  
 Department of Energy  
 Department of the Interior  
 Federal Highway Administration  
 Forest Service-Pacific Northwest Region  
 Idaho Department of Fish and Game  
 Idaho Department of Water Resources  
 Idaho National Engineering & Environmental Lab  
 Kittitas County Commission  
 Lake Roosevelt Forum  
 Legislative Commission on Indian Services  
 Marion County Board of Commissioners  
 Montana Department of Fish, Wildlife and Parks  
 Morrow County Commission  
 National Marine Fisheries Service  
 National Parks Service  
 National Oceanic and Atmospheric Administration  
 Natural Resources Conservation Service  
 Northwest Fisheries Science Center  
 Okanagon County Commissioners  
 Oregon Department of Fish and Wildlife  
 Oregon Department of Geology & Mineral Industries  
 Oregon Department of Land Conservation and Development  
 Oregon Department of Transportation  
 Oregon Department of Environmental Quality  
 Oregon Department of Forestry  
 Oregon Division of State Lands  
 Oregon Office of Energy  
 Oregon Soil and Water Commission  
 Oregon State Marine Board  
 Oregon State Parks and Recreation Division  
 Oregon Tourism Commission  
 Oregon Water Resources Department  
 Pacific Northwest Research Station  
 Pend Oreille County Commissioners

continues on page 7 ►

## The Framework Project — Scientific and Systematic

Here's how the process works:

### ✓ Step One **DONE**

The Council and its partners, in collaboration with the region's independent science panels, developed the Framework concept and a scientific foundation for fish and wildlife recovery actions.

### ✓ Step Two **DONE**

A broad spectrum of interests (more than 300 people attended an initial workshop) developed a set of visions and goals for the future of the Columbia Basin. Using workshops and input from two rounds of regional public meetings, seven alternatives were developed and refined from more than 30 initial proposals.

### ✓ Step Three **DONE**

Two scientific work groups analyzed the initial alternatives to see if they were feasible and complete, and if their objectives and goals could be expected to achieve their stated visions.

### ✓ Step Four **DONE**

The alternatives were revised and fleshed out with considerable detail to reflect concerns and comments from the scientific work groups.

### ☐ Step Five

The scientific work groups will describe the expected outcomes of each of the revised alternatives: how will Northwest ecosystems change in response to each? How will those changes affect people?

### ☐ Step Six

In keeping with its commitment to openness, the Framework Project will share all of its background data, information, statistics and scientific assumptions with important stakeholders

and the public to ensure accuracy, thoroughness and comprehensiveness before final analytical results are produced. If people are concerned, they will have an opportunity to make suggestions.

### ☐ Step Seven

The Framework Project will produce an initial analysis and share it with key stakeholder groups and the public through another round of regional meetings to ensure people understand the results predicted for each alternative. If stakeholders raise concerns about the analysis, it will be refined and improved.

### ☐ Step Eight

The Framework Project's final analysis of the alternatives will be compiled into a final report. The report and the analysis will be used by the Northwest Power Planning Council, federal agencies and others to guide the future of fish and wildlife recovery efforts.

## Balanced Range of Alternatives Shapes the Analysis

At the heart of the Framework Project's policy work is a series of seven science-based alternatives for the river's future. The alternatives represent a range of plans, from those that are most protective of the Northwest's ecology to those that are most protective of its economy.

To ensure that people are part of the equation, each alternative addresses not only fish and wildlife, but also the importance of fishing, agriculture, shipping, recreation and other economic activities. And finally, each alternative goes beyond the Endangered Species Act's single-species approach to include all the species that need and deserve our attention.

## Each Alternative includes: *A Vision*

The vision paints a picture of the future of the river and the life it supports. In addition to fish and wildlife goals, a vision might describe the state of industry, agriculture or commerce. The vision must be realistic, and acknowledge the trade-offs necessary for all the river's uses to co-exist.

## *Objectives*

These are the targets that define the vision and give direction on how to proceed. They are measurable outcomes; the number and type of species or the growth in the local economies, for example.

## *Strategies*

Strategies are the specific steps planned to achieve objectives. Strategies to help fish and wildlife might include: changes in the way dams are operated (or removal of dams in some cases); changes in land-use regulations; changes in fishing; and, changes in hatchery programs.

## Scientific Analysis

Two independent scientific workgroups made up of carefully selected experts from a range of environmental, biological, cultural, and economic specialties (see sidebar, Page 8) will soon complete an analysis of the alternatives from not only an ecological perspective, but also for their impacts on human culture, economics, and society as well.

## Accountable Public Process

The Framework process was designed to be collaborative, and to the greatest extent possible, open to public participation.

All of the agencies involved joined to coordinate public involvement and outreach and to communicate with people who will be affected by the decisions that will flow from the analysis. And, every workgroup meeting was open to the public.

Three rounds of public meetings were held throughout the region to inform the public and stakeholders and to solicit their input and involvement. State, tribal and federal decision-makers participated in the meetings. Another round of public meetings will be held when the project's analysis is complete.

## Framework to Guide Important Action on Fish and Wildlife

The Framework Project will continue to support important decisions on fish and wildlife recovery that will be made in coming months by the Northwest Power Planning Council (see "Next Steps," Page 21) and by federal agencies. The Framework analysis will lay a foundation so the Council and its partners in fish and wildlife recovery can work from scientifically sound, economically balanced information and choose from a broad range of possible options.

In addition, federal agencies with Endangered Species Act responsibilities can use the Framework Project's results. Federal modelers and managers co-ordinated with Framework staff to ensure the project's analysis will also be useful to federal decisions.

The Framework Project is a straightforward attempt by the Northwest Power Planning Council to bring balance, accountability, and action to decisions about the future of the Columbia River. ■

Port of Morrow  
Stevens County Commissioners  
US Geological Survey  
US Army Corps of Engineers  
US Attorney's Office  
US Bureau of Reclamation  
US Department of the Interior  
US Environmental Protection Agency  
US Fish and Wildlife Service  
USDA Forest Service  
Washington Conservation Commission  
Washington Department of Ecology  
Washington Department of Fish and Wildlife  
Washington Department of National Resources  
Washington State Association of Counties  
Washington State Department of Agriculture  
Washington State Parks and Recreation

### Industry Groups

Associated Oregon Industries  
Associated Oregon Loggers  
Columbia Basin Development League  
Douglas Timber Operators  
Idaho Dairyman's Association  
Idaho Grain Producers Association  
Idaho Rural Development Council  
Intertribal Timber Council  
Kaiser Aluminum  
Northwest Forestry Association  
Northwest Mining Association  
Olympic Peninsula Christmas Tree Association  
Pacific Northwest Waterways Association  
Warm Springs Forest Products Industry  
Washington Wine Institute

### Fishing Groups

Association of Northwest Steelheaders  
Columbia River Fisherman's Protective Union  
Oregon Trout  
Northwest Sportfishing Industry Association  
Salmon for All  
Trout Unlimited  
White Salmon Steelheaders

### Tribal Governments and Organizations

Affiliated Tribes of Northwest Indians  
Burns Paiute Tribe  
Canadian Columbia River Inter-Tribal Fish Commission  
Coeur d'Alene Tribe  
Columbia River Inter-Tribal Fish Commission  
Colville Confederated Tribes  
Confederated Tribe of Grande Ronde Indians  
Confederated Salish and Kootenai Tribes  
Confederated Tribe of Umatilla Indian Reservation  
Confederated Tribe of Warm Springs Reservation  
Confederated Tribes of Siletz Indians  
Coquille Indian Tribe  
Cow Creek Band of Umpqua Indians  
Kalispel Tribe  
Klamath Tribes  
Kootenai Tribe of Idaho  
Nez Perce Tribe  
Okanagon Nation Fisheries Commission  
Shoshone-Bannock Tribe  
Shoshone-Paiute Tribes of the Duck Valley Reservation  
Spokane Tribe of Indians  
Warm Springs Cultural and Heritage Program  
Yakama Nation

## Scientific, Economic Workgroups Assist Framework Project

### The Ecological Workgroup

#### Who?

The ecological workgroup is a carefully selected group of independent scientists and researchers from throughout the Pacific Northwest who are specialists in analyzing river ecosystems. A steering committee of tribal, federal and stakeholder representatives worked closely with the scientists.

#### How?

The scientists first described the current state of the Columbia Basin: which species live where, their number and overall health. The Framework Project used this information to develop the range of alternatives.

To analyze the alternatives, the ecological workgroup made use of the most current databases on Columbia Basin species and habitat characteristics. These data, together with EDT's powerful analytical capabilities, will project how different species and systems will perform under each alternative.

### The Human Effects Workgroup

#### Who?

The human effects workgroup is made up of individuals and representatives of groups who have an economic or cultural stake in the Columbia River and the region's fish and wildlife. They are supported by economists and social scientists who specialize in analyzing the effects of various management actions on local economies and populations.

#### How?

The work of the human effects workgroup will address elements that can be quantified, i.e., described with numbers, and those that are non-quantifiable, i.e., that must be

# Analyzing the Alternatives: Ecosystem & Diagnosis & Treatment (EDT)

At the heart of the Framework Project's analytical effort is a system called Ecosystem Diagnosis and Treatment (EDT). Unlike other analytical systems, EDT is all about ecosystems — the places where fish and wildlife live and the ways they interact with their environment.

EDT's bottom line: the condition of the ecosystem predicts the condition of fish and wildlife.

At the most basic level, EDT does three things. First, it evaluates current ecological conditions. Second, using the best available scientific knowledge, EDT examines the changes that are likely to result from different management actions. Third, EDT predicts — using the best available scientific information — how different species will respond to those changes.

Although EDT is new to large-scale regional planning, it is not a new analytical system. EDT has been used to develop fish and wildlife plans for the Grande Ronde and Deschutes rivers in Oregon; the Clark Fork River in Montana; and the Cowlitz, Yakima, and Nisqually rivers in Washington.

### From Regional to Local — EDT's Geography

Unlike other systems, EDT organizes information at four different geographic scales (see maps on pages 12 and 13). The broadest scale is the Columbia Basin as a whole. The next level of detail allows policy makers to divide the region into 10 distinct ecological provinces. This scale helps identify broad problems, priorities and possible solutions. Beyond the province scale are subbasins. The Columbia Basin is made up of nearly 60 separate subbasins. Subbasins are collections of watersheds.

And finally, to ensure that citizens can make a difference in their own watersheds, EDT also will provide analytical detail at a scale that divides the region into approximately 7,200 separate areas. From the broad to the specific, EDT's ability to aggregate and separate data and analysis will create valuable information and guidance for regional policymakers and local watershed councils alike.

## The Fundamentals of EDT

EDT is based on a series of fundamental scientific assumptions that are well documented in the latest scientific literature. These fundamentals include biological carrying capacity, fish and wildlife productivity, and their life history diversity. Examining one of EDT's scientific fundamentals — biological carrying capacity — helps illustrate how the system works.

The notion behind biological carrying capacity is that at any life stage (e.g. egg to fry for salmon), there is an upper limit on the number of animals that can be accommodated by the quantity and quality of available habitat. This upper limit is the *carrying capacity* for that life stage of that species in that habitat.

For example, as the population of salmon increases beyond a certain point, survival decreases until the population returns to the carrying capacity of the habitat. Think about stuffing people into a VW Bug. It is easy to see that there is a limit to the number of people that can be stuffed in.

With one person, the comfort level is as good as it gets in a VW Bug. As the number of people in the VW increases, the comfort level declines. Eventually a point is reached when you just can't get anyone else in the car. At that point, you've reached the VW's carrying capacity. You can only increase the carrying capacity by changing the size of the vehicle — using a VW van perhaps — or by changing the vehicle itself (taking out the seats to make more room, for example).

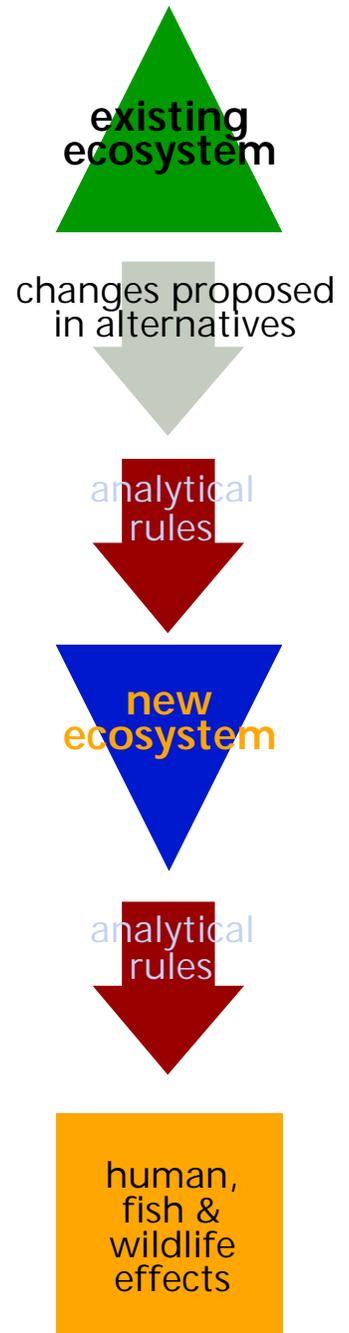
Now take the same problem and transfer it to the number of salmon that spawn and the number that survive to spawn in the next generation. All things being equal, the maximum survival of young salmon from a spawning pair of adult salmon should occur when the number of young is low. As the number increases, the young salmon get in each other's way and there is more competition for space and resources. As a result, survival declines until the capacity of the habitat is reached.

Once again, to change the carrying capacity, you can either increase the amount of habitat or improve the quality of the habitat you already have. Carrying capacity affects every stage of the salmon lifecycle. It applies in the streams where salmon are born, where they live until they migrate to the ocean, in the river during their migration, in the ocean and throughout their trip back up river to spawn (and at every stage of other species' lifecycles, too).

EDT uses data about the carrying capacity of the region's existing habitat to predict the outcomes that would result from changing that habitat (from a VW Bug to a VW Van in our example) by implementing different river

*continues on page 10* ►

## EDT at a glance



described as values or general outcomes.

Based on the actions employed in the alternatives and the biological results predicted by EDT, the Human Effects Workgroup will predict the impacts of each alternative on people using several different indicators. Some examples are:

### *Economic Opportunity*

This includes projected employment rates, per capita income, and other job-related information.

### *Social Effects*

This includes life expectancy, crime rates, nutrition, accident rates, infant mortality and other factors.

### *Tribal Effects*

The river plays an important part in the cultural identity of tribal people. The Human Effects Workgroup will consider these effects when evaluating the alternatives.

The human effects analysis will use existing studies that analyze the effects of various fish and wildlife recovery strategies on local and regional economies. Existing models and new studies were used to assess river operation alternatives. Other strategies, such as habitat improvements, are less well understood. The Human Effects Workgroup will extrapolate from existing data to complete its analysis or recommend further research where data is not available or reliable.

### *Balancing the Effects, Making Decisions*

Natural resource plans always involve compromises and trade-offs. The purpose of the Framework Project's ecological and human effects analysis is to help policy-makers assess the benefits to humans that come from improving the health of fish and wildlife and the quality of the ecosystem before making decisions. ■

management alternatives. To do this, EDT relies on very detailed information at the regional, provincial, subbasin and local level and a set of science-based "rules."

## **Science-Based "Rules" Ensure Accountability**

Here's an example of how EDT's "rules" work. Each action in every alternative is designed to create an expected change in the ecosystem. For example, one of the 108 separate strategies EDT will analyze calls for removing some roads in our forests to reduce the amount of silt in areas where salmon spawn, thus improving the capacity of the habitat and improving the ability of salmon to reproduce.

The "rule" in this case is the scientific knowledge and experience that links removing roads with reduced silt in streams. Based on scientific studies and literature and on the opinion of experts, there is a documented relationship between the amount of sediment in stream gravel and the survival of salmon eggs. The nature of that relationship is reflected in the so-called "rule."

In other words, scientists hypothesize that removing "w" miles of road in "x" type of forest reduces silt by "y" amount improving survival of salmon eggs by "z" percent. EDT uses that formula to judge the effects of alternatives that call for road removal. And, EDT can make that judgment about each of the 108 strategies as they apply to each of 7,200 distinct geographic areas that make up the Columbia Basin.

Every one of the several hundred "rules" EDT uses is documented with scientific literature and expert opinion. That documentation will be made available to the public. More importantly, EDT is coordinated with and complements federal and other regional scientific initiatives.

## **From Analysis to Action**

By combining its vast habitat data with its analysis of carrying capacity and its review of two other fundamentals — fish and wildlife productivity and life history diversity — EDT will provide the clearest picture available of how different actions change ecological conditions and thus the status of fish and wildlife.

Once policy-makers understand not only how different ecosystem changes will affect fish and wildlife, but why as well, they will be in a better position to make sound decisions about the future of the Columbia River. EDT will provide that information and help make those decisions.

An important success of the Framework Project is the collection of EDT's rules and the documentation and data that support them. In scientific terms, the rules are hypotheses that capture the best available scientific information about fish and wildlife recovery at this point in time. These hypotheses can, and will, be tested and refined. In this way, EDT will not only provide policy-makers with clear information about different alternatives and decisions, it will also become an evolving synthesis of knowledge about fish and wildlife recovery. ■



ILLUSTRATION: LARRYMILAM

# What to Expect from the Framework Project and EDT

*The Framework Project will produce a lot of data. The challenge is describing that data in a way that leads to decisions. Here's a brief description of what you can expect.*

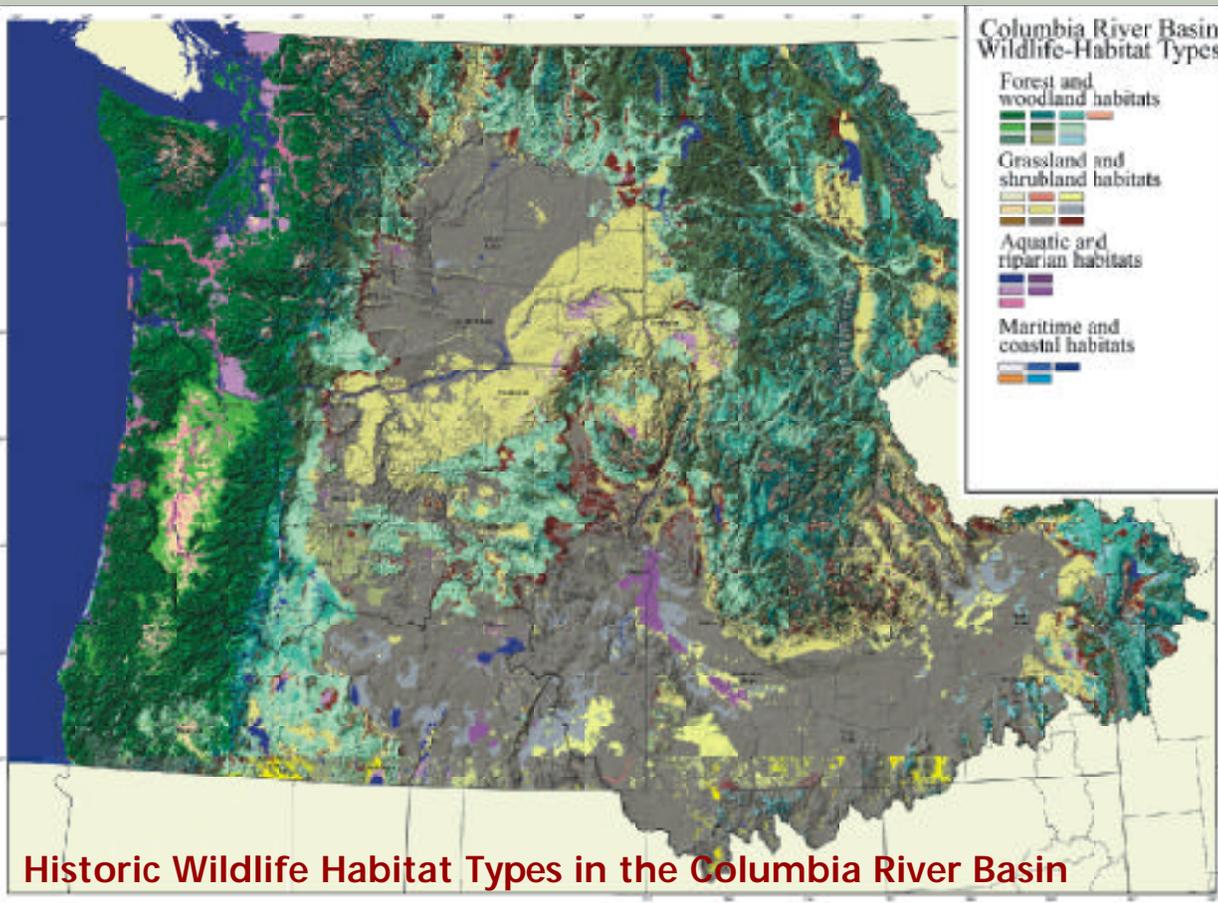
EDT takes disparate data and creates straightforward reports that display the performance of specific fish and wildlife populations under each of the proposed management alternatives (see Page 14). EDT will create reports for each of 10 ecological provinces (see map, Page 13). The reports will measure different fish and wildlife populations' ability to reproduce, the size of the populations and the populations' diversity. EDT results will be created at the subbasin and watershed level, too.

The Framework Project's Human Effects Group will use EDT's analysis to determine the likely economic costs and benefits of each alternative. Cost and benefit information will be broken out for different industries, land uses, geographic areas and by the different strategies called for in the alternatives.

For most people, maps are the most effective way to illustrate the power of the Framework Project data system and the likely affects of the different alternatives. A typical Framework Project map will show the entire Columbia River Basin with data displayed for 7,200 watersheds. Different colors or shades of gray will represent different biological conditions and economic costs and benefits. Thanks to GIS technology, it also will be possible to create similar maps that focus on any one of the Columbia Basin's ten ecological provinces or 60 subbasins.

Finally, the data reports from the Framework Project will be used to create charts and graphs comparing the different alternatives' biological and economic effects. Charts and graphs will be created to illustrate how each alternative would change current economic and biological conditions.

Turn the page to see EDT-based maps of historic and current habitat types in the Columbia Basin. These maps were among the first produced to help analyze the different alternatives



**Historic Wildlife Habitat Types in the Columbia River Basin**

### **The Framework Project: Building a Picture of the Future**

The Multi-Species Framework Project’s analytical effort is using an analytical tool called Ecosystem Diagnosis and Treatment. Unlike other systems, EDT organizes information at four different geographic scales. The broadest scale is the Columbia Basin as a whole.

The maps above were created using EDT’s data and analytical ability regarding current and existing habitat types in the Columbia River Basin. The maps show that aquatic, riparian, grassland, shrub-land and some forest habitats have changed significantly from their historic conditions. The EDT system analyzes those changes and predicts the likely effects on fish and wildlife populations.

More importantly, by analyzing how proposed alternatives would change various habitats, EDT can make predictions about how those alternatives will affect fish and wildlife in the future.

Once policy makers understand not only how different ecosystem changes will affect fish and wildlife, but why as well, they will be in a better position to make sound decisions about the future of the Columbia River. EDT will provide that information and help make those decisions.

### **Provinces of the Columbia Basin**



The maps above show a basin-wide perspective. When its analysis is complete, the Framework Project will also provide pictures of how different alternatives will affect habitat, and thus fish and wildlife, at the province and subbasin level.

The province level divides the region into 10 ecological provinces. This scale helps identify broader problems, priorities and possible solutions.