

OKANAGAN RIVER BASIN

Washington, U.S. – British Columbia, Canada

INTRODUCTION

The transboundary Okanagan River winds through topography most expect to see in Utah or Nevada. Relative to other Canadian climates, it is little wonder that tourists flock to the basin every year from all parts of Canada. The basin's warm climate offers respite from Canadian winters, and the semi-arid conditions offer farmers in the U.S. a large number of growing days. Unfortunately, the rapid development in Canada and the drive to increase apple yield in the U.S. have discovered the basin's limiting factor: water.

Like many experiences in the Pacific Northwest, the case of the Okanagan River Basin is a story about water and fish. During the 20th century, dozens of anadromous fish populations that spawned and reared in the three large natural lakes along the Okanagan River[†] were sacrificed in the name of flood control, power, and irrigation benefits. Over time, the region's values have shifted toward protection of the waning viability of at-risk species, especially Okanagan sockeye. This particular species has a great deal of meaning to the native peoples in the area and persists as the last anadromous salmon stock in the Canadian Okanagan.¹

Existing collaborative infrastructure, such as the 1964 Columbia River Treaty, creates opportunity for the two countries to harmonize efforts to address this problem. The primary motivation for attempts at



[†] Apropos for the focus of this case, readers should be aware that Okanagan is the Canadian spelling of the word. After first stumbling into the valley in 1811, white trappers had no fewer than 50 spellings for the “Oakinackken” (Autobee 1996). The common U.S. spelling, for example, is Okanogan. I will use the “Okanagan” throughout this document. For the purposes of this case, the Okanagan Basin includes the Similkameen River drainage, the largest tributary to the Okanagan.

transboundary management has been, and continues to be, sockeye salmon and the very water it lives in.² Unfortunately, efforts in the basin operate at different spatial scales and are administered by unrelated agencies. The compelling crisis posed by the continued decline of sockeye in the basin, however, has pushed resource managers to consider new, innovative possibilities.

Why transboundary management?

In the Okanagan Basin, there is some activity in the U.S. and Canada, and much of it recognizes the value of transboundary collaboration. Unfortunately, there seems to be little recognition or relationship between them. Scientists widely recognize the necessity of managing for this stock across the international border.³ The Okanagan sockeye lives out a complicated life history across an international border, between freshwater and marine environments. Okanagan sockeye require passable migratory paths and spawning grounds in the U.S. just as much as clean lentic habitat (lakes) in Canada for rearing. Argues one fish biologist, “We truly have to overcome agency fragmentation and agency inertia and find ways of achieving more integrated decision making about this particular stock...[we need] better land-use practices in support of conditions that will increase its long term probability of persistence.”⁴ In short, operating on just one side of the border will not ensure the success of this species.

CONTEXT

The Okanagan River flows from its headwaters near Armstrong, British Columbia, for almost 140 miles (225 kilometers) to the international boundary between the United States and Canada. Once it crosses the border, it flows another 5.6 miles (9 kilometers) to its confluence with the Similkameen River, and then roughly another 140 kilometers into the Columbia River between the Wells and Chief Joseph dams. While in Canada, the Okanagan River links three major lakes—the Okanagan, Skaha, and Osoyoos. All told, the entire subbasin region covers more than 8,200 square miles (5.25 million acres 21,000 square kilometers), with 70 percent of the drainage in Canada (5,700 square miles).⁵

Ecosystem description

The region’s unique ecology is shaped by a combination of the geology, geography, and climate. This area emerged from the last ice age as a wide valley lined with fertile bench-land terraces. When the last glaciers finally receded, they left finger-like depressions now filled by the lakes of the Okanagan Basin. The Coastal and Cascade Mountains cast a rain shadow on the basin, giving it a dry climate. The interior portion of the Okanagan is considered true desert—it receives about eight centimeters of rain annually.⁶ The open waters of the Okanagan’s finger lakes moderate local temperatures, however, cooling the air in summer and warming it in winter.⁷

The Okanagan Basin is a unique habitat of international importance. “The peculiar geographic and climactic tapestry weaves together diverse habitat elements in close proximity,” writes one Canadian conservation group.⁸ Wetlands, grasslands, rocky

outcrops, and other landscapes support a wide array of plant and animal species. It is home to almost two dozen species of plants and animals that are currently listed in Canada as nationally Threatened, Endangered, or Vulnerable. A full one-third of *all* Red-listed species[†] in British Columbia reside in the Okanagan.⁹ In fact, many of these species are only found in this area. Eight species of invertebrates are found nowhere else in the world.¹⁰ In addition, some species persist in the Okanagan Basin in increasing isolation from the rest of their range, contributing to the species' genetic diversity.¹¹

Furthermore, the Okanagan River watershed is a vital link for many migratory species that utilize it for only part of the year. It supports one of only two viable populations of sockeye salmon left in the entire Columbia Basin.¹² The Okanagan Basin is an internationally important ecological corridor for migratory megafauna, as well. Species such as mule deer utilize the north-south corridor created by the Okanagan Basin that connects the dry landscapes of British Columbia's interior with the grasslands to the south.¹³ In addition to salmon and megafauna, this corridor is a crucial part of the flight path for many species of birds during annual migrations between summer and winter ranges.¹⁴

Human Communities

The basin has also long been a home for native peoples. For centuries before European settlement, the Okanagan was home to a number of tribes, including the Northern and Southern Okanagan and the Colville. The tribes moved with the seasons: picking berries and fishing in the spring and summer and deer hunting in the fall.¹⁵ Relations between tribes were relatively peaceful.¹⁶ Based on their long connection with this place, area tribes share strong ethnographic links with each other and strong cultural, historical, and subsistence links to this stock of fish.¹⁷ Since this is the last remaining anadromous run in the Canadian Okanagan, a great deal of significance rests on the survival of this species.

Human use

Although the Okanagan serves as an ecological corridor, human use of the basin is anything but contiguous. The basin simply *looks* different on either side of the border.¹⁸ On the one hand, the Okanagan region is one of British Columbia's most densely populated regions, with one of the fastest growing populations in Canada, exploding from 195,000 in 1976 to almost 400,000 today.¹⁹ On the other hand, Washington's Okanagan has been called one of the last outposts of frontier life and its population is as disparate as that image connotes—the entire Okanagan County, of which the basin is less than 67 percent, has only 38,000 residents.²⁰

Urbanization

The Okanagan Basin is rapidly urbanizing. In 1969, the Canadian federal government and the Province of B.C. began a study to develop a comprehensive framework for the development and management of water resources for the social and economic growth in

[†] British Columbia's Conservation Data Centre lists three classes of species: Red-list (extirpated, endangered, threatened, or are candidates for such status), Blue-list (vulnerable indigenous species or subspecies of special concern), and Yellow-list (secure).

the Okanagan Basin.²¹ Although the study acknowledged that the rate of growth was unpredictable, the valley's economy and population surpassed the study's 50-year predictions in a mere 25 years.²²

The South Okanagan Basin in particular has attracted settlement from throughout Canada. The valley is one of Canada's warmest areas, drawing new residents at a rapid pace. Development to accommodate the growing population base meets with few limiting constraints since over 85 percent of the Canadian Okanagan land base is in private ownership.²³ Even the lands controlled by the province, called Crown lands, show signs of stress: weed invasion, off-road vehicle use, and livestock grazing threaten the health of the land. New development, roads, and other rights-of-way further stress the ecosystem by fragmenting Crown lands.²⁴

Canada's Okanagan Basin is an urban area. Even with the designation of Snowy Provincial Park in January 2001,²⁵ the absolute proportion of land protected in the Okanagan Basin is less than five percent. In response to a question of why there is not more protected land in this popular valley, a provincial land-use official said, "In some areas [like the Okanagan], there's just been too much land already privatized."²⁶

The result of available land for development, fueled by rapid population growth, is a rapid physical expansion. In an area with little rainfall, that leaves the Okanagan River to shoulder the basin's water needs. As a resident fish biologist observed, "Human populations are increasingly coming into direct competition with the fish for the very substance of life."²⁷ Development also fragments the diverse tapestry of habitat within the valley and severs the ecological corridor. Many of the threatened and endangered species rely on the diversity of the basin's habitats to survive, seasonally alternating use of a particular type.²⁸

Irrigated agriculture

The land-use patterns along the Okanagan in the U.S. reflect that the basin's climate and topography are not as unique to Americans as they are to Canadians. Instead of droves of people flocking to live in the Okanagan, the largest landowners in the U.S. portion of the basin are the Colville Confederated Tribes and the U.S. Forest Service. Forestry, grazing, and irrigated agriculture are the dominant land uses.²⁹

Although privately owned land is less than a third of the Okanagan landbase in the U.S., it consists of almost all of the ecologically significant riparian habitat along the river itself, contributing sediment and excess nutrient runoff to the waterway. The availability of water shaped by the history of the valley. In 1910, the first authorized U.S. Bureau of Reclamation dam in Washington State was built in the Okanagan Valley, primarily to irrigate apple orchards.³⁰ Irrigation opportunity explains much of the land distribution in the U.S. Okanagan.

River impoundment

Water impoundment projects forever changed the functioning of this ecosystem. For 100 years, dams were constructed to meet human needs for irrigation water, municipal use,

hydropower, and flood control. These dams altered the flow regime of the river and presented impassable obstacles to anadromous fish stocks. Water diversions on the U.S. side have left reaches of tributaries to the Okanagan, such as Salmon Creek, dry during summer months.³¹ Where diversions do not dry out the streambed, they present physical barriers to migratory fish. For example, a diversion dam above Oliver, B.C., between the Osoyoos and Skaha lakes, is the upper terminus for migratory fish on the Okanagan. On a related note, the Similkameen River is impassable at Enloe Dam, an abandoned power generation facility 8.8 miles above the confluence with the Okanagan River. This dam blocks access to more than 95 percent of the anadromous fish habitat in the Similkameen River, the Okanagan's largest tributary.³²

Changing regional and national values in both countries create tension surrounding allocation of the finite water resources in the region. In both the U.S. and Canada, threatened and endangered species have legitimate claims on instream flows or ecosystem services based on the presence of water in the river. When water supplies run low, many perceive a trade off between humans or fish and anger erupts. A NMFS spokesman aptly summarized the fundamental tension: "Fish need water. Farmers need water. Unfortunately they tend to need it at the same time."³³

Existing Transboundary Collaborative Infrastructure

A complex tangle of international treaties, legislative mandates, and oversight authority provide opportunity for transboundary interaction to resolve many of these shared problems. First, the U.S. Congress passed the Pacific Northwest Electric Power Planning and Conservation Act of 1980, which created the Northwest Power Planning Council. The Act directs the Council to prepare a program to protect, mitigate, and enhance the fish and wildlife of the Columbia River Basin that have been affected by the construction and operation of hydroelectric dams. NPPC must balance these needs, however, while also assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply. The Act also directs the Council to inform the public about fish, wildlife and energy issues and to involve the public in its decision-making.³⁴

Secondly, the Act has been recently interpreted by the implementing agencies in line with the Columbia River Treaty of 1964 (CRT). The CRT facilitates cooperative resource development and fish and wildlife mitigation for the *entire* Columbia River Basin. In effect, these mandates require the NPPC to treat the Columbia River Basin as a holistic system, including the portions in Canada.³⁵ The CRT itself required Canada to provide 15.5 million acre-feet of usable storage for flood control in the U.S. by building three dams on the Columbia River mainstem. A fixed amount of money is paid annually to Canada for the use of their land for water storage. Canada created an agency similar to NPPC, called the Columbia Basin Trust (Trust), to manage these monies. Although a significant proportion goes to socioeconomic development, some funds are spent on fish and wildlife programs.³⁶ Nevertheless, the Trust and the NPPC have convened a series of international workshops on ecosystem management in the Columbia River Basin.³⁷ The most recent workshop, entitled *Toward Ecosystem Management in the Upper Columbia River Basin*, was held in Castlegar, B.C., in April 1998. Over 400 individuals, most of

who were government land managers, and 40 organizations from throughout the Upper Columbia were in attendance.³⁸

Thirdly, the Pacific Salmon Treaty (PST) specifically names Okanagan sockeye. The PST, both the original 1985 version and the amended 1996 version, was the first serious attempt to settle the disputes popularly known as the U.S.-Canada “salmon wars.”³⁹ The PST calls for the three parties, the U.S., Canada, and Native American tribes in the U.S., to consult about restoration and conservation of anadromous salmon stocks in the Columbia Basin.⁴⁰ This cooperation simply did not take place, however, under the 1985 Treaty or the 1996 revision. However, the legal mandate remains.

Finally, the high concentration of threatened and endangered species in the area, especially salmon, involves both federal governments and state and provincial agencies in management. There is a concerted effort amongst resource managers to coordinate endangered species protection efforts under the Endangered Species Act and the soon-to-be-enacted[†] Species at Risk Act.⁴¹ Specific to salmon, agencies have tried to improve the suitability of river conditions by manipulating physical structures and supplementing natural recruits with aquaculture-reared fish, all at the dam at great cost. Only recently have scientists realized effort has not been effective.⁴² “We’re in our seventh year and the program has yet to find a glimmer of hope,” said the Douglas County fisheries biologist.

APPROACH TO TRANSBOUNDARY MANAGEMENT

Transboundary management in the Okanagan Basin has struggled to find a foothold, although there is activity both in the U.S. and Canada, much of which purports to be transboundary. Without a clear focal point, these collaborative efforts are difficult to tease apart. Most collaborative efforts in the Basin lack an identifiable leadership structure or operate on more of an ad hoc basis, or both. In fact, some of the programs are called different names in different documents and by different participants, which makes it difficult to track their activities.

This amalgamation, nevertheless, can be separated into three distinct efforts based on interaction: the Douglas County Project, the South Okanagan-Similkameen Conservation Program, and the Columbia Basin Ecoprovince Review and Subbasin Planning Process. These efforts operate in the Okanagan at variable geographic scales, but have the potential to form an interconnected web that can function like a safety net for sockeye and the ecosystem itself. Unfortunately, in many cases, these groups are not aware of one another.

[†] The Canadian parliament is expected to pass some form of an endangered species act in the coming year that will give federal agencies a sort of listing authority similar to NMFS under the U.S. Endangered Species Act (Harrison 2000, Hyatt 2000, Wolf 2001, Hyatt 2001).

Douglas County Project

The decline of the anadromous sockeye salmon stock means that it has become a concern under the U.S. Endangered Species Act. NMFS declined to list the Okanagan sockeye once before,⁴³ but its status is rapidly approaching a level where listing is imminent. As a condition of their the Federal Energy Regulatory Commission (FERC) license to operate the Wells Dam on the Columbia River, the Douglas County Public Utility District (Douglas County) must meet a specific mitigation requirement to compensate for the impacts of dam operation. Their requirement pertaining to Okanagan sockeye is that they must improve productivity over the 20-year average by roughly 10 percent.⁴⁴ It does not have an ecosystemic scope, as might be expected given Douglas County’s motivations, but participants laud it for the diverse representation and sound science at its core.

Project description

Faced with FERC requirements, Douglas County realized the futility of continuing with the current attempts to supplement the stock, which are failing to show results. A Canadian fisheries biologist summarizes the situation: “The net result of [the hatchery program] is that they’ve probably not produced a *single* additional fish in the last 10 or 15 years, in spite of making valiant efforts to do so.”⁴⁵ Instead, Douglas County recognized the potential stock improvements from concentrating on spawning and rearing habitats—which happen to lie in B.C. The Douglas County fisheries biologist notes, “Quite honestly, if we did not see the international border we would be [focusing our efforts] in British Columbia, where the fish spawn and rear in their early life stages.”⁴⁶

In 1996, Douglas County decided to take a first step toward fulfilling their mitigative responsibility in a truly unconventional manner—they contacted fisheries experts working on the Okanagan in B.C. Early discussions determined it was possible to meet a variety of agencies’ approval, namely First Nations, the province, and Canadian federal government. A contact group was formed in B.C., called the Okanagan Basin Technical Working Group (Working Group), to focus concerted effort on trying to understand what measures were available.⁴⁷ Since the initial contact, Douglas County commissioned a variety of studies, many of which will be finalized by May 2001.⁴⁸ This project involves representatives of the Canadian Department of Fisheries and Oceans, MELP, and Okanagan Nations Alliance through research contracts.

Organizational structure

The project is indeed unconventional, but it does have a distinct form. The Okanagan Basin Technical Working Group (the Working Group) is the steering force of the project. There is no formal “organization” per se, but the Working Group includes representatives of various interests. The Working Group essentially operates as a kind of administrative unit in that it coordinates the activity of its member agencies for this program.⁴⁹ The

Okanagan Basin Technical Working Group Members, 2001

United States

- Douglas County Public Utilities District

Canada

- Department of Fisheries and Oceans
- B.C. Ministry of Environment, Lands, and Parks
- Environment Canada
- Okanagan Nations Alliance

funding from Douglas County, however, goes directly to the Working Group members through their respective managing entities. This establishes channels for future on-the-ground activity, since the contract recipients are the individuals that will be making the management decisions.⁵⁰

The project is essentially a cooperation between committed individuals who happen to work for government agencies with the responsibility for sockeye conservation. Working Group members meet regularly, but the process is not open to the public. No formal treaty or agreement between the two countries sanctions this project, but there is no contravening precedent either. As one participant explained, “[The project is only] formal in the sense that it involves agencies.”⁵¹

In fact, it has been individual commitment, rather than process or structure, which has carried the project along for almost four years. One participant recalls, “The personalities involved are quite committed to the fish...Everybody in this process to date has had kind of a ‘fish first’ attitude—particularly from the Canadian side.”⁵² This stock is the sole remaining anadromous stock in the Canadian Okanagan—a significant fact that focuses effort from the Canadian participants: “I think we’ve kind of dug in our heels on this [stock] and said ‘we may lose this one, but we won’t lose it without a fight.’”⁵³

Stakeholder involvement

Participants in the Douglas County Project are proud of the project’s inclusive mix of stakeholders. A participant explains, “We did not want to exclude anybody from the equation which is why we’ve asked for bringing together the environmental agency from the province, the federal government, as well as the First Nations people.”⁵⁴

The project also tries not to exclude any participants from decision-making. Douglas County is aware of the peculiar dynamic implicit in the arrangement—namely that resource managers in B.C. are engaged in helping the utility district to handle its mitigative responsibility in the U.S.⁵⁵ The Project operates on consensus, firmly rooted in biologically-defensible goals. Indeed, consensus has caused the project to slower than if the agencies were operating alone.⁵⁶

This small pool of representatives involved in the Douglas County Project gives reason for pause, however. Significant sectors are not included, including other U.S. interests and non-governmental organizations on both sides of the border. One participant explained that the process has not *excluded* anyone. He contends, “There are probably groups that would like to have a seat at the table, but the question is whether they can sustain the effort to maintain the seat. It isn’t that they’ve been excluded from the table.”⁵⁷

Obstacles

The Douglas County Project has encountered several obstacles, both foreseen and unexpected, in its short lifetime. These include political concerns, the international border, implications of the project in terms of the PST, and bureaucratic inertia.

The Colville Confederated Tribes, the current caretakers of the Douglas County hatchery program, have valid concerns about the project—it will lose the jobs and funding associated with their hatchery if sockeye can be raised in Canada with greater success. Douglas County representatives, however, no longer consider the hatchery program viable in its current form. The hatchery program's shortcomings are not due to tribal management, however, as one representative stressed: "The Colvilles have done as good a job with this program as can be expected of anybody...that isn't the issue here. It's the fact that...they were never meant to be cultured in the fashion that people want to try to culture them in."⁵⁸

The eventual outcome of the project will most likely cost the Colvilles jobs and funds. A Douglas County representative explains, "[The Colville] are understandably not too eager to see this program go away because it provides employment for four people at the hatchery plus it also provides some administrative support. So there are some funds that they would lose if this program shifted into Canada."⁵⁹

The international border itself has also been a significant challenge to the Douglas County project. The past decade of unsuccessful mitigation efforts, from the hatchery program to physical alterations, might not have been realized without the presence of the international border. Instead, there are two different management systems in place that affect sockeye equally. A participant speculates, "If these groups formed in the absence of the border you'd only have one group that formed and it would reflect the whole watershed, not just the part that Canada's sovereign over and that the U.S. is sovereign over...the ways of doing business in Canada and the U.S. in terms of water and fish are much different."⁶⁰

Furthermore, the PST's elaborate system of interrelated harvest quotas motivated opposition from regional native peoples. The Columbia River Intertribal Fish Commission is concerned that improving the Okanagan sockeye run would trigger sharing of chinook or coho salmon in other parts of the Columbia River Basin in accordance with the PST. The Intertribal Fish Commission, a coalition of Native American tribes in the U.S., has expressed opposition to that outcome, however it might be realized.⁶¹

Finally, the Douglas County project has not moved as quickly as expected because of bureaucratic inertia. The Project involves a large number of political operatives in far-flung decision centers, and decisions are made with an eye toward their concerns. A participant observed that this characteristic certainly complicates things.⁶²

South Okanagan-Similkameen Conservation Program

The South Okanagan-Similkameen Conservation Program (SOSCP), was created by MELP and Environment Canada in July 2000. SOSCP out of an existing management strategy for the basin coordination of the Nature Trust of B.C.'s South Okanagan Critical Areas Program and the MELP's Habitat Conservation Fund Okanagan Endangered Species Program. In the early 1990s, the Strategy set priorities for management activities for the conservation of natural habitat and its unique flora and fauna.⁶³ The Strategy

prioritized biophysical mapping projects, species status reports, and opportunities for stakeholder participation.⁶⁴

SOSCP was created to eliminate the redundant work performed by individual recovery teams working toward single species recovery. SOSCP was endowed with an ecosystem perspective to harmonize Canadian activity since many groups were working at cross-purposes by altering ecosystems to benefit one species without considering the needs of others.⁶⁵ SOSCP intends to coordinate existing conservation strategies, negotiating the acquisition of priority habitats, and expanding community involvement through partnerships.⁶⁶ Since SOSCP is a relatively new organization, its structure has yet to take shape.

Stakeholder diversity

SOSCP's membership was built from six core partners (see inset box). SOSCP now also includes another 13 organizations, including The Nature Conservancy of Washington,[†] to bring the total to 19. As discussed earlier, SOSCP also includes community involvement, broadening the potential viewpoints available to the ERPSS Subbasin Planning Process. SOSCP consists of nineteen conservation organizations and government agencies, including MELP, several provincial land conservancies, Environment Canada, and The Nature Conservancy of Washington.⁶⁷

Unlike other efforts in the region, SOSCP underscores the importance of public involvement in a recent public brochure: "SOSCP recognizes the conservation achievements of local residents. The founding partners look forward to working with community members to realize common goals and explore opportunities to learn about and encourage conservation."⁶⁸ Environment Canada announced in June 2000 that it will contribute \$1 million (Canadian) from its Habitat Stewardship Program to fund a variety of SOSCP activities that will be carried out by non-government organizations, private landowners, conservation groups, and local governments.⁶⁹

SOSCP Core Members, 2001

- Environment Canada
- B.C. Ministry of Environment, Lands, and Parks
- Habitat Conservation Trust fund
- Nature Trust of British Columbia
- Nature Conservancy of Canada
- Land Conservancy of B.C.

Columbia Basin Ecoprovince Review and Subbasin Planning Process

The Columbia Basin Ecoprovince Review and Subbasin Planning Process (ERSPP) is an emerging process that harmonizes priorities across the border. Largely a collaborative of government agencies, ERSPP works on the river subbasin level to set mitigation and restoration priorities and channels federal funds to programs in a strategic method. Unlike prior processes used by the same agencies, the planning is done on the subbasin level, however, which creates much-needed resource opportunities for transboundary collaboration.

[†] Participation by The Nature Conservancy of Washington is strictly limited to financial support at this time. The Conservancy's Directory of Science and Stewardship suggests that the use of ecoregional planning by his organization will necessitate transboundary collaboration in the future (Cook 2001).

Project description

The Pacific Northwest is unique in the amount of money available for fish and wildlife work because of the legacy of hydropower projects. As noted earlier, the NPPC is essentially an agency dedicated to sharing hydropower profits with fish and wildlife. Its resource pool comes from wholesale power revenues generated by the Bonneville Power Administration (BPA), the federal agency that markets the electricity generated at U.S. federal dams on the Columbia River.⁷⁰ BPA contributes about \$120 million per year to these fish and wildlife programs.⁷¹ Of that, 85 percent goes to fish programs and the other 15 percent to wildlife programs. Recipients are primarily state agencies and tribes, although consultants and universities receive a significant proportion. Increasingly, project-based collaborations are applying for funding. About two-thirds of the total “hits the ground” every year, making BPA the single largest funding source for fish and wildlife programs in the region.⁷²

Given the size of the Columbia Basin, federal agency employees cannot be expected to have the knowledge base of every subbasin in the system. The Columbia Basin Fish and Wildlife Authority (CBFWA), a self-chartered organization made up of the legally recognized resource managers from the four states and two federal fish and wildlife management entities as well as thirteen Native American tribes of the Columbia River Basin,⁷³ supports NPPC in the review process. Taken as in combination, this review process attempts to it to coordinate member action through joint planning and provide for an open forum for members to exchange ideas and information on matters affecting anadromous and resident fish, wildlife, and habitat concerns, and work toward unified positions.⁷⁴ Each step of the process is driven by consensus, a feature which members believe focuses actions in a single direction representing the best available information from the fish and wildlife managers.⁷⁵

This project review process is indeed confusing and cumbersome. NPPC recognized this shortcoming and is in the midst of a complete overhaul.⁷⁶ The new review process, called the ERSPP, breaks the Columbia River Basin into 52 subbasins in 11 ecoprovinces.⁷⁷ Each subbasin will undergo a three-step, three-year review en route to creating a subbasin plan.⁷⁸ ERSPP implements the new ideological interpretation of NPPC’s jurisdiction, incorporating Canadian federal and provincial managers and tribes in this process for the subbasins, like the Okanagan, that extend across the border.⁷⁹

The ERSPP uses a three-year rolling review for subbasin plans. After the planning processes are completed at the subbasin level, the subbasin will submit a list of projects for funding with its plan to the NPPC. In this way, NPPC is able to maintain a focus on ecoprovincial and regional planning, leaving the smaller scale issues to those better prepared to address them. As one participant in the transition explains, “It’s a process by which you formulate projects in a strategic way, rather than tactical or opportunistic.”⁸⁰

ERSPP in the Okanagan

The ERSPP makes a sincere effort to build ecosystem planning into the allocation of BPA’s substantial resources. At its heart is a kind of analytical framework for assessing

the relative health of the watershed.⁸¹ This framework will be employed at the subbasin level to set watershed-level priorities. NPPC will then allocate money to projects in the basin that meet the priorities, subject to adaptive management, in the proper sequence.⁸² One participant describes the framework this way: “It points you in the direction of where your priorities for preservation and restoration are and those are characterized in terms of species diversity, capacity, and productivity. So you’re using conservation biology principles in the assessment. And then the planning [takes] that to the next step: what do we do?”⁸³

The Okanagan River Basin[†] is one of the 52 subbasins subject to planning under ERSPP. Participants in ERSPP describe it as the best example of the ERSPP’s transboundary capacity. Since ERSPP is only in the midst of creation, the Okanagan offers the best look at what substantive transboundary process will look like. A primary example of the type of transboundary work that will be more likely under the new process is a sockeye project spearheaded by the Colville tribe. Recently approved, the project^{††} aims to reintroduce sockeye into Skaha Lake. An implicit goal of the project is improving the sockeye stock while also keeping the hatchery on the Colville reservation. The project was motivated by a desire by the Okanagan Nations Alliance to see sockeye reintroduced further up the Okanagan River into their historical range.⁸⁴ The science indicates that increased lentic habitat for rearing could substantially improve runs.⁸⁵ The Colville knew that BPA funds were available (BPA spent over \$1 million on three projects in the subbasin in FY2000)⁸⁶ and offered to act as a sponsor to make additional resources available to Canadian agencies. At present, the Canadian Department of Fisheries and Oceans is contracted to perform a disease risk analysis, in effect answering its primary concern about reintroduction—exposure of resident kokanee and several hatchery-reared salmonid species (exported throughout B.C.) to disease carried into Skaha Lake by returning anadromous sockeye.⁸⁷ MELP and others assist with data collection.

Organizational structure

The ERSPP is intrinsically an internal mechanism for NPPC review of project funding proposals submitted from throughout the region. The review process incorporates independent scientists (through the CBFWA) and regional resource managers from the U.S.—this will not change under ERSPP. Other than fundamentally restructuring the planning boundaries, what is different is that Canadian officials will now be able to participate in the planning process and coordinate ERSPPs guidelines with their own.

In the Okanagan, a group of managers, consultants, and government officials has already begun the subbasin planning process. The membership remains heavily rooted in the U.S., but individuals are trying hard to include additional Canadian perspectives.⁸⁸ In fact, the subbasin planning group has already identified and made contact with

[†] The Okanagan Subbasin will be defined to include the Okanagan, Similkameen, and Methow River valleys in May 2001 (Wolf 2001).

^{††} BPA Project number 20124, “Evaluate an Experimental Re-introduction of Sockeye into Skaha Lake.”

Stakeholder diversity

At the landscape-scale, ERSPP involves well over 2,500 individuals from Canada, the U.S., and various tribes and First Nations.⁸⁹ Participation involves a broad range of funding organizations, resource managers, and consultants, although non-governmental representation is thin. One participant describes, “Everybody’s involved. It’s a multijurisdictional effort to coordinate—there’s no real leader *per se*, other than the tribes and the NPPC.”⁹⁰ At the landscape scale, the membership list confirms this claim.

In the Okanagan, the team assembled to coordinate the subbasin planning process informally calls itself the Okanagan Technical Advisory Committee (see inset box). This group of contributors includes representatives of the U.S. Forest Service, Okanagan County, NMFS, U.S. Environmental Protection Agency, Washington Department of Ecology, the ONA, and others. The team leader, however, is a biologist from the Colville Confederated Tribes.⁹¹

Critics note that the ERSPP Okanagan Subbasin Planning Process is still primarily designed to work with the First Nations people and states, the primary U.S. resource agencies in charge of carrying out mitigation activities. Internal documents show that, although there is heavy state representation, a diverse group of contributors have already involved themselves in drafting the first of three steps in the planning process.⁹²

**Members of the Okanagan Technical
Advisory Committee, 2001**

United States

- Colville Confederated Tribes (team leader)
- ENTRIX, Co. (consultants)
- Golder Associates (consultants)
- National Marine Fisheries Service
- Okanagan County Water Resources
- Okanagan Irrigation District
- U.S. Army Corps of Engineers
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Forest Service
- Washington Department of Fish & Wildlife
- Washington State Department of Ecology
- Washington State Conservation Commission
- Washington State Department of Transportation

Canada

- Golder Associates
- Okanagan Nations Alliance

Interaction between efforts

The potential for comprehensive collaboration at the ecosystem scale in the Okanagan is great. Endangered species concerns act as a common crisis to focus attention of the various resource managers. An institutional framework for ecosystem management across the basin could be established through the ERPSS process. In fact, despite the fact that SOSCP is a fledgling effort that has little recognition in the basin, ERSPP reached out to incorporate it in the subbasin planning process.⁹³ A meeting in Colona, B.C., in February 2001 between the Okanagan subbasin planning committee (ERPSS) and SOSCP officials resulted in an agreement to fuse the two programs at the planning and coordination level.⁹⁴ The details of this partnership will not be finalized until June 2001.⁹⁵ The impending partnership with SOSCP would further diversify the Subbasin Planning Process.

Unfortunately, interaction between the ERPSS and the Douglas County Project is non-existent. Douglas County has made no effort to involve itself with the ERPSS, and for understandable reason—as a non-federal dam, Douglas County is free of the federal mitigation mechanisms. It seems, however, that cooperation would benefit both parties. The Douglas County position does not agree with this reasoning, however, “We don’t see a need to [involve ourselves with that planning initiative] as far as how that would better serve us. At some point that would need to be done, but right now there doesn’t seem to be an interest in doing it.”⁹⁶ In fact, it is not clear that the large-scale planning process even knows of the Douglas County effort: “I’m not sure they’re aware of our program....”⁹⁷

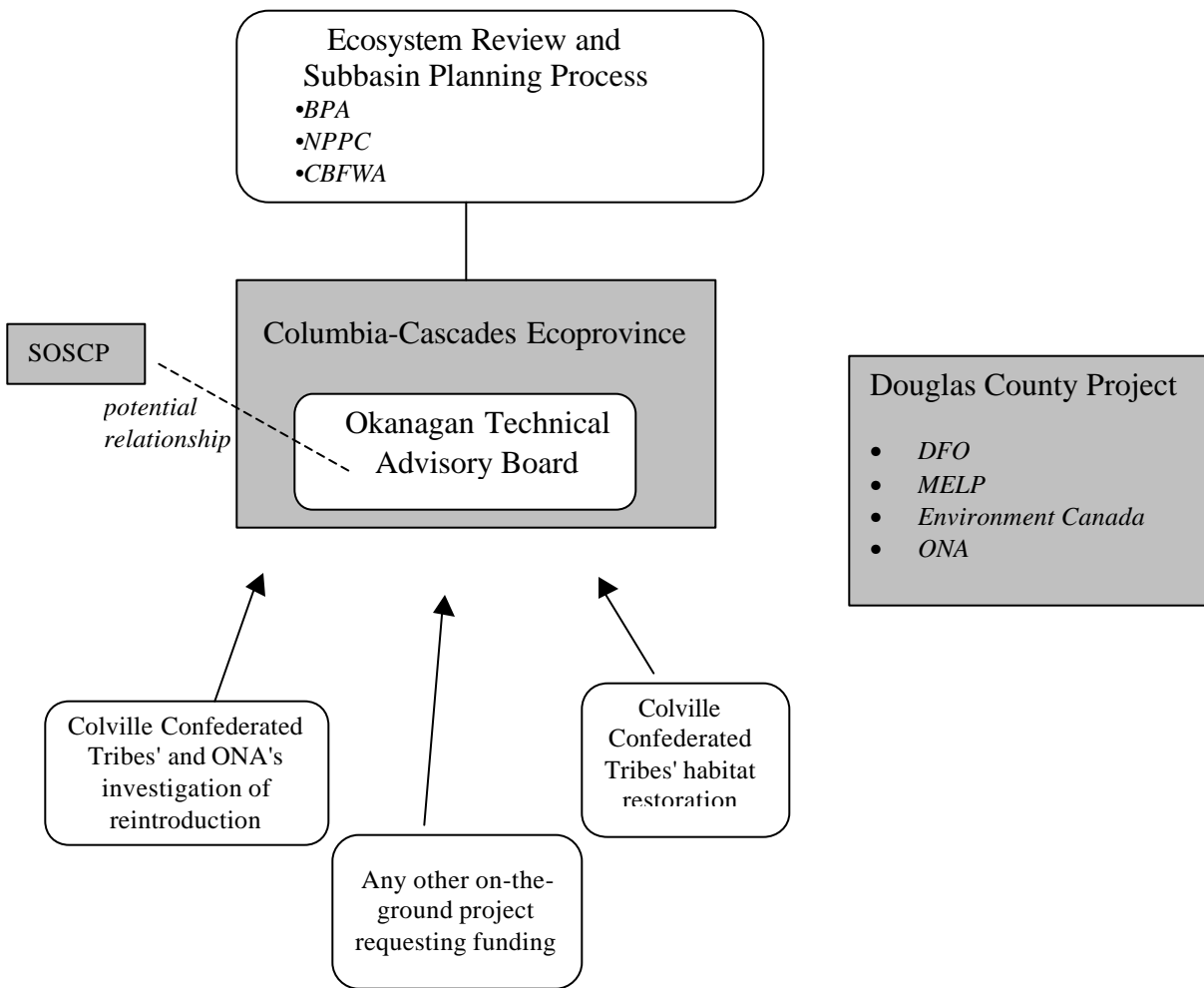


Figure 1. Interorganizational representation of activity in the Okanagan Basin. This diagram attempts to show the three relevant efforts (shaded) and interaction between them. Note the disconnect between ERSP and Douglas County. (This is not meant to capture all activity in the basin, nor the diverse activities of any of the efforts pictured above.)

ACCOMPLISHMENTS

For a variety of reasons, the accomplishments to date of the two efforts have been limited. A common accomplishment cited by members affiliated with one or more groups is opened lines of communication and an increased awareness of what counterparts are doing. As with many transboundary efforts participants are quick to cite procedural longevity as a feat in its own right. One participant sums up the predominant opinion: “[I]n many respects [there’s been] fairly modest headway, but when I look at where it started from, which was pretty much a cold start, it has come a long way. It just depends on what your benchmark for success is.”⁹⁸ By this rationale, participants name three primary accomplishments: creating an unbiased review of the sockeye problem, identifying opportunities for improvement of the sockeye population, and establishing a communication network.⁹⁹

Unbiased review

The Douglas County project generated an extensive review of projects and potential sockeye gains. One participant recalls, “We have gone through that and thought about where the bottlenecks are for this population, and possible improvements or resolutions to those bottlenecks. And we’ve found that many of the projects that we thought would actually help the population actually do very, very little to help improve their status... [T]hrough a lot of review of possible strategies, we have begun to eliminate several options. That, I think, has helped us to focus on what the options are that will actually work on the ground.”¹⁰⁰

Raising awareness

The Douglas County Project also raised awareness in Canadian agencies of their agency’s impact on sockeye populations. Increased awareness could potentially result in different actions by the agencies, especially dam managers. The Douglas County fisheries biologist contends, “While we don’t have anything physical on the ground, we’ve funded research that has brought people in B.C. a much higher appreciation for what things they do and how those impact the fisheries resources that they have a responsibility to protect.”¹⁰¹

Communications network

Finally, increased socialization has improved communication between resource managers in both cases. In some cases, colleagues working on the same population of fish were introduced for the first time through the project. A fisheries biologist asserts, “And so,

Significant Milestones

- 1996-** Douglas County approaches Canadian resource managers about potential collaboration.
- 1997-** Okanagan Basin Technical Working Group formed.
- 1999-** NPPC initiates overhaul of its annual funding planning process.
- 2000-** SOSCP created.
- 2001-** Okanagan Subbasin Planning Process approaches SOSCP about participating.
- 2002 -** First Okanagan Subbasin Plan will be completed

even if we completely walked away from the project at this juncture, the B.C. and Canadian government have tools at their disposal that will help them to be much better managers of the system for protecting these resources.”¹⁰²

CONCLUSIONS

The Okanagan story is being written each day. There is no single, identifiable process or organization that is responsible for coordinating conservation efforts throughout the basin. Instead, the needs of the Okanagan sockeye motivate the bulk of resource management work in the valley. This approach to management is poised for a transition, however, to an ecosystem management paradigm. The basin has the opportunity to establish a powerful coordinated ecosystem planning forum.

Implicit in the activity in the Okanagan Basin is the recognition that both the nations and tribes must take responsibility for the basin’s resources. As one Douglas County participant commented, “Sometimes watersheds need to be looked at as units, not necessarily just along the political boundaries. In order to do that...you have to ignore the international boundary.... I think the program we’ll develop will be biologically defensible, and that’s what we’re attempting to do.”¹⁰³ Ironically, this paradigm shift might come about by harmonizing protection measures for a *single* species.

Lessons

- **Where collaborators lack a shared sense of place, a focal species can make collaboration easier.** Modern scientific paradigms advocate for managing resources at the ecosystemic level, rather than solely for timber harvest or salmon recovery. Nevertheless, since transboundary collaborators often do not share a history, culture, or even a language, there is a potential disconnect about what a watershed means and should be used for. Until participants have a common sense of the place, ecosystem management will be difficult to implement. The Okanagan is an example of such an ecosystem. In this case, participants coalesced around sockeye salmon instead. A Douglas County project participant recalls, “There are groups on both sides of the border who are proponents for maintaining and restoring this particular stock of salmon and ensuring that it’s access to water is adequate for meet that objective and that creates an ongoing focal point for transboundary discussion and interest.”¹⁰⁴
- **Transboundary work requires patience and sincere commitment from participants.** Collaboration is predicated upon shared trust among participants. Trust takes time and repeated interaction to create especially when there is tension. Transboundary collaborators need to be acutely aware that these efforts need time to find common interests. One Douglas County participant recalls, “It seems practically trite, but discovering [common interests] is exciting. Once you realize that there is this commonality between all the players as far as something to do, now all of a sudden there is a lot of excitement and there is momentum that’s being generated. The project takes on a brand new meaning—it’s worth the effort.”¹⁰⁵

- **Participants in a transboundary collaborative effort must be able to take the perspective of other participants.** The importance of this stock of sockeye salmon differs among the First Nation, Canadian, and U.S. participants in this basin. This is the last remaining anadromous stock in the Canadian Okanagan, and a stock of significant cultural importance to the native peoples in the area. U.S. concern, however, is not at the level. Participants in either effort must be willing to understand that there are different, equally valid perspectives on the same issue.
- **Access to organizational resources is a key to success.** Like it or not, organizations that found themselves on volunteer time will travel a much more difficult path to success than a well-resourced group. Funding channels allow transboundary collaborators a method of predicating future work on common goals and priorities. Although most transboundary efforts will not operate in a situation where the majority of implementation dollars can be influenced at a distinct chokepoint, the ERPSS model is a powerful way to effect coordinated management. A participant in the ERPSS process sums it up well: “It all comes down to funding, it all comes down to money.”¹⁰⁶
- **International agreements that create transboundary channels of communication, treaties or otherwise, facilitate collaboration.** Transboundary work in the Okanagan benefits from the several international agreements that apply to its resources—that is, the PST and the CRT. The preexisting institutional infrastructure can eliminate the bureaucratic obstacles that frustrated the Douglas County project, as the ERPSS experience illustrates. Simply having some document or some established channel of communication with counterparts across the border can give collaborators the traction to gain momentum.
- **Transboundary collaborations should document progress and success to the greatest extent possible.** Documentation of an effort’s progress serves several positive functions. It can positively impact morale, which is especially important when problems seem too large to reconcile. It creates an institutional memory that allows newcomers to understand the origins of the effort and see how far the collaboration has come. Documentation also publicizes the collaboration and indirectly reaches out to other interested parties.

Interview Contacts

- **Shawn Black**, Field Associate (Okanagan Valley), The Land Conservancy of British Columbia
- **Judy Brock**, Chairwoman, Okanagan-Similkameen Conservation Alliance
- **Jay Cook**, Director of Science and Stewardship, The Nature Conservancy of Washington
- **Chris Fisher**, Fisheries Biologist, Colville Confederated Tribes
- **Mitch Friedman**, Executive Director, Northwest Ecosystem Alliance
- **John Harrison**, Public Information Officer, Northwest Power Planning Council
- **Kim Hyatt**, Okanagan Basin Technical Working Group Member, Department of Fisheries and Oceans
- **Rick Klinge**, Fisheries Biologist, Douglas County (Wash.) Public Utility District
- **Keith Wolf**, Director of Ecological Sciences at Golder Associates, the firm creating the process for ERSPP

ENDNOTES

- ¹ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000, and Kim Hyatt, fisheries biologist, Department of Fisheries and Oceans (Canada), personal communication, 21 November 2000.
- ² Kim Hyatt, personal communication, 21 November 2000, and Chris Fisher, fisheries biologist, Colville Confederated Tribes, personal communication, 15 February 2001.
- ³ Independent Scientific Group, "Return to the River: Scientific Issues in the Restoration of Salmonid Fishes in the Columbia River," *Fisheries*, (March 1999) 24:3, p. 10-19; Chris Fisher, personal communication, 15 February 2001; Rick Klinge, fisheries biologist, Douglas County (Wash.) Public Utility District, personal communication, 21 February 2001; and Kim Hyatt, personal communication, 21 November 2000.
- ⁴ Kim Hyatt, personal communication, 21 November 2000.
- ⁵ Okanagan Wildlife Notes, British Columbia Ministry of Environment Wildlife Program, <http://www.env.gov.bc.ca/sir/okanwld/index.html> (16 February 2001).
- ⁶ Kim Hyatt, personal communication, 21 November 2000.
- ⁷ *Conserving Canada's Desert Country: A Prospectus*, South Okanagan-Similkameen Conservation Program (Environment Canada) July 2000, p2.
- ⁸ *Conserving Canada's Desert Country*, p. 3.
- ⁹ *Conserving Canada's Desert Country: A Prospectus*, p2.
- ¹⁰ *Conserving Canada's Desert Country: A Prospectus* and "Okanagan Wildlife Notes."
- ¹¹ *Conserving Canada's Desert Country: A Prospectus* and "Okanagan Wildlife Notes."
- ¹² Kim Hyatt, personal communication, 21 November 2000, and Bonneville Power Administration, *FY2000 Subbasin Notes*, p. 248-256, <http://www.nwppc.org/attch1.htm> (21 March 2001).
- ¹³ Shawn Black, Project Director, The Land Conservancy (Okanagan Valley, B.C.), personal communication, 15 February 2001.
- ¹⁴ *Conserving Canada's Desert Country: A Prospectus*, p. 4.
- ¹⁵ Robert Autobee, *The Okanagan Project*, third draft, Bureau of Reclamation History Project (Denver, CO; Bureau of Reclamation, 1996), <http://www.dataweb.regis.do.usbr.gov/html/okanogan1.html> (22 January 2001).
- ¹⁶ Bruce A. Wilson, *Late Frontier: A History of Okanogan County*, (Okanogan, Wash.; Okanogan County Historical Society, 1990), 17, 38, as found in *Ibid.*
Kim Hyatt, personal communication, 21 November 2000, and Chris Fisher, personal communication, 15 February 2000.
- ¹⁸ Mitchell Friedman, Executive Director, Northwest Ecosystem Alliance, personal communication, 1 March 2001.
- ¹⁹ British Columbia Statistics, "Okanagan Valley: Population," <http://www.marh.gov.bc.ca/GROWTH/ovpop.html> (10 April 2001).
- ²⁰ Autobee, *op cit.*, and Chris Fisher, personal communication, 15 February 2001. Autobee is quoting historian Alvin M. Josephy, Jr.
- ²¹ Environment Canada, "Growth Management in the Okanagan Valley," <http://www.env.gov.bc.ca/sir/okanwild/index.html> (18 February 2001).
- ²² "Growth Management in the Okanagan Valley."
- ²³ Judy Brock, President, Okanagan-Similkameen Conservation Alliance (Penticton, B.C.), personal communication, 16 February 2001; "Okanagan Wildlife Notes"; and *Conserving Canada's Desert Country: A Prospectus*.
- ²⁴ "Okanagan Wildlife Notes."
- ²⁵ See Chad Skelton and Jim Beatty, "Snowy Park's 26,000 Hectares Joins a Huge Cross-Border Preserve," *Vancouver Sun*, 19 January 2001.
- ²⁶ Skelton and Beatty, *op cit.*
- ²⁷ Kim Hyatt, personal communication, 21 November 2000.
- ²⁸ "Canada's Endangered Desert Country," *Science & the Environment Bulletin*, Environment Canada, November 2000, http://www.ec.gc.ca/science/sandenov00/article2_e.html (3 March 2001).

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- ²⁹ Bonneville Power Administration, *FY2000 Subbasin Notes*, p. 248-256, <http://www.nwppc.org/attch1.htm> (21 March 2001).
- ³⁰ Autobee, *op cit*.
- ³¹ Shawn Black, personal communication, 15 February 2001, and Bonneville Power Administration. *FY2000 Funding notes*, http://www.nwppc.org/aiwp-2000/2000-6ahtm#_Toc479409616 (11 January 2001).
- ³² Bonneville Power Administration, *FY2000 Subbasin Notes*.
- ³³ NMFS spokesman Brian Gorman quoted in Associated Press, "Fisheries Threatened with Suit: Irrigators Want Water Policy Firmed Up with Federal Agencies in Okanagan County," *Seattle Post-Intelligencer*, 7 February 2001, <http://seattlep-i.nwsourc.com/local/fish073.shtml> (7 February 2001).
- ³⁴ NWPPC 2000 summary, <http://www.nwcouncil.org/library/2000/2000-19.htm>
- ³⁵ John Harrison, personal communication, 12 November 2000, and Sustainable Fisheries Foundation, *Towards Ecosystem Management in the Upper Columbia River Basin: Workshop Proceedings*, preliminary draft, October 1998, <http://www.nwppc.org/canada.htm> (12 March 2001).
- ³⁶ Keith Wolf, personal communication, 15 February 2001.
- ³⁷ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000.
- ³⁸ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000, and Conference Proceedings.
- ³⁹ Daniel D. Huppert, *Understanding the U.S.-Canada Salmon Wars: Why the Pacific Salmon Treaty has not Brought Peace*, (University of Washington, 1995) <http://www.wsg.washington.edu/salmon/huppertreport.html>, accessed on 20 January 2001.
- ⁴⁰ Daniel A. Waldeck and Eugene H. Buck, *The Pacific Salmon Treaty: The 1999 Agreement in Historical Perspective*, Report for Congress RL30234, Congressional Research Service (Washington, D.C.), 18 October 1999, <http://www.cnie.org/nle/mar-36.html>, accessed 22 January 2001, and Dr. Kim Hyatt, Canada Department of Fisheries and Oceans, personal communication, 21 November 2000.
- ⁴¹ Kim Hyatt, personal communication, 21 November 2000; John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000; and Keith Wolf, personal communication, 15 February 2001.
- ⁴² Chris Fisher, fisheries biologist for Colville Confederated Tribes, personal communication, 15 February 2001.
- ⁴³ See Gustafson, R.G., T.C. Wainwright, G.A. Winans, F.W. Waknitz, L.T. Parker, and R.S. Waples, *Status and Review of Sockeye Salmon from Washington and Oregon*, U.S. Department of Commerce, NOAA Technical Memo NMFS-NWFSC-33, (Washington, D.C.: Government Printing Office, 1997).
- ⁴⁴ Kim Hyatt, personal communication, 21 November 2000.
- ⁴⁵ Hyatt 21 November 2000.
- ⁴⁶ Rick Klinge, personal communication, 21 February 2001.
- ⁴⁷ Rick Klinge, personal communication, 21 February 2001, and Kim Hyatt, personal communication, 19 January 2001.
- ⁴⁸ Rick Klinge, personal communication, 21 February 2001.
- ⁴⁹ Kim Hyatt, personal communication, 21 November 2000.
- ⁵⁰ Rick Klinge, personal communication, 21 February 2001.
- ⁵¹ Kim Hyatt, personal communication, 21 November 2000.
- ⁵² Kim Hyatt, personal communication, 21 November 2000.
- ⁵³ Kim Hyatt, personal communication, 21 November 2000.
- ⁵⁴ Rick Klinge, personal communication, 21 February 2001.
- ⁵⁵ Rick Klinge, personal communication, 21 February 2001.
- ⁵⁶ Rick Klinge, personal communication, 21 February 2001.
- ⁵⁷ Kim Hyatt, personal communication, 21 November 2000.
- ⁵⁸ Rick Klinge, personal communication, 21 February 2001.
- ⁵⁹ Rick Klinge, personal communication, 21 February 2001.
- ⁶⁰ Kim Hyatt, personal communication, 21 November 2000.
- ⁶¹ Rick Klinge, personal communication, 21 February 2001.
- ⁶² Kim Hyatt, personal communication, 21 November 2000.

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- ⁶³ Barbara Findlay and Ann Hillyer, *Here Today, Here Tomorrow: Legal Tools for the Voluntary Protection of Private Land in British Columbia*, West Coast Environmental Law Research Foundation (Vancouver, Canada), January 1994, <http://www.wcel.org/wcelpub/51110/welcome.html>, (10 March 2001).
- ⁶⁴ Findlay and Hillyer.
- ⁶⁵ Science and the Environment Bulletin.
- ⁶⁶ Science and the Environment Bulletin.
- ⁶⁷ Conserving Canada's Desert Country.
- ⁶⁸ Conserving Canada's Desert.
- ⁶⁹ Science and the Environment Bulletin.
- ⁷⁰ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000, and "Background of the NPPC," Northwest Power Planning Council Homepage, <http://www.nwcouncil.org/about/background.htm>, accessed 9 March 2001.
- ⁷¹ Keith Wolf, personal communication, 15 February 2001
- ⁷² Keith Wolf, personal communication, 15 February 2001.
- ⁷³ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000, and "The Authority," Columbia Basin Fish and Wildlife Authority Homepage, <http://www.cbfwa.org/cbfwa.htm>, accessed 10 March 2001.
- ⁷⁴ "About the Authority," <http://www.cbfwa.org/cbfwa.htm>, accessed 10 March 2001.
- ⁷⁵ Keith Wolf, personal communication, 15 February 2001, and "About the Authority," <http://www.cbfwa.org/cbfwa.htm> (10 March 2001).
- ⁷⁶ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000, and Keith Wolf 2001.
- ⁷⁷ Keith Wolf, personal communication, 15 February 2001. For more information on the ERSPP, visit <http://www.cbfwf.org>.
- ⁷⁸ Keith Wolf, personal communication, 15 February 2001.
- ⁷⁹ John Harrison, Public Information Officer, Northwest Power Planning Council, personal communication, 12 November 2000.
- ⁸⁰ Keith Wolf, personal communication, 15 February 2001.
- ⁸¹ Keith Wolf, personal communication, 15 February 2001.
- ⁸² Keith Wolf, personal communication, 15 February 2001.
- ⁸³ Keith Wolf, personal communication, 15 February 2001.
- ⁸⁴ Chris Fisher 15 February 2001.
- ⁸⁵ Kim Hyatt, personal communication, 21 November 2000; Rick Klinge, personal communication, 21 February 2001; and Chris Fisher, fisheries biologist for Colville Confederated Tribes, personal communication, 15 February 2001.
- ⁸⁶ BPA FY2000 Funding notes, http://www.nwppc.org/aiwp-2000/2000-6ahtm#_Toc479409616, accessed on 11 January 2001.
- ⁸⁷ Chris Fisher 15 February 2001.
- ⁸⁸ Keith Wolf, personal communication, 15 February 2001.
- ⁸⁹ Kim Hyatt, personal communication, 19 January 2001, and ERSPP participants contact list, no date.
- ⁹⁰ Keith Wolf, personal communication, 15 February 2001.
- ⁹¹ Kim Hyatt, personal communication, 21 November 2000; Okanagan/Similkameen Subbasin Summary: January 2001 Draft, and Keith Wolf, personal communication, 15 February 2001.
- ⁹² Okanagan/Similkameen Subbasin Summary: January 2001 Draft, prepared for the Northwest Power Planning Council by the Okanagan Technical Advisory Group.
- ⁹³ Keith Wolf, personal communication, 15 February 2001, and Kim Hyatt, personal communication, 19 January 2001.
- ⁹⁴ Keith Wolf, personal communication, 15 February 2001.
- ⁹⁵ Keith Wolf, personal communication, 15 February 2001.
- ⁹⁶ Rick Klinge, personal communication, 21 February 2001.
- ⁹⁷ Rick Klinge, personal communication, 21 February 2001.
- ⁹⁸ Kim Hyatt, personal communication, 21 November 2000.
- ⁹⁹ Kim Hyatt, personal communication, 21 November 2000.
- ¹⁰⁰ Rick Klinge, personal communication, 21 February 2001.
- ¹⁰¹ Rick Klinge, personal communication, 21 February 2001.

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- ¹⁰² Rick Klinge, personal communication, 21 February 2001.
¹⁰³ Rick Klinge, personal communication, 21 February 2001.
¹⁰⁴ Kim Hyatt, personal communication, 21 November 2000
¹⁰⁵ Rick Klinge, personal communication, 21 February 2001.
¹⁰⁶ Keith Wolf, personal communication, 15 February 2001.