Assessing the Feasibility of Policy Prescriptions in the Salmon 2100 Project

by

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I. Introduction

Wild salmon populations and runs are in an overall decline in the Pacific Northwest, a region in which salmon are a part of the culture and cuisine, and where sport, commercial and tribal fishing is an integral part of life for many. In the region, populations and runs of Chinook (*Oncorhynchus tshawytscha*), Chum (*Oncorhynchus keta*), Coho (*Oncorhynchus kisutch*), Sockeye (*Oncorhynchus nerka*), and Steelhead (*Oncorhynchus mykiss*) have been listed as threatened and/or endangered under the Endangered Species Act (ESA), in the U.S., and/or the Species at Risk Act (SARA), in Canada, in the years 1991-2007. Salmon recovery efforts in the Pacific Northwest have proved costly; the state of Washington alone is anticipating spending over $2 billion on salmon recovery efforts over the next 10-30 years (Governor's Salmon Recovery Office). Quite aside from this large sum of money used to try to keep salmon populations and runs from declining, considerable time and brainpower have gone into solving the problem of salmon population and run declines. The results have been decidedly mixed and the future of wild Pacific salmon remains uncertain.

With the large amounts of money spent on the issue it is not surprising that questions arise about whether or not we are tackling the salmon recovery problem in an effective way. A key question that remains is: what should and can be done about the decline of wild salmon populations and runs in the Pacific Northwest? As a society "nearly *everyone* favors salmon recovery in the *abstract*, but individuals differ greatly over what they are willing to sacrifice to restore salmon runs" (Lackey, 2002: 225). For many members of the public the issue of salmon recovery is just one of a great many issues that demand their attention and resources. When it comes to funding salmon recovery, they have to decide how much salmon recovery matters to them within the context of all of the other programs and sources clamoring for their attention and for funding (e.g. schools, domestic violence and homeless shelters, services for seniors and children, health care, drug rehabilitation programs, national defense, immigration, etc.).

The Pacific Northwest has seen an overall decline in salmon runs/salmon populations since the 1850s (Lackey, 2002: 224). For example, in the Columbia Basin by 1909, 66 years after the "Great Immigration" of white settlers to the Pacific Northwest, the salmon harvest had declined more than 40% from an estimated 41 million pounds harvested annually to about 24 million pounds (Blumm, 2002). Debate over what policy measures to take to address the declining salmon populations in the region have been continuous since the declines were noted. Most recently there has been considerable discussion and skepticism about whether what we are doing is working to address the declines. The national government as well as many state, county, tribal, and city governments have spent considerable sums of money over a long period of time, and implemented a variety of recovery methods and yet we see numbers among some wild salmon populations declining still.

As a fisheries scientist, Dr. Robert Lackey of the US EPA Western Ecology Laboratory in Corvallis, Oregon had been involved in both the research and policy-making of salmon recovery in the Pacific Northwest for the past 20+ years. As he describes in the Preface to *Salmon 2100: The Future of Wild Pacific Salmon (Salmon 2100)*, in contradiction to the positive statements made by scientists and policy makers in public about the possibility of restoring salmon runs,

> "the tone around the table at the end of the evening was decidedly different...the limitations to wild salmon recovery were not primarily scientific…instead, they recognized that *dramatic policy changes* must be implemented if the long-term downward trend in wild salmon abundance was to be reversed…" (Lackey, Lach, & Duncan, 2006: ix, emphasis in text).

With these experiences in mind, Lackey contacted a colleague, Dr. Denise Lach, then Co-Director of the Center for Water and Environmental Sustainability at Oregon State University, about ways to bring new thinking about salmon recovery policy to the table. Together, they approached more than 24 professionals involved in salmon recovery efforts: scientists, policy analysts, advocates, and academics. Each was asked to address the question, "what is it really going to take to have wild salmon populations in significant, sustainable numbers through 2100?" The participants were asked to develop a comprehensive policy prescription that they believed would be our best bet in recovering wild salmon in the Pacific Northwest (defined as Southern British Columbia, Washington, Oregon, Idaho, and Northern California).

Many questions were raised after the completion of the Salmon 2100 project including what should be done or will be done with all of the ideas and information presented in the book? Will it have an impact on salmon/natural resource policy, or was it just an interesting academic exercise? Is the Salmon 2100 project a valid policy making shortcut that could be used to brainstorm solutions to other natural resource challenges? What no one seemed to ask – at least in public – was whether the proposed prescriptions were even viable alternatives to extant policy and on-going activities. This paper analyzes the feasibility of the policy prescriptions provided by the authors using the social construction framework as developed by Schneider and Ingram (1990; 1993; 1997). This analysis is based on the policy prescriptions themselves as published in *Salmon 2100* as well as interviews conducted with 24 of the authors and 3 observers of the process.

The Salmon 2100 project, recently published in book form, has raised several questions about the policy making process specific to natural resource issues. Questions abound regarding who should be developing and writing natural resource policy, as well as what role scientists should play in the process. I analyzed the policy prescriptions presented in *Salmon 2100*, using the Social Construction Framework to determine whether any of the policy prescriptions presented in the book are feasible in the real world**.** In interviews with many of the participants in the Salmon 2100 project, and a few outside observers, I looked for things to do differently and things to

do the same in possible future projects where potential solutions to natural resource challenges are developed. Many of the policy prescriptions presented in the Salmon 2100 project are political non-starters from a policy perspective. A few participants have developed policy prescriptions that use a combination of policy tool(s), target populations and benefits and burdens that could pass the "laugh test" in the policy arena.

After presenting a brief background of salmon recovery efforts, what we know about science and policy efforts is discussed, a description of the social construction framework is provided, and the methods used in this analysis are laid out. Results from the analysis are discussed in some detail and recommendations are included in a brief conclusion.

II. Literature Review

IIa. Salmon Recovery Policy in the Pacific Northwest: A Brief History

The precursor to the current Endangered Species Act (ESA) of the United States was passed in 1966. It was amended, into the ESA that we know today, and signed into law by President Richard Nixon in 1973. The purpose of the ESA was to develop tools with which to preserve at-risk and endangered species in part through the conservation of the habitats on which they depended (Ferrey, 2004: 541). The ESA was Congress' recognition of the importance of not losing species to extinction. Section 7 of the ESA requires the various federal agencies to consult and cooperate with each other to ensure that no federal actions are taken that would jeopardize a species or its "critical habitat".

Section 9 of the ESA makes private parties liable for destroying the habitat of a threatened or endangered species, and for the "take" of individual members of a threatened or endangered species. In the context of the ESA, the verb "to take" includes conduct on the part of a private individual that could actually injure a threatened or endangered species; it is defined in the ESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. Section 1532(3)(19)) (Ferrey, 2004: 543). Section 4 of the ESA is the section that deals with the listing of species or specific populations of species as "threatened" or "endangered". As a part of the listing process a species is proposed for listing and, in order to go forward the species must meet one of the following five requirements: 1) present or threatened destruction, modification or limiting of its habitat or range; 2) overutilization for scientific, commercial, educational or recreational purposes; 3) predation or disease; 4) inadequate existing regulatory mechanisms; or 5) other manmade or natural factors that affect its continued existence. When a species is listed any habitat that is critical to its survival must be listed as well. Under the ESA the "best available science" must be used in determining the status of a species proposed for listing (Ferrey, 2004). A recovery plan must be developed for each listed species, with the ultimate goal being the delisting of the species. The act of

delisting indicates that the species is no longer in danger of near term extinction and therefore no longer requires the protection of the federal government.

While the ESA is considered by many to be the primary protector of species listed as threatened or endangered under it, the act does allow a considerable amount of administrative discretion on the part of the agencies overseeing the recovery. It has been suggested that the ESA is an inflexible law and that it does not operate within biological and policy reality. Parties who do not agree with ESA decisions about salmon recovery made by the National Marine Fisheries Service (NMFS), for example, have used the Clean Water Act (CWA) to require changes in water quality for salmonid spawning and rearing habitat. One of the provisions of the CWA is providing "fishable" waters in the United States (Blumm, 2002: 25).

In contrast to the ESA protection of "anything living or a part thereof" the Species at Risk Act (SARA) of Canada has a threefold purpose. SARA was created to protect indigenous Canadian species, subspecies and distinct wildlife populations from going extinct, to afford threatened and endangered species the opportunity to recover, and to promote the responsible management of other species so that they do not become threatened or endangered (SARA 2007). The SARA requires that the "best available knowledge" be used to determine the status of a species. In this way the SARA differs from the ESA which requires the use of the "best available science" in making its listing determinations. The SARA includes more than "science" in its listing procedure. The act protects threatened and endangered species through the use of prohibitions, and uses compensatory measures to ensure that individuals and businesses are not unfairly punished by the imposition of critical habitat prohibitions. The responsibility for protecting the wildlife of Canada is shared among the various governments in the country, including the Aboriginal governments (SARA 2007). As with the ESA the ultimate goal of the SARA, with regard to listed threatened and endangered species, is to allow them the opportunity to recover so that they can be removed from listing.

Runs of Chinook salmon *(Oncorhynchus tshawytscha)* were listed as threatened, under the ESA from 1992-1999. Those runs of threatened Chinook range from the coast of California to Puget Sound in Washington and the Snake River in Idaho. The winter run of Chinook on the Sacramento River in California was listed as endangered in 1990, while the spring run on the upper Columbia River in Oregon had Chinook listed as endangered in 1999 (U.S. Department of Fish and Wildlife). The Okanagan population of Chinook salmon was listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2005. The COSEWIC is the governmental body that identifies and assesses the status of species and operates within the SARA. The status was downgraded to "threatened" in 2006 and there are no plans, at this time, to list the population under the SARA (COSEWIC 2007, SARA 2007). Winter runs of Chum salmon *(Oncorhynchus keta)* on the Columbia River in Oregon and summer runs of Chum at the Hood Canal were listed as threatened under the ESA in the summer of 1999 (U.S. Department of Fish and Wildlife). Coho salmon *(Oncorhynchus kisutch)* on the central California coast were

listed as endangered under the ESA in the winter of 1996, and then in the summer of 1997 the California and Oregon populations of Coho were listed as threatened. In 2005 the Coho run on the lower Columbia River in Oregon was listed as threatened (U.S. Fish and Wildlife Service). In 2002 the Coho population of the interior Fraser River were listed as endangered by COSEWIC (COSEWIC 2007). At this time there are no plans to list the population under the SARA (SARA 2007). Sockeye salmon *(Oncorhynchus nerka)* on the Snake River in Idaho were listed as endangered "wherever stock found" under the ESA in 1992. Sockeye were listed as threatened in Ozette Lake, Washington in 1999 (U.S. Department of Fish and Wildlife). In 2003 the Cultus Lake population of Sockeye were listed as endangered by the COSEWIC, but a determination was made that due to the socio-economic importance of the population to communities in coastal British Columbia, Canada, it will not be listed under the SARA (COSEWIC, 2007; SARA, 2007). The Sakinaw Lake population of Sockeye was listed as endangered by the COSEWIC in 2005 and, in 2006 the SARA listed the population as endangered (COSEWIC, 2007; SARA, 2007). Runs of Steelhead *(Oncorhynchus mykiss)* were listed as threatened under the ESA in Oregon in the late 1990s and 2000, in Idaho in 1998, in northern California in 2000, and in Washington in 2007 (U.S. Fish and Wildlife Service).

Salmon policy and debate over salmon policy in the Pacific Northwest has been around since the late 19th century. Initial attempts at harvest regulation on the part of states were poorly coordinated and poorly enforced, when they were enforced at all. State regulations throughout the late 19th and early 20th centuries focused solely, but ineffectively on limiting harvest, but failed entirely to place any restrictions on actions that destroyed salmon habitat. Harvest was first limited by making most rivers, the traditional tribal fishing sites, off limits, while not limiting salt water fishing, which was dominated by white-run industrial fishing operations which unselectively harvested massive numbers of salmon (Blumm, 2002). The thinking of the time was that any losses among wild salmon could be made up for with artificial propagation. The first hatcheries in the region were built in the early 1870s but by the early 1900s salmon harvest declines had worsened, rather than improved (Blumm, 2002). The 1930s saw the building of the first of many large dams in the region. The majority of the major dams in the region were built by the federal government which saw the very anthropocentric "benefits" of providing electricity for the aluminum industry during the war, providing jobs for returning WWII soldiers, and irrigating agriculture at a low cost initially for farmers. These dam-building projects were widely supported by the local population because of the economic development and jobs they created. For salmon the dams entirely blocked access to spawning grounds, turned the downstream passage of juveniles into a treacherous journey with high losses, and removed the efficiency of the spring freshet for transport to the ocean (Blumm, 2002).

The Mitchell Act was passed by Congress in 1938. Its aim was to offset the massive losses of salmon from dam building, though the federal funding of hatcheries. According to Blumm, "[h]atcheries were perceived as the way to preserve the salmon runs without losing the benefits accompanying maximum hydroelectric development"

(Blumm, 2002: 10). The Mitchell Act funded about 40 hatcheries in the region for fifty years at a cost of about $200 million. In the midst of the dam construction era U.S. Supreme Court Justice William O. Douglas overturned a license granted by the Federal Power Commission for the construction of the High Mountain Sheep Dam in Idaho. Eight years later Congress created the Hells Canyon National Recreation Area which required that the rivers, as important fish and wildlife habitat, remain free-flowing and banned any dam construction.

Pacific Northwest salmon policy in the 1970s was primarily focused on the allocation of harvest rights. The tribes took the states to court over harvest regulations and treaty rights on numerous occasions. The courts required the states to reallocate salmon harvests to maintain the commitment to the treaties with the tribes that afforded them half of the harvestable salmon heading to the tribes' traditional fishing sites (Blumm, 2002). This harvest reallocation mandate from the courts forced the states to reopen river and estuary fishing sites that had been closed for decades. It also required a more complete understanding of the life-cycle of the salmon as well as each salmon run's migration patterns. This was the beginning of modern salmon management, and the tribes became co-managers as the court determined was their right.

The goal of the Northwest Power Act (NPA), passed in 1980, was to include salmon "conservation" to a greater degree and make salmon welfare and fishermen concerns, on par with the goals of the dams. The Northwest Power Planning Council (NPPC) was the interstate agency that would be the instrument that used the "best available" science to make the regulatory and management decisions to strike this balance (Blumm, 2002). The first NPPC program came out in 1982 and, though it did not persuade dam operators to adjust river flows to the degree that they hoped, the statute did launch the concept of salmon restoration as a regional goal, though restoration was driven by anthropocentric goals. Again, a lack of enforcement meant that federal water management agencies could interpret the NPPC's programs as suggestions rather than requirements. The other major salmon policy of the decade was the 1985 Pacific Salmon Treaty, which addressed the issue of interception fishing in the Pacific Ocean. The U.S. and Canada developed a joint management plan in order to address the issue of ocean harvests intercepting salmon that would have returned to other jurisdictions for spawning (and harvest). While the results of the treaty did not really address the problem of interception fishing or the conservation of salmon habitat it was a key step in approaching salmon management in a coordinated regional manner.

The ESA was the focus of salmon policy in the 1990s. In 1989 the Sacramento River winter Chinook was the first salmon run to be listed as a "threatened species" under the ESA. Petitions seeking the listing under the ESA of salmon runs around the region were filed. When an article published in Fisheries made it clear that there were not just a few runs or particular basins in danger of extinction, plans to protect salmon were made while the ESA listing process, a somewhat cumbersome and slow process, ran its course. The mid-1990s saw the traditional technical fixes in salmon

management come under attack from the NPPC's independent scientific group, which had been created to evaluate the science behind the NPPC's program. The independent scientific group recommended that what would help salmon recover would be for salmon to have access to more miles of free-flowing rivers. Calls for dam breaching in the Pacific Northwest continue today, and significant political opposition to dam breaching remains.

Salmon policy at the beginning of the 21st century is focused on the management of ecosystems, regardless of state lines, national boundaries, and, in a few cases, property ownership. The federal agencies have developed a Columbia basin-wide recovery plan that is supposed to combat harvest, habitat, hatcheries and hydropower production; the four biggest causes of mortality among salmon (Blumm, 2002). Questions do arise about how effective ecosystem management will be, how long political opposition to dam breaching will persist, and whether attempts to manage ecosystems without breaching dams will prove to be effective or just another salmon policy disappointment. And so the issue of salmon ends up as what Lackey, et al. call a "policy conundrum: [in which] salmon ostensibly enjoy universal public support, but society collectively has been unwilling to arrest their decline, much less restore depleted runs" (Lackey, Lach, & Duncan, 2006: 15).

IIb. The Role of Science in the Policy Making Process

Along with this long history of salmon policy in the Pacific Northwest, there is the debate about the role of science and the scientific community in the natural resource policy making process. According to White and Hall, trained scientists and members of the general public have very different ways of looking at and addressing natural resource issues and problems. Built into the training of scientists is a tendency to "frame policy issues as matters of systematic, objective empirical data… [and] in so doing, uncertainty or disagreement is 'filtered out'' (White & Hall, 2006: 306). On the other hand, citizens rely primarily on their own personal experience to gain knowledge about or even develop an interest in a particular natural resource policy issue. This knowledge gained from personal experience influences their behavioral choices and their decision to participate in a particular policy issue. This reliance on personal experience can run counter to scientific evidence or theories.

This claim by White and Hall (2006) is echoed by Clark, et al. (2002) when they say that perceptions about credibility are typically based on perceived expertise, which is supported by the inclusion of scientists in policy making. The inclusion of salmon "advocates" in the Salmon 2100 project – renamed after non-participating fish biologists challenged the scientific credentials of some of the authors – reflects how only those with appropriate "scientific credentials…can enhance credibility within a scientific community" (Clark, et al. 2002: 27). While involving stakeholders who are non-scientists in the policy process may foster saliency and acceptability among the public, it may also lower the credibility among both the scientific community and general population of the decisions made through non-scientific methods with non-scientific information.

It has been noted that "the involvement of science in policy has often exacerbated the political polarization of controversies, led to the deconstruction of expert knowledge, and reduced scientists' credibility because their involvement is seen as ritualistic or manipulative" (White & Hall, 2006: 308). The neutrality and the objectivity of science itself can come into question when scientists get involved directly in policy making as advocates for particular policy options. Members of the public may be concerned that individual scientists' agendas may introduce bias and subjectivity into scientific results used in policy making. This runs counter to our long held belief that science is objective and neutral, and scientists are objective and dispassionate, unswayed by social, political, and religious pressures.

Another issue is that, "the authority and credibility of science are widely acknowledged throughout American society, resulting in widespread public belief in the ability of science to solve problems" (White & Hall, 2006: 307). As a society we tend to push for more science, more research, more facts, presumably in the hope that the information provided by science/scientists will help policy makers and citizens make difficult decisions about natural resources. This raises questions about where the scientist's role stops and the policy maker's role begins.

The participants in the Salmon 2100 project fall into two distinct groups: those with a background in fisheries science, and those without a background but involved in salmon recovery as policy makers, practitioners or concerned citizens. While Americans put a lot of stock in science to solve natural resource problems, the question that remains is whether or not the recovery of wild Pacific Salmon is a scientific challenge or a social challenge. Interestingly, most of the participants in the Salmon 2100 project, even the scientists, believed that social change was the most important factor in future recovery efforts of wild Pacific salmon (Lackey, et al., 2006a: 4).

IIc. The Social Construction Framework

From among the many frameworks and analysis tools available to social scientists I chose to use the Social Construction Framework, developed by Anne Schneider and Helen Ingram. They define social constructions as "stereotypes about particular groups of people that have been created by politics, culture, socialization, history, the media, literature, religion, and the like" (Schneider & Ingram, 1993: 335). These stereotypes, as they call them, create a positive construction or perception of some groups or "target populations" and leave other groups with a negative construction or perception. Table 1 describes the four target populations that are defined by their social construction and level of political power and influence.

In the social construction framework individuals and populations can be characterized in four ways: advantaged (politically powerful and positively constructed), contenders (politically powerful and negatively constructed), dependents (politically weak and positively constructed), and deviants (politically weak and negatively constructed). It should be noted that these categories are not static and an

individual or target population may fit into more than one category depending on the context in which they are being considered and the individual's affiliation with different groups and organizations. Social constructions are developed and reinforced in mass media, religion, education, literature and the arts, as well as by social scientists conducting research (Schneider & Ingram, 1997).

Table 1: Social Constructions and Political Power

		Constructions	
Power		Positive	Negative
	Strong	**Advantaged**	**Contenders**
	Weak	**Dependents**	**Deviants**

The distribution through public policies of society's benefits and burdens is based upon this matrix. Schneider and Ingram argue that those groups which are constructed as being politically weak (dependents and deviants) receive less than their share of beneficial policy, while advantaged groups/populations receive more than their share of beneficial policy. They posit that the reverse is true of social burdens, where, "[b]urdens will become oversubscribed especially to deviants and undersubscribed to the advantaged groups" (Schneider & Ingram, 1993: 337).

Schneider and Ingram state that "*[a]dvantaged* groups are those with considerable resources to influence policy (size, voting strength, wealth, propensity to mobilize, for example) who also carry positive social constructions…[and] the single most salient construction…is whether the group is considered to be 'meritorious' and 'deserving'" (Schneider & Ingram, 1997: 108). This sense of entitlement, on the part of those groups categorized as advantaged and the perception by the rest of society that advantaged groups are somehow entitled to what they receive has a great influence on the allocation of burdens and benefits.

Target populations categorized as contenders are, according to Schneider and Ingram, "powerful but constructed as greedy, not caring about the effects of their actions, and not deserving of their exalted status" (Schneider & Ingram, 1997: 108). In the context of salmon recovery policy the groups that I think fit this description are those groups, companies and organizations that often rely on the same resources that are essential for salmon survival, or for whom some part of their operations damages the salmon's habitat. These target populations are seen to be competing with salmon for water, land (habitat), or making money through damaging salmon habitat through pollution, destruction, or extreme alteration. These groups are, despite their negative construction, politically powerful and economically important to the region.

Dependent target populations are those with little political influence but a positive construction. These groups are often considered "deserving" but their actions are not tied to the advancement of the common good in the way that the actions of advantaged actors are. Schneider and Ingram point out that "even the advocacy groups that have emerged on [the dependents'] behalf tend to be far less powerful than those who work on behalf of business, senior citizens, farmers, the military, and so on" (Schneider & Ingram, 1997: 109).

Lastly, target populations that can be categorized as deviant are politically weak and are typically constructed as "violent, dangerous, threatening, and deserving to be punished" (Schneider & Ingram, 1997: 109).

This framework was used to assess the viability of the Salmon 2100 policy prescriptions by analyzing how each prescription assigns benefits or burdens to different target populations. Schneider and Ingram suggest that "different kinds of target populations usually will be associated with particular kinds of goals, rules, tools, rationales, and assumptions" (Schneider & Ingram, 1997: 104). Schneider and Ingram (1997) suggest that if policies are designed to burden advantaged populations, they are likely to be resisted and/or defeated. Instead, advantaged target populations are more likely to be favored with policies that provide incentives, capacity building, learning opportunities, or even symbolic efforts that require little or no change of advantaged groups' behaviors. Target populations categorized as contenders, on the other hand, put policy makers in a tough spot; they are powerful enough to apply political pressure and thus avoid really burdensome policies, but they are not popular enough to garner beneficial policies directly (Schneider & Ingram, 1997). Because of this powerful yet unpopular position, contenders are likely to be on the receiving end of burdensome policies that are symbolic in nature, and beneficial policies that use relatively opaque incentives to obscure the fact that contender groups are benefiting. Because of their relatively powerless position, dependents are typically the recipients of beneficial policies that are primarily symbolic in nature (Schneider & Ingram, 1997). Burdensome policies directed at dependent populations mostly use authority tools and are often couched in terms that make them seem beneficial to dependent groups.

III. Methods

    IIIa. The Salmon 2100 Project

      Salmon 2100 is made up of 23 essays by 33 authors, who range from professional fisheries scientists to academics to community organizers and salmon advocates. Some of the authors belong to several of these categories and several are retired though still active in the community of people who have dedicated their life's work to the study of salmonids. Almost all of them have shaped a significant portion of their professional careers around salmon recovery in one way or another. There is no question that these individuals are dedicated to the continued presence of Pacific salmon in the Pacific Northwest.

      This unity of purpose should not give the impression that all of the authors agree about how to accomplish salmon recovery; everything about how to maintain populations of wild Pacific salmon in the PNW is up for discussion and debate in this book. Nor should it give the impression that all of the authors were pleased with the inclusion of all of the other authors in the book. Some rankled at the inclusion of non-fisheries biologists, while others felt that there were not enough different backgrounds and perspectives represented.

      The authors were charged with developing a comprehensive policy prescription to answer the following question: "What specific policies must be implemented in order to have a high probability of sustaining significant runs of wild salmon through 2100 in California, Oregon, Washington, Idaho, and southern British Columbia?" The editors purposefully did not define the terms "wild," "significant" and "sustainable" because these terms with regard to salmonids are the subject of continuing debate and because they become policy preferences when they are defined.

      In the book, the editors present four drivers of wild salmon decline that they believe will shape the future for wild salmon in the Pacific Northwest through this next century. The four "core policy drivers" are: 1) the rules of commerce; 2) the increasing scarcity of key natural resources; 3) regional human population levels; and 4) individual and collective preferences. The core policy drivers were presented to the chapter authors as a possible framework on which they could develop their policy prescriptions for wild salmon recovery in the region. The authors did not have to agree with the core policy drivers, but the framework did serve as a starting point, something to which they could respond in developing their policy prescription.

      Salmon are not the only species or natural resource affected by the rules of commerce. When, as a local, national, and global society we focus on economic efficiency, low-cost production, and when we see growth and progress as inherently "good" and/or "necessary" many parts of the environment are affected. Economic efficiency is messy and continuous growth in the economy is, to some, unrealistic in a world of finite natural resources. While most people would likely be unwilling to pay extra for "salmon-friendly" products, there has been successful marketing of "green"

and "low-carbon" products in the United States, though the overall economic impact is fairly minor.

One of the "key natural resources" that will be increasingly scarce in the coming century is high quality water. We have already seen conflict arise between salmon advocates and farmers in the Klamath basin when there is not enough water to meet all of the needs. The editors make it clear that they "are not arguing that allocating water for salmon is more important than allocating it for alternative uses" but they also raise the questions "as competition for scarce water continues and becomes more intense, how will advocates for wild salmon fare relative to advocates for competing priorities such as drinking, irrigation, manufacturing, generating electricity, recreation, or any of a thousand other water needs?" (Lackey, Lach, & Duncan, 2006: 62-63).

Estimates for the projected population of the Pacific Northwest vary, but most fall between 50 and 100 million people. Anywhere from about quadruple the current population, to an almost seven-fold increase in the human population. It seems reasonable to speculate that the increases in the human population will continue to be concentrated in the urban areas of the Willamette Valley and the Interstate-5 corridor up into southern British Columbia. It also seems reasonable to expect that the vast majority of those people will want water and electricity coming into their homes and that they will need schools for their children to attend, transportation of some sort, and many of them will want to live in a single-family dwelling rather than an apartment or condominium. Even if society chooses not to increase the urban growth boundaries, and essentially force people to live closer and closer together, people still require various utilities, waste will be produced and will need to be disposed of, and transportation will still be an issue. "All options must, however, be grounded in the near certain reality that the human population of the Pacific Northwest will be *several* times larger before the end of the 21st century, even though the *overall* population of North America may well level off at "only" twice its current level. The generally inverse relationship between the level of human activity and human abundance has been widely demonstrated" (Lackey, 2002: 227).

This discussion of human population growth in the region is closely tied to the fourth core policy driver presented by the editors: individual and collective preferences have a huge impact on the environment; this impact will only increase as the regional population increases exponentially over the next century. As the editors point out "it is society's collective behavior…that provides the best indication of the relative priority of wild salmon as a public objective" (Lackey, Lach, & Duncan, 2006: 66). Whether or not society as a whole is aware of it, we, as a society, are constantly making choices that impact wild salmon. Often the impact on salmon is not explicitly laid out when we are buying something, choosing mass-transit over driving a car, or voting on a ballot measure that may indirectly affect salmon. It is naïve to think that the majority of Americans are paying close attention to how their life choices are impacting wild salmon and, as the editors point out, "it is naïve…to consider salmon recovery as anything but one potentially minor element in a

constellation of competing wants, needs, and preferences, many of which are mutually exclusive" (Lackey, Lach, & Duncan, 2006: 68).

IIIb. Interview and Document Analysis Methodology

In order to analyze the feasibility of the policy prescriptions of the Salmon 2100 project using the social construction framework, I began by reading the entire 627-page book. I also conducted semi-structured, in-depth interviews with the editors and authors about their experience working on the book. The two main goals were to find out if any of the policy prescriptions presented in the book had a chance of being adopted and implemented, and to learn what the experience had been like for the participants.

I was able to contact and interview 24 of the 33 authors. Of those that I was not able to interview, two I was unable to contact, one is deceased, one politely declined to participate, and five did not respond to my persistent and varied attempts to get in touch with them. While a few of the authors were interviewed in person, the majority of the interviews were conducted over the telephone.

Geography played a role in my inability to interview many of the authors in person. About half of the authors live in the state of Oregon. The others live in Washington, Idaho, California, and the Canadian provinces of British Columbia, and Quebec. Another factor was the reality that all of the authors are busy people, and speaking on the telephone took up less of their time than did meeting for a face-to-face interview. Exceptions were made for two authors who are hard of hearing; their interviews were conducted via the postal system whereby I mailed them the interview questions and they mailed me their responses. Despite some minor protestation that they could not participate if it was going to take up a considerable amount of time, I received very lengthy, complete answers to my questions from the majority of the interviewees.

The interviewees were informed that their confidentiality would be maintained to the best of my abilities, and that I would disguise their identity in my writing. Several of the authors I was able to interview stated that they would like to have their names attached to their responses and that they believed it was important that people's names be attached to their statements. They understood that a part of the IRB protocol requires that I maintain the confidentiality of my contacts and interviewees. I will reference the authors by name throughout the essay only when I am directly quoting from their policy prescription in the book.

The interviews consisted of ten open-ended questions (see Appendix), which attempted to determine the authors' experience in participating in the Salmon 2100 project, their thoughts on the results of the project, and what, if anything, they learned in the course of participating in the project. The interviews varied considerably in length with the longest running almost three hours and the shortest taking only 20 minutes.

None of the authors I interviewed refused to answer specific questions, although several neglected, either consciously or unconsciously, to answer part or all of a question in the course of the interview. It should also be noted that none of the interviewees were offered any sort of compensation for participating in my research.

Once the interviews were complete, Schneider and Ingram's social constructions and policy tools were used to analyze the policy prescriptions (1990; 1993). I began by characterizing the target populations that would be affected by each of the policy prescriptions as one of the four social construction framework categories: advantaged, contenders, dependents or deviants. Each target population was put into only one category (see Table 2).   The target populations are arranged alphabetically within their social construction framework category, and their ordering does not in any way indicate degrees of importance or influence. It should be noted that the target populations were specifically categorized in the context of salmon recovery policy and not in the context of any other policy.

According to Schneider and Ingram "*advantaged* groups are those with considerable resources to influence policy (size, voting strength, wealth, propensity to mobilize, for example) who also carry positive social constructions…[and] the single most salient construction…is whether the group is considered to be 'meritorious' and 'deserving'" (Schneider & Ingram, 1997: 108).   This sense of entitlement, both on the part of those groups categorized as advantaged, and in the treatment received from the rest of society has a great influence on the allocation of burdens and benefits. Despite the fact that "people care intensely not only about what they receive from government, but [also] what others are receiving as well and why" (Schneider & Ingram, 1997: 107), providing benefits to advantaged groups in policy is rarely contested. According to Schneider and Ingram "[t]he easiest problems for elected officials to address will be those for which advantaged segments of the population receive benefits that can be logically connected with public interest goals" (Schneider & Ingram, 1997: 115). The main reason, that advantaged groups are undersubscribed burdensome policies is because of their ability to wield political power, mobilize others, and convince others that policies that burden them are infeasible "or even repellent" (Schneider & Ingram, 1997: 115). On the rare occasion that advantaged populations are burdened by some policy goal, it is usually the case that the benefits of the policy will be gained by another advantaged group. This situation is often framed as an issue of fairness wherein one advantaged group must sacrifice for the benefit of another advantaged group, which ultimately is beneficial to the whole of society in some way.

Target populations categorized as contenders are, according to Schneider and Ingram, "powerful but constructed as greedy, not caring about the effects of their actions, and not deserving of their exalted status" (Schneider & Ingram, 1997: 108). In the context of salmon recovery policy the groups that I think fit this description are those groups, companies, and organizations that often rely on the same resources that are essential for salmon survival, or for whom some part of their operations damages the salmon's habitat. These target populations are seen to be competing with salmon for water, land (habitat), or making money through damaging salmon habitat through

pollution, destruction, or extreme alteration. These groups, despite their negative construction, are politically powerful and economically important to the region. The public generally opposes providing contenders with direct benefits, because it seems unfair to reward groups that are perceived as overly powerful and overly privileged. Schneider and Ingram point out that "[c]ontenders usually have sufficient control to blunt the imposition of burdens, but not enough power to gain visible benefits unless they are able to disguise, obfuscate, and mislead the media and the public. Statutes directed toward these contending groups are likely to be complex, vague, and deceptive" (Schneider & Ingram, 1997: 118). In order to fulfill the public's desire for fairness, policy makers must make it appear that they are burdening contending groups, and in order to not incur the economic and political wrath of the powerful contending groups, policy makers must write policies that incur few, if any actual burdens on contenders, and provide actual, if hidden, benefits.

Dependent target populations are those with little political influence but a positive construction. These groups are often considered "deserving" but their actions are not tied to the advancement of the common good in the way that the actions of advantaged actors are. Schneider and Ingram point out that "even the advocacy groups that have emerged on [the dependents'] behalf tend to be far less powerful than those who work on behalf of business, senior citizens, farmers, the military, and so on" (Schneider & Ingram, 1997: 109). Dependents are often viewed as "needy" and this is often underscored with the view that their hardships and their dependent situation as a whole are due to personal shortcomings and bad choices. In the context of salmon recovery very few of the target populations I categorized as dependent would be considered helpless or needy. Primarily the target populations that fall into this category do so because they are relatively politically and economically weak, compared to the target populations in the advantaged and contender categories. It is because of this lack of political and economic influence that we would expect to see that these target populations have received considerable symbolic policy, but very little policy that actually accomplished anything or was fully implemented or funded. Typically, even capacity tools are avoided with this group, because, with that perception of relative helplessness comes the idea that this group "lack[s] the capacity, skills, character, discipline, and will to manage their own destiny" (Schneider & Ingram, 1997: 123).

According to Schneider and Ingram target populations that can be categorized as deviant are politically weak and are typically constructed as "violent, dangerous, threatening, and deserving to be punished" (Schneider & Ingram, 1997: 109). I did not see any of the target populations discussed in the Salmon 2100 project being socially constructed as deviants (socially negatively constructed as "undeserving" or "unworthy" and politically weak) (see Table 2).

While arguments and justifications can, and have been made for categorizing the target populations differently than I have done, I have, to the best of my ability, categorized each of the target populations in the context of salmon recovery based on both their social construction and their political and economic influence and power.

Table 2: Social Construction Framework Categories for Target Populations

Social Construction Framework Groups	Policy Prescription Target Groups
Advantaged:	Agency Managers
	Agency Scientists
	Businesses
	Federal Government
	Landowners
	Policy Makers
	Scientists
	State Government
	Technology Developers
Contenders:	Agriculture
	Developers
	Industry
	Mining
	Ranching
	Timber
	Utilities
Dependents:	Artists/Artisans
	Commercial Fishermen
	Cottage Industries
	Environmental Groups
	Individuals
	Local Government
	Non-Profit Salmon Organization
	Public ("the masses")
	Recreators
	Sport Fishermen
	Social Scientists
	Tourists
	Tribes
	Watershed Councils
Deviants:	None

The policy prescriptions themselves were then characterized using Schneider and Ingram's suite of policy tools (e.g., authority, incentives, capacity building, learning, and symbolic). The policy tools were then cross-referenced with the target groups to determine whether the prescribed policies would burden or benefit the target population. This information was then used to predict the likelihood of the successful promulgation of the proposed prescriptions. The results of these two analyses are discussed in more detail below.

IIIc. Policy Tools in Salmon 2100

Schneider and Ingram (1990) developed a framework that explores which policy tools can be used most effectively with particular target populations. The framework is based on the idea that there are socially ingrained behavioral assumptions about different groups (target populations) in our society. This framework was developed as a tool for investigating how we attribute policy burdens and benefits to different target populations in our society, and what assumptions are at the root of these policy decisions. According to Schneider and Ingram "public policy almost always attempts to get people to do things that they might not otherwise do; or it enables people to do things they might not have done otherwise" (1990, p.513). This assumption is the framework around which they developed different kinds of policy tools, and their impact or usefulness with various target populations. The policy tools advanced by Schneider and Ingram are: 1) authority tools; 2) incentive tools (both positive and negative); 3) capacity tools; 4) symbolic tools; and 5) learning tools.

The first of these, authority tools, are "simply statements backed by the legitimate authority of government that grant permission, prohibit, or require action under designated circumstances" (Schneider & Ingram, 1990: 514). Authority tools are primarily used within the governmental hierarchy where it is assumed that lower-level government employees will obey orders, and the system is structured around leader-follower relationships. When authority tools are used with target populations they are usually accompanied by a motivating device or tool (Schneider & Ingram, 1990). An example of this appears in Rees' policy which included, as a part of his proposed economic no-growth plan, the suggestion that regional policies should be implemented to control human population growth. According to Rees, "we need regulations [authority tools] and incentives [incentive tools] to help steer the distribution of people and settlement patterns away from ecologically sensitive areas within the Pacific Northwest" (Rees, 2006: 512).

While authority tools often have no tangible payoff for the target population or the lower-level government employee at which they are directed, incentive tools rely exclusively on tangible payoffs (positive or negative) to effect policy. This category of policy tools "assume[s] individuals are utility maximizers and will not be positively motivated to take policy-relevant action unless they are influenced, encouraged, or coerced by manipulation of money, liberty, life, or other tangible payoffs" (Schneider & Ingram, 1990: 515). When incentive tools are used the target population is assumed to have the ability to make a well-informed choice in order to maximize their utility. Schneider and Ingram point out that "[w]hether a target population's behavior is controlled through positive or negative devices may have more to do with the political power and social status of the target population than with the behavior" (Schneider & Ingram, 1990: 517).

Capacity tools aid agencies, individuals and/or target populations in making decisions and carrying out activities by educating, training, informing, and providing resources which will be useful or helpful in accomplishing a specific action or program (Schneider & Ingram, 1990). It is clear that the use of capacity tools "assume[s] incentives are not an issue, but there may be barriers stemming from lack of information, skills, or other resources needed to make decisions or take actions that will contribute to policy goals" (Schneider & Ingram, 1990: 517). An example of a capacity building tool was presented by Bailey and Boshard (2006) when they call for a shift in salmon recovery decision making and funding allocation. They present a policy prescription that is based on a shift towards community-driven salmon recovery, which would require capacity tools. They believe, "[w]ith the community model more money is spent locally during the projects on salaries and goods and services…More full-time jobs are created and more local people hired…The education and skills training opportunities are endless, as are the scientific data collection opportunities, using local manpower" (Baily & Boshard, 2006: 124). When not directed at target populations, Schneider and Ingram state that capacity tools "are used to influence agency practices and to encourage adoption of innovative programs" (Schneider & Ingram, 1990: 518).

Learning tools are used when "[a] problem may be recognized, but it is not understood or there is no agreement about what should be done" (Schneider & Ingram, 1990: 521). This is the "more research needed" tool that is used when we feel that a more accurate or effective decision could be made if we had more data, more public input, more information. The backbone of Rahr and Augerot's (2006) salmon sanctuary system was this idea that candidate sanctuaries could be identified and prioritized and would then serve as anchors for the various conservation units that would preserve the genetic diversity of salmonids as we know them today. This policy prescription is based on the idea that if the scientists had more information, then the policy makers would have better information to use in their policy making.

The final category of policy tools, symbolic tools, seeks to manipulate target populations and individuals into engaging in policy-preferred behavior by appealing to such intangible values as equality, justice, and right and wrong (Schneider & Ingram, 1990). An important feature of many policy goals for which symbolic tools are used is that "[s]ymbolic pronouncements seek to convince people of the importance and priority government is associating with certain activities or goals, even though actual commitment of resources or development of programs may not be underway" (Schneider & Ingram, 1990: 520). Williams and Pister suggested, as a part of their discussion of the importance of promoting intelligent consumption, that we as consumers need to change our attitudes, ethics and our behavior related to our consumption of both goods and resources (utilities as well as the resources that are used to produce our goods) (Williams & Pister, 2006: 591). While having the whole of American society change their consumption patterns, as well as their attitudes about their place in the environment as a whole and how they measure their success and happiness, may address the root cause of salmon decline in the region, it is ultimately a symbolic policy tool. It is a symbolic tool because it is akin to policy makers

suggesting that people make changes in their lives (recycle more, consider fuel-efficiency when purchasing a new car, conserve energy with a programmable thermostat, buy compact-fluorescent light bulbs, etc.) that sound eco-friendly, but do not mandating actual changes; there is no clout behind it.

IV. Results: Assessing the Viability of Proposed Policy Prescriptions

　　IVa. Grouping Policy Prescriptions Based on Action Required

　　　　None of the authors focused solely on the fish in coming up with their policy prescriptions. All are aware that salmon recovery is a complex issue and that salmon exist as a part of a complex ecosystem. Many authors, in fact, present a suite of policy prescriptions that they hope would work together in restoring salmon. In order to deal with the large number of proposed prescriptions, the policies presented in the Salmon 2100 project were grouped by the common types of actions required by the policies (see Table 3 starting on p.40). The types of actions required by the policy prescriptions were: 1) new regulations; 2) modifications of current systems and structures; 3) new systems and structures; 4) taxes and fees; 5) positive incentives; 6) more research, and, for those actions that did not fit into one of the other groupings; 7) miscellaneous.

　　　　Many of the authors created policy prescriptions around the development and implementation of new regulations of one kind or another as described in Table 3. For example, Ashley lists as one facet of his triage-style salmon protection policy that, "[t]he maximum allowable harvest rate for any salmon stock will be conservatively set at less than 20%" (Ashley, 2006: 89). In his chapter, Michael discussed the need for changes in the way that salmon habitat is managed, restored, and conserved. One of the new regulations he included in his prescription was that wildfires, landslides and other large-scale disruptions should be allowed to occur on a natural timescale. With this he called for the division of forested areas into those that would be protected for salmon habitat and thus would be allowed to experience natural disturbance regimes, those that would be intensively logged for timber on an industrial logging management plan (Michael, 2006: 439).

　　　　Most of the authors incorporated minor to moderate changes to some of our existing systems and structures in their policy prescriptions. For example, in advocating for a switch from an environmental perspective to an engineering perspective of salmon recovery and other natural resource issues, Buchal addressed current federal regulations and suggested a modification: "Remove federal restrictions on hatchery management to encourage innovation in breeding and engineered habitat solutions. Repeal restrictions on engineering riverbeds to improve salmon habitat" (Buchal, 2006: 203). Another policy prescription tackled the issue of protections in place for salmon predators in suggesting that existing laws like the ESA, the Marine Mammal Protection Act (MMPA), and the Migratory Bird Treaty (MBT) be modified to allow the active management of predator species (Stout, 2006: 545). Williams and Pister contend that, at this point, salmon recovery is not a matter of working towards some technological breakthrough or gaining a better understanding of some aspect of salmon biology, but rather, it is a matter of society making changes in how human life impacts the earth. They argue that

"[i]n the long run, even strong laws and regulations can only go so far in promoting sustainable resource management…the growing *demands* of consumers and growing *numbers* of consumers can outweigh even the best of policy intentions by forcing changes through pressures on lawmakers…consumers must be aware of the consequences of their high consumption rates and be willing to search for ways to reduce their resource demands…[ultimately] this requires a change in attitudes and ethics" (Williams & Pister, 2006: 591).

Some of the authors came up with entirely new systems, structures and organizations that they would create to tackle the issue of salmon recovery. Ashley, advocating for a salmon sanctuary system to be run by nonprofit salmon societies, was emphatic that new ownership arrangements were necessary for publicly accountable stewardship. He suggested that "stewardship societies whose primary objective is the protection and recovery of wild salmon is the safest long-term strategy for the protection of salmon as it minimizes the risk of intervention by current or future individuals, industry, or governments, who may have different priorities" (Ashley, 2006: 86). Other authors were also thinking about new organizations. Knudsen and Doyle called for a "salmon think tank" organized by salmon scientists to educate and advocate for policy based on sound science (Knudsen & Doyle, 2006: 326). On the other hand, Lombard recommended a new pricing system for natural resources. He believes that this new pricing system, in which individuals, landowners, local governments, and businesses and industries would pay the true cost of the extraction and distribution of said natural resources "would reduce or eliminate subsidies for environmental degradation" and he calls the system "ecological pricing" (Lombard, 2006: 378).

While some authors did not delve into how their policy prescription would be paid for, several authors suggested funding part or all of their policy prescription with various kinds of taxes and fees. Ashley, for example, proposed funding a salmon sanctuary system through the use of a variety of progressive taxes that he thought would encourage the protection of salmon and salmon habitat. His idea was that progressive taxes would affect all areas of society equally so that it would be a society-wide drive to protect salmon and their habitat. (Ashley, 2006: 88). He suggested various taxing strategies including an ecological footprint tax, deleterious land use tax, or consumptive water use taxes. Other authors also incorporated negative incentives into the fabric of their policy prescription. Rees called for a move to a steady-state economic system and as part of this transition he advises that "[w]e also need regulations and incentives to help steer the distribution of people and settlement patterns away from ecologically sensitive areas within the Pacific Northwest" (Rees, 2006: 512).

There were also those who developed policy prescriptions that incorporated positive incentives as a form of motivating individuals, businesses and communities to fulfill their policy goal(s). In his chapter, Martin questions whether we can successfully recover salmon throughout their historical range, or whether we should

focus efforts where they are most likely to be successful. As a part of his policy prescription he recommended "[d]evelop[ing] a set of incentives to encourage local governments to pursue environmental protection measures within their development plans" (Martin, 2006: 422). Curtis and Lovell contend, in their multi-faceted policy prescription, that while the ESA is a critical and necessary policy for preventing extinction, "it needs a counterpart, equally as strong and more incentive-based, to get to recovery" (Curtis & Lovell, 2006: 224).

Many of the authors, in their chapters, state the need for further research on, and a better understanding of, specific aspects of the salmon recovery process. In his list of recommendations for stream and ocean management, Stout starts with the need for further research on how vegetative cover supports needed stream erosion. Hartman, Northcote, and Cederholm took a multi-pronged approach in their chapter, presenting a range of policies that tackle various aspects of salmon recovery on various scales; from focusing on specific aspects of fish biology to suggesting sweeping societal changes that will impact salmon recovery among other things. One of their required policies was to end or reduce harvests until we understand more clearly the causes of decline (Hartman, Northcote, & Cederholm, 2006).

All those authors who put their faith for salmon recovery in future technological advances and increased scientific knowledge are countered by the policy prescription presented in Nicholas. Nicholas takes the perspective of an old female Chinook salmon who recommends that we "not trust in science or government to save salmon. [She continues] Your human science and technology alone will never be enough to sustain salmon in the next century…[and then she admonishes] You already know enough to choose between actions that will secure the future of wild salmon and actions that will most jeopardize our future" (Nicholas, 2006: 454).

Finally, there were several policy prescriptions that did not fit into any of the aforementioned groupings of policy prescriptions and were categorized under the heading "Miscellaneous." A few examples of these "miscellaneous" policy prescriptions include Bisbal's desire to change the identity of salmon science by integrating local and traditional ecological knowledge into more traditional scientific methods. Also Bailey and Boshard advocate for the inclusion of communities and individuals who live and work close to the salmon recovery project locations in the salmon recovery planning process. They point out that

> "[a] prevailing attitude from technocrats and consultants is that salmon recovery and other environmental programs and projects have to be sneaked past the communities and landowners they affect so that they do not freak out…The result is a self-created negative feedback loop where technocrats will not work with the community, so the community rejects what they are planning, and then the technocrats avoid the community and do not work with them. This only makes the ultimately necessary task of community engagement more difficult" (Bailey & Boshard, 2006: 109-110).

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used

Policy Prescriptions Grouped by Type of Action Required	Policy Tools				
	Authority	Incentive	Capacity	Learning	Symbolic
New Regulations					
Set maximum allowable harvest rate at less than 20%	X				
Stop all mixed-stock fishing everywhere	X				
Stop all fishing to maintain remaining salmon populations	X				
Reduce/eliminate harvest until salmon population dynamics are better understood and addressed	X			X	
Stop all ocean fishing so that timing, location and amount of harvest can be carefully controlled	X			X	
Switch commercial fishermen from anadromous fish to nonanadromous fish	X		?		
Set harvest limits using the precautionary principle, theories of fluctuating populations and the effects of uncertainty in population dynamics	X				
Remove dams to restore salmon habitat and connectivity of river basins	X				
All permitted water diversions must be enclosed in pipe to prevent water is lost to infiltration or evaporation	X				
Limit or eliminate significant water withdrawals in watersheds in salmon sanctuaries	X				
Remove hydroelectricity producing structures from most big rivers and manage those remaining for maximum generation per unit of water passed	X				
Implement regional water and energy conservation policies	X				
Limit human development in some watersheds	X				
Implement regional growth management policies	X				
Create regulations to keep people from settling in ecologically sensitive areas	X	X			

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used Continued

New Regulations (Continued)	Authority	Incentive	Capacity	Learning	Symbolic
Raise urban water quality standards	X				
Require that key habitat be returned to near-pristine conditions	X				
Restrict timber harvest in watersheds set aside for wild salmonid production – harvest timber primarily (and heavily) in areas managed for timber production	X				
Modification of Current Systems and Structures					
Manage dams for improved adult and juvenile fish passage	X		X		
Adjust water releases at dams for improved temperature control	X		?		
Require environmental education in public schools	X				
Include the social sciences, traditional and local knowledge in science education	X				X
Develop more targeted and efficient hatcheries to justify continued fishing and maintain fishermen as a part of the salmon preservation constituency			X		
Change hatchery programs to reflect local needs of salmon and the habitat's carrying capacity			X		
Close hatcheries used only for fish production	X				
Use hatcheries to increase genetic variation of salmon populations	X		X		
Conduct hatchery impact assessments, modify the regulations and potentially close inefficient/ineffective hatcheries	X		X		
Develop engineered habitat as a community effort – create partnerships with the public	X		X		
Repeal restrictions on engineered habitat to allow for improvements in salmon habitat	X		X		
Shift leadership and decision making regarding salmon recovery to communities			X		
Develop an ecosystem-based approach to salmon management	X				

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used Continued

Modification of Current Systems and Structures (Continued)	Authority	Incentive	Capacity	Learning	Symbolic
Habitat management should be planned and organized at the local level –allowing states to focus efforts for best results			X		
Emphasize scientifically managed salmon and back it up with "sufficient funding for research and development of new & improved management techniques" (330)	X		X		
Make management adaptive to accommodate changing issues and conditions	X				
Growth management strategies should be developed on a regional scale	X		X		
Limit type and amount of development based on the watershed's salmon recovery status	X				
Educate public on the need to change from a growth based economy to a steady-state economy					X
Change the "rules of commerce"					X
Include the social sciences, traditional and local knowledge in the definition of "salmon science" and in salmon recovery			X		?
Change social behavior and preferences					X
Encourage going beyond the minimum requirements of the environmental protection laws		X			X
Change predator protection laws to allow for predator control "as needed" to maintain a balance.	X				
Remove domestic, gravel mining and agricultural structures in floodplains	X				
New Systems and Structures					
Develop non-profit salmon organizations to be in charge of the salmon sanctuary system			X		
Identify and prioritize candidate sanctuaries				X	
Develop basin-wide salmon conservation plans	X				

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used Continued

New Systems and Structures (Continued)	Authority	Incentive	Capacity	Learning	Symbolic
Transfer land ownership and water licenses from private and public ownership to a series of non-profit salmon societies who will form and manage a salmon sanctuary system	X				
Rethink how and where we live, work travel, etc. in developing new technologies				X	X
"Ecological pricing" – pay true cost of resources (without the subsidies currently in place)	?	X			
Implement regionally coordinated human population control policies	X				
Adopt a steady-state economic model – reduce the impact of the increased human population in the region	X				X
Create a regional council of governments to assure a coordinated regional salmon recovery effort and avoid the cumulative effects of fragmented decision making	X				
Create salmon science think-tanks to educate, advocate for scientific actions, address core drives of decline, and promote research and development programs			X		
Taxes & Fees					
Watershed use fees		X			
Consumptive water use fees		X			
Ecotourism and recreation fees		X			
Ecological footprint tax		X			
Deleterious land use tax		X			
Pollution taxes		X			
Develop disincentives for people to move to the region	X	X			
Develop disincentives for settling in ecologically sensitive areas	X	X			
Positive Incentives					
Tax credits for businesses that reduce their ecological footprint		X			

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used Continued

Positive Incentives (Continued)	Authority	Incentive	Capacity	Learning	Symbolic
Provide incentives for local governments to include environmental protection in their development and urban planning		X	?		
Provide incentives to communities and private property owners who participate in salmon recovery projects		X	?		
Provide incentives for people and businesses in prioritized basins that would work like "urban enterprise zones"		X			
Use incentives and education to build support for salmon sanctuaries in local communities		X	X		
Develop incentives to go beyond the minimum requirements in place in current "safety net" type environmental protection laws		X			
Encourage scientific and technological innovation for the coming energy crisis		X	?		
Create incentives for people to have fewer kids		X			
Encourage innovation in breeding and habitat construction		X	X		
More Research					
Stop all ocean fishing so harvest timing, location and amount can be carefully controlled	X			X	
Develop and implement policies to reduce or eliminate harvest until salmon population declines are better understood and addressed	X			X	
Develop ways to better predict run sizes in order to more accurately set allowable harvest levels				X	
Understand reasons for habitat decline, fix them and monitor the fixes				X	
Identify high quality habitat for conservation or restoration				X	
Evaluate current habitat management policies and techniques				X	

Table 3: Policy Prescriptions Grouped by Type of Action Required and Type of Policy Tool Used Continued

More Research (Continued)	Authority	Incentive	Capacity	Learning	Symbolic
Identify and prioritize candidate sanctuaries	X			X	
Develop a better understanding of ocean influence				X	
Improve understanding of the predator-prey relationships				X	
Develop a better understanding of which vegetation allows for suitable erosion in each headwater stream to get the best possible spawning beds			?	X	
Design and create alternative energy sources for power				X	
Rethink how and where we work, live and travel in developing new technologies				X	X
Miscellaneous					
Monitor fisheries to prevent overharvest				X	X
Royalties from timber, fishing and hydro will be used to buy land for salmon sanctuaries		X			
Protect the "best first" rather than the "worst first" (a la ESA)	?				X
Reduce fuel load in forested areas so fires of natural intensity can occur and contribute to healthy salmon habitat	X				
Allow for natural disturbance regimes	X				
Buy land adjoining key streams to protect as salmon habitat	X				
Use revenues from various natural resource extraction taxes to buy land for salmon sanctuaries	X				
Use science and technology to move towards energy independence					X
Evaluate chosen policy/policies for effectiveness					X
Maintain or rebuild community support for projects through localizing salmon recovery efforts			X		?
Value local knowledge of the land, species and populations					X
Increase awareness and knowledge of the problem			X		X

IVb. Assigning Benefits and Burdens to Target Populations

The policy tools described in the discussion of Table 3 are used again in Table 4 (starting on p.54), which attempts to illustrate how target populations are affected (negatively, with burdens, or positively, with benefits) by what kind of policy tools in the policy prescriptions presented in the Salmon 2100 project. The target populations are arranged alphabetically in Table 4 within their social construction target group categorization. For each of the policy prescriptions described above, a corresponding list of affected target populations was developed. I then determined whether that target population was likely to be positively affected (benefits) or negatively affected (burdens) by the implementation of that policy prescription.

Schneider and Ingram list the following as examples of beneficial policies: "subsidies, rules that grant advantages to the group in their economic or social pursuits, tax breaks, policy tools that grant the group control, rationales that provide positive constructions for the group, or other government actions that enable the group to gain values that it prefers" (Schneider & Ingram, 1997: 112) Examples of burdensome policies include: "taxation, rules that confer disadvantages, tools that constrict control or liberty, or other actions that confer negative values on a group" (Schneider & Ingram, 1997: 112). To this last list of examples I would add fees, and rationales that provide negative constructions for the group.

In developing their policy prescriptions, very few of the authors are familiar with developing public policy and even fewer are likely to be familiar with Schneider and Ingram's idea of the social construction framework. My analysis of the authors' choice of policy tools and the distribution of benefits and burdens in their policy prescription is in no way meant to belittle or undermine their efforts. Instead, it is an attempt to see how feasible the proposed prescriptions might be given the social construction framework.

What is seen in Table 4 is a not an entirely unexpected use of policy tools and an interesting distribution of benefits and burdens. The majority of prescriptions used authority tools to meet policy goal(s). The authority tools used to achieve the presented policy goals were primarily burdensome in nature, especially for the advantaged and contender populations. In fact, none of the authority tools benefited contenders, either directly or indirectly. Advantaged target populations benefited very little from the authority tools used in the Salmon 2100 project. Brannon's proposal that salmon recovery can be achieved, in large part, through engineering new habitat, is an example of an authority tool that would benefit advantaged target populations, namely agency scientists, scientists and technology developers (Brannon, 2006). Dependent groups were almost evenly benefited and burdened by the authority based policy goals. In my interview with one of the participants who had proposed a salmon sanctuary system, the participant stated that the proposed salmon sanctuaries would provide good, living-wage un-exportable jobs to residents of rural communities. The harvest regulations suggested by Dose would negatively impact tribal, commercial and sport fishermen, potentially only in the short term, but would be seen as a boon for

many environmental groups. The distribution of benefits and burdens through the use of authority tools in Table 4 does not indicate the creation of very many viable policy prescriptions. Neither advantaged nor contender target populations are going to allow themselves to be so excessively burdened, especially not in a situation when taking those burdens for "the greater good" involves a relatively niche issue.

Incentive tools were more evenly balanced between benefits and burdens applied to the various target populations, though contenders still received the brunt of the burdens (see Table 4). There was more carrot than stick used on advantaged target populations (meaning there were more benefits than burdens ascribed to the advantaged group through the use of incentive tools). The benefits came in the form of either: taxes and fees paid to the agencies for the use of the resource(s) they manage, tax credits to businesses and landowner for curbing their pollution; or financial incentives for scientists and technology developers to create new energy sources or improve the efficiency of current energy sources. A considerable number of taxes, fees and the removal of subsidies (negative incentives) were directed towards dependent target populations as well as contenders. Curtis and Lovell proposed the "remov[al of] at least some of the incentives to destroy salmon habitat"; suggesting that once critical habitat has been designated, "areas where federal subsidies for new development…are not consistent with the conservation of the species would be reduced or eliminated" (Curtis & Lovell, 2006: 120-121). Ashley's ecological footprint tax, which would impact all of the contender groups as well as individuals and tribes, could be countered with his idea that "tax incentives and credits would also be available to industries that exhibited significant reductions in their ecological foot-print…" (Ashley, 2006: 88).

Again, contenders, while generally unpopular, are politically and economically powerful. They would not allow themselves to bear all of the costs of doing business and extracting resources, but would accept symbolic costs along with actual tax incentives. Advantaged target populations would be amendable to many of the incentive policy tools proposed in the Salmon 2100 project, but would undoubtedly balk at the burden placed on the federal government by the proposals to curb human population growth in the region (MacDonald, Knudsen, & Steward, 2006; Rees, 2006). Dependent target populations are not likely to be able avoid fees and taxes (negative incentives) because of their relatively weak political position, but they would also likely protest mightily at the suggestions for controlling the human population growth in the region. While policies affecting dependent groups often use negative incentive tools, there are some policy suggestions that run so extremely counter to deeply held social beliefs that they will not succeed in being implemented, funded and enforced, unless the target population they affect is quite small and, usually, considered deviant; one such policy suggestion in the United States is that of human population control or regulation (Schneider & Ingram, 1990; 1997).

The distribution of policy prescriptions using capacity tools fit quite well with what we would expect using the social construction framework. While it would seem logical to use capacity tools to distribute benefits to dependent groups, thus making

them less dependent, capacity tools are most likely to be used to create benefits for advantaged groups (Schneider & Ingram, 1997). It is interesting that none of the capacity tools in the proposed policy prescriptions that would affect dependent target populations would do so in a burdensome way (see Table 4). All of the capacity tool policy goals presented in the book would have a positive impact on dependent groups. Bailey and Boshard (among others) proposed the complete restructuring of the salmon recovery bureaucracy; encouraging a move from top-down decision making to "community-driven salmon recovery" (Bailey & Boshard, 2006: 120). Bisbal proposed a different sort of restructuring when he suggested that a new definition of "salmon science" needed to be developed and that it should include the social sciences as well as traditional and local knowledge. (Bisbal, 2006). Advantaged groups, with their ability to self-regulate and self-teach according to Schneider and Ingram (1990), would expect to be primarily benefited through the use of capacity tools in the policy prescriptions, though they were almost equally benefited and burdened by the capacity tools proposed in the various suggested policies. The proposal to restructure hierarchy of salmon recovery decision making and funding, explained above, would mean the loss of power by advantaged groups including agency managers and state governments and would put policy makers in an unenviable position. Ultimately a policy suggestion like Ashley's (2006) to modify dams to improve adult and juvenile fish passage would involve capacity building tools that would positively affect agency scientists, other scientists, technology developers and eventually agency managers and several dependent groups.

It is interesting that none of the policies that used capacity tools targeted contender groups. According to Schneider and Ingram (1990), advantaged target populations should be heavily favored through the use of capacity tools. As we see in Table 4, they are somewhat favored. Several of the proposed burdensome policies, such as Bailey and Boshard's restructuring of the salmon recovery hierarchy, would be political non-starters because of the requirement that advantaged populations voluntarily give up considerable power. Those policy prescriptions most likely to succeed would be those that used capacity tools to benefit advantaged populations.

The few learning tools targeting contender groups that were presented in policy prescriptions all resulted in burdens on the contender groups. Hartman, Northcote and Cederholm state that "policies should be developed…to stop habitat deterioration in drainages under stress" (Hartman, Northcote, & Cederholm, 2006: 286). This process would burden the contender groups because of the potential that some or all of their property would be determined to be within a "drainage under stress" or that their actions were causing a drainage to be under stress. Advantaged target populations, on the other hand, were almost equally benefited and burdened by the learning tools with which the authors strove to achieve their policy goal(s). Often when a learning tool would benefit one advantaged group it would burden another advantaged group. For example, in Hartman, Northcote and Cederholm's (2006) multi-pronged policy prescription, they stated that habitat restoration should include a thorough understanding of the causes of the habitat decline, restoring the habitat, monitoring the restoration, maintaining the habitat, and finally evaluating and reporting on the

restoration process. This process would provide benefits to agency scientists, scientists, and technology developers, while burdening agency managers with yet another project to oversee and complete paperwork for.

None of the policy prescriptions that used learning tools were directed at dependent populations. Schneider and Ingram (1990; 1997) would suggest that the various chapter authors have an underlying assumption that whatever we need to learn more about in order to make decisions in salmon recovery is not something that dependent populations would either know about or be able to research. It is not surprising that advantaged populations would be targeted with policies using learning tools. According to Schneider and Ingram (1990; 1997) learning tools are often used with advantaged populations because they assume that when those groups have the capability to gather more information they will be able to make informed decisions about how to proceed using one of the other policy tools. Policies that utilize learning tools are rather open-ended in nature and are often not used with populations or groups that policy makers suspect will either not go in the hoped-for direction, or will not know what to do outside of a strictly structured situation (Schneider & Ingram, 1990). Again, contender groups have significant political and economic power and are not likely to allow policies to be put in place that will undermine their ability to operate in the status quo, or take their property.

The majority of the symbolic tools that would affect advantaged target populations were burdens (see Table 4). These included Kolmes and Butkus' proposal, as one facet of their policy prescription, that the region's rules of commerce be fundamentally changed (Kolmes & Butkus, 2006: 358). Another example is Steel's suggestion that the first step in developing an effective policy to address salmon recovery is "increase[ing] citizen and policymaker awareness *and* knowledge of the problem" because, he argues, without an awareness either that there is a problem or that the problem is as big/severe as it is, there will be no impetus for change (Steel, 2006: 528). Very few symbolic policy prescriptions were suggested that would impact contenders either positively (with benefits) or negatively (with burdens) (see Table 4). Some beneficial policies were distributed to dependent groups through the use of symbolic tools. Williams and Pister developed a policy prescription that called for the promotion of intelligent consumer practices. They advocated for their proposal saying that, despite the fact that this would require most of us to change our attitudes about the consumer lifestyle. They continue their argument that because "high rates of consumption do not necessarily lead to better lifestyles or more contentment," most people would be happier living a less consumption driven lifestyle and more consciousness about consumption would benefit the environment (Williams & Pister, 2006: 589). Looking at this with the social construction framework in mind, it makes sense that because of the political and economic power wielded by advantaged groups, any burdens placed on them would likely be primarily symbolic, and relatively hollow in nature (Schneider & Ingram, 1997). The distribution of benefits to dependent populations through the use of symbolic tools fits with the idea that policy makers will want to look like they are helping dependents, but will not find it politically advantageous to actually expend resources doing so (Schneider & Ingram, 1990).

Table 4: Target Populations Affected by Policy Tools Used in Policy Prescriptions

| | Policy Tools | | | | | | | | | |
| | Authority | | Incentive | | Capacity | | Learning | | Symbolic | |
	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens
Advantaged										
Agency Managers		X	X		X	X	X	X		X
Agency Scientists	X				X		X	X		
Businesses		X	X						X	X
Federal Government		X		X	X	X		X		X
Landowners		X	X			X			X	
Policy Makers		X				X		X		
Scientists	X		X		X		X			
State Government		X		X	X	X		X		X
Technology Developers	X		X		X		X			
Contenders										
Agriculture		X	X	X				X		
Developers		X	X	X				X	X	
Industry		X	X	X				X	X	X
Mining				X				X		
Ranching		X		X				X		
Timber		X		X				X		
Utilities		X		X				X		
Dependents										
Artists/Artisans				X						
Commercial Fishermen		X								
Cottage Industries				X						
Environmental Groups	X	X								
Individuals		X	X	X	X				X	
Local Government	X	X	X	X	X				X	
Non-Profit Salmon Organization	X		X							

Table 4: Target Populations Affected by Policy Tools Used in Policy Prescriptions Continued

	Policy Tools									
	Authority		Incentive		Capacity		Learning		Symbolic	
	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens	Benefits	Burdens
Dependents (Continued)										
Public ("the masses")	X								X	
Recreators	X			X						
Sport Fishermen		X		X						
Social Scientists	X				X					
Tourists				X						
Tribes	X	X			X					
Watershed Councils					X					

V. Discussion

The results of this analysis suggest that the authors in the Salmon 2100 project relied primarily on authority tools to achieve their policy aims. Authority tools are not, in and of themselves, a bad idea, but the use of authority tools is most accepted and most effective when used to burden politically and economically weak target populations and to benefit positively viewed, politically and economically powerful target groups (Schneider & Ingram, 1990; 1997).

Within the social construction framework we expect effective policies to use authority tools to assign benefits primarily to advantaged target populations. In my analysis of the policy prescriptions presented in the Salmon 2100 project I found that the authors ascribed a considerable number of burdens to advantaged populations through the use of authority tools in their policy prescriptions. This almost assuredly earns them the dubious distinction of being labeled immediately as "non-starters" in our political system. Advantaged populations, because of their political power, have the ability to determine whether or not an issue makes it onto the legislative agenda. This ability to frame the political agenda means that it is unlikely that policy prescriptions allocating burdens to advantaged groups through the use of authority tools will make it into the political debate at all. In the interviews several of the authors, when discussing the viability of their policy prescription(s), described a sort of a "gut feeling" that policies applying burdens to advantaged groups would not fly in a real policy making setting. Though they did not use the language of the social construction framework, this indicates a visceral, if not analytical, understanding of what Schneider and Ingram have explicitly laid out in their work on the social construction framework; that some groups in our society have the power to control the political agenda.

My analysis of the Salmon 2100 policy prescriptions showed that all of the policies that used authority tools to target contender groups did so in order to place burdens on them. These contender target populations have the ability, like advantaged target populations, to keep issues off the agenda that they would find burdensome in one way or another. So policy prescriptions using authority tools to burden contender groups have little chance of being taken seriously in the policy making arena, much less being implemented in the real world. Savvy politicians and policy makers are aware of this, and they typically burden contenders through the use of symbolic policies that appear to have a negative impact but which, in reality either affect contender groups not at all, or may in fact benefit them in some obscured way. In a couple of the interviews, when discussing who currently reaps the benefits of salmon policy, participants alluded to policy prescriptions that would come down hard on contender groups with authority tools (as well as harsh disincentives in the form of sanctions) but quickly said that these actions would result in "huge political battles." Again, this indicates a gut understanding of what Schneider and Ingram have explicitly laid out in the social construction framework.

In my analysis I found that quite a few of the policy prescriptions presented in the Salmon 2100 book used authority tools to benefit dependent populations. These are unlikely to be developed, implemented and funded because policy makers will likely see them as a waste of resources that could be better used to benefit a target population that can help them in their re-election bid. My analysis of the Salmon 2100 project did find that some of the policy prescriptions used authority tools to burden dependent target populations. These policy prescriptions have a higher likelihood of being developed, funded and implemented.

The use of incentive tools to assign benefits to advantaged target populations is an effective way of meeting policy aims. A policy maker who wishes to reduce the ecological footprint of the state that they serve would do well to use an incentive tool like providing a tax credit for advantaged organizations, groups and populations who reduce their ecological footprint, rather than trying to raise the taxes of those same advantaged groups because of their current ecological footprint. In my analysis I found that several of the Salmon 2100 policy prescriptions used incentive tools to benefit advantaged target populations, which should increase their likelihood of being implemented. A few advantaged target populations would receive burdens based on the incentive tools suggested in a couple of the policy prescriptions. As before, applying burdens to advantaged populations is typically not politically feasible, but when they are burdened through the use of incentive tools (e.g. a reduction in subsidies) typically the date it goes into effect is far into the future so the advantaged population has ample opportunity to adjust or contest the policy (Schneider & Ingram, 1997: 131).

My analysis showed that contender target populations were burdened across the board by several Salmon 2100 policy prescriptions using incentive tools to meet their policy goals. While it would likely be appealing to a lot of people to write policies that required contender target populations to foot the bill for salmon recovery, since many people blame members of the contender groups for playing a part in the decline of salmon, it is difficult to put burdens on contenders. Contender groups would be willing to accept burdens, according to Schneider and Ingram, if: 1) the contender groups were convinced that by accepting a fee or tax (a negative incentive) of some sort they would be avoiding or replacing a more expensive burdensome policy; or 2) the contender groups were confident that they were positioned to actually benefit as a remote target (Schneider & Ingram, 1997).

Incentive tools were used to assign burdens to dependent target populations far more than they were used to assign benefits, according to my analysis. It is interesting that so many of the taxes and fees, as well as policies around paying true costs were aimed at dependent populations. Some of the taxes and fees leveled at dependent target populations have to do with choice. By choosing to go hiking in a state or national park one is choosing to pay the use fee associated with that activity. Some of these actions may be presented by policy makers as having to do with choice, but may in fact affect members of the dependent population who, by virtue of their lack of economic and political power, are not truly able to make a choice in the matter. For

example: Rees' policy prescription to create disincentives for people to settle in ecologically sensitive areas would burden individuals who already live there, who might or might not be able to move somewhere else, as well as burdening the local governments which would be burdened by loss of income generated by taxes of various kinds. This power with the media and the legislative process is a level of power that typically cannot be effectively countered by dependent populations (Schneider & Ingram, 1997). Typically any positive incentives aimed at dependent populations will require the eligible parties to be aware of the program and take the initiative to apply (e.g. knowledge about available grants or subsidies); the programs will be less likely to seek out members of dependent target populations (Schneider & Ingram, 1997: 131).

In the course of my analysis I found that advantaged populations were assigned benefits and burdens almost equally through the use of capacity tools in the Salmon 2100 policy prescriptions. The use of capacity tools to assign either burdens or benefits to advantaged populations is one of the most effective methods of meeting policy aims (Schneider & Ingram, 1990; 1997).

My analysis found that none of the authors developed policy prescriptions that used capacity tools towards the contender target populations in a beneficial or burdensome manner. Capacity tools are structured with the assumption that the target population is sufficiently motivated to engage in the desired behavior, but is lacking the tools to accomplish the goal (Schneider & Ingram, 1990). It is unlikely that contender groups would be motivated to engage in many of the policy prescriptions that applied capacity tools to other target populations.

In my analysis I found that all of the policy prescriptions, directed at dependent target groups, utilizing capacity tools to meet goals, were beneficial in nature. Most of these involved providing dependent populations with the tools to develop more autonomy and have more decision-making power in the salmon policy process. These are unlikely to get on the political agenda because of the loss of power that would result for politically powerful advantaged and contender populations. If the capacity tools that are suggested for dependent populations in the Salmon 2100 book were to be implemented those dependent groups would become advantaged groups. In the current policy making system, dependent target populations are most likely to see capacity tools used to provide free information about something so that the dependent group can make different (read "better") decisions – decisions that will maintain the status quo of the power dynamic but will fulfill a policy goal in some way (Schneider & Ingram, 1997: 130).

In the course of my analysis I found that advantaged target populations were targeted with burdens slightly more than with benefits when learning tools were used in the policy prescriptions. This fits with Schneider and Ingram's (1990) discussion about how learning tools are used in policy making. Typically experts and scientists (members of the advantaged population in this context) would play a significant role in gathering and presenting any new information, thus benefiting, while agency

managers and various levels of government (all of which are also advantaged groups) would be responsible for changing management and planning to accommodate the new information, thus being burdened.

Contender target populations were only targeted with burdens when the policy prescriptions used learning tools to meet their goals, according to my analysis. Many of the learning tools presented in the policy prescriptions called for increasing our knowledge about some facet of salmon habitat or the salmon life-cycle. Many of the actions proposed would negatively impact contender groups by halting current activities in order to better understand the dynamic situation at hand. The stoppage of any of the actions and activities perpetrated by any of the contender groups in this scenario would be met with vehement opposition.

None of the policy prescriptions used learning tools to target dependent populations with either benefits or burdens. Since many of the learning tools were presented in the form of gathering more data or in some way improving our understanding of salmon, perhaps this shows bias on the part of the authors; that they would not only deny dependent target populations a role in enhancing our knowledge about salmon, but would also perhaps assume that they had nothing to add.

My analysis found that advantaged target populations were afforded more benefits than burdens through the use of symbolic tools. While there is no political danger in aiming symbolic benefits at advantaged target populations, there are no real benefits either. Many of the policy prescriptions that used symbolic tools (either beneficial or burdensome) towards advantaged populations also targeted dependent groups. It is possible that my inclusion of the advantaged groups went outside of the intended scope of the policy prescriptions, and that the authors never intended to target the advantaged groups with the symbolic tools they suggested.

According to my analysis, relatively few of the Salmon 2100 policy prescriptions used symbolic tools at all, and of those very few were aimed at contender target populations. Of those symbolic tools that were used to target contender groups, slightly more of them were beneficial than were burdensome. This is noteworthy since, according to Schneider and Ingram (1990; 1997), the use of symbolic tools to burden contender groups allows the policy maker to win favor with the public for "going after" groups who are generally seen as "greedy" and "undeserving," while at the same time refraining from alienating politically and economically powerful groups who could impact the outcome of the policy maker's future political campaigns and policymaking efforts.

My analysis found that some of the authors used symbolic tools towards dependent target populations, and that all of those symbolic tools were beneficial in nature. In terms of the social construction framework groups that are not viewed as self-reliant, are not politically or economically powerful, and may or may not be seen as "deserving" are most likely to be the recipients of relatively symbolic policies, even when more direct intervention would be more effective (Schneider & Ingram, 1997).

While it came out in the interviews that many of the authors had a gut feeling about who would be able to successfully fight being burdened by policies, they did not mention any awareness or feeling about who could easily be burdened by policies.

In summary, according to my analysis, the Salmon 2100 project policy prescriptions that have some chance of being raised by policy makers and politicians are those that benefited advantaged target populations through the use of any of the tools and those that burdened advantaged target populations only through the use of capacity or symbolic tools. Any policy prescriptions that benefited contender target populations through the use of incentive and symbolic tools and those that burdened contender target populations only through the use of symbolic tools could also be suggested without risk of political suicide. Those that benefited dependent groups through the use of symbolic tools, and those that burdened dependent target populations through the use of authority and incentive tools are also likely to get onto the political agenda.

No author's comprehensive prescription met the criteria of appropriate benefits and burdens of the social construction framework. Nor did I find that any portions of the policy prescriptions, in their current form, really met the above criteria. Portions of policy prescriptions from the Salmon 2100 project could make it onto the political agenda, according to the social construction framework, but many contained benefits for one group that were outweighed by the burdens placed on a more powerful group. Likewise, several policy prescriptions could become more politically feasible with minor tweaking/adjusting.

For example, in his chapter Bisbal proposes overhauling the field of salmon science and recreating it with the inclusion of several disciplines (the social sciences) and sources of knowledge (traditional and local) that were previously widely excluded. Bisbal's policy prescription would benefit dependent groups (social scientists, the tribes, individuals, fishermen, and the public) through the use of a symbolic tool, in that the policy prescribed is one that fulfills the appeal of interdisciplinary problem solving but does not, in its current form, mandate any real changes to the research and management status quo. In its current form Bisbal's policy prescription seems like it has no teeth and, as such, should pose little threat to advantaged or contender groups like agency managers, agency scientists, technology developers, and scientists. There is the power of suggestion. By saying, out loud, in a political speech or meeting of policy makers that social science, traditional and local knowledge should be included in the definition of salmon science, you could galvanize an individual or an organization into trying to make it a reality; this would pose a threat to advantaged and contender groups and would likely be discouraged because of that potential threat.

In his chapter Ashley proposes a triage-based selection of which stocks to protect and one part of the policy he outlines as a rationale is that "[t]ax incentives and credits would…be available to industries that exhibited significant reductions in their ecological foot-print and adopted more salmon-friendly business practices" (Ashley,

2006: 88). This would effectively benefit some advantaged and contender groups (businesses and various industries) through the use of an incentive tool in the form of tax credits and incentives. A tax credit would be burdensome to federal and state governments because they would lose tax revenue under Ashley's plan. This competition over benefits and burdens between target populations may stall feasibility for many of these policy prescriptions.

VI. Conclusion(s) and Lessons Learned

Salmon recovery continues to be a challenging and divisive policy issue. It is an issue that will continue to be addressed at the tribal, local, state, and national level both through the legislative process and the courts. The debates over what is "wild" and how returns should be counted will continue as well. The Salmon 2100 project has certainly added to the debate around salmon policy as well as the broader issue of the role of science in the policy making process. Participation by non-scientists in the Salmon 2100 project produced a firestorm of debate, both about whether or not salmon recovery is a scientific issue or a social issue (or a combination of the two), as well as the role of scientists, policy makers, and other concerned individuals in a discussion of this sort.

In completing my content analysis of the Salmon 2100 book I identified and categorized the target populations that would be affected by the policy prescriptions presented in the book. I later interviewed more than half of the participants in the Salmon 2100 project to gather some information about participation and the development of their policy prescriptions. The result of my content analysis was that those policy prescriptions that effectively directed benefits or burdens at particular target populations have a possibility of making it onto the political agenda.

Following are the "lessons learned" that I identified in the course of my interviews with participants in, and observers of, the Salmon 2100 project and my content analysis of the resulting book *Salmon 2100*.

The first lesson learned is that there must be a perception of fairness, meaning that all the participants must be confident that they and their ideas will get a fair shake in the course of the project. The participants must perceive the process as fair or they will not participate. Nobody wants to put themselves in the position of being set-up, so it must be clear to all of the participants that their ideas, and indeed their participation is valued equal to everyone else's. In responding to the question "do you think that your views were given a fair hearing in the course of the project?" most participants answered in the affirmative, saying things like: "My views were not edited – I wrote what I believe," "the editors gave us free reign…they cut for length but not for content," and "the editors challenged us to make our case stronger." One participant initially felt "attacked" by a few of the coauthors, but felt that by the end of the project those same coauthors listened to the ideas presented and were respectful. Another participant felt that "the little voices were not heard" and that the book "underrepresented" their particular view.

The second lesson learned is that projects that attempt to address complex issues, as the Salmon 2100 project did, require a framework or forecast to which the participants may react. Editors or project organizers should be as explicit as possible about the likely future of the issue they wish to address. This does not require an ability to look into a crystal ball and see into the future. On most topics it is possible, through research and information gathering, to develop a forecast of the likely future

given the current trends. The Salmon 2100 participants were provided with a chapter of the book which describes the four core policy drivers of future of salmon in the Pacific Northwest. The core policy drivers were there for them to react to, dismiss, or accept. The vast majority of the participants accepted the core policy drivers and many of them incorporated at least one of the core policy drivers into their chapter. One participant said "I don't disagree with the premise and the drivers, and despite all the money we've put into conservation we haven't made great strides." Another participant put it this way, "the analysis is correct – salmon are doomed – and the future of life here in the PNW is ugly. That said, I refuse to give in to the analysis. A revolution is possible…to save what we have and restore much of what we have lost."

The third lesson learned is that project participants should be required to propose a policy or plan in the long-term (50-100 years into the future). This way the participants do not get caught up in any seasonal or short-term, biological and/or political cycles in developing a policy or plan. If you really only want to plan for having sustainable runs of wild salmon in the Pacific Northwest for the next 10 years then, by all means, 10 years should be the timeline on which your participants create their plans, but the resulting policy prescriptions will likely be tactical rather than strategic. The timescale demanded of the participants needs to fit the goal of the project and it needs to be specified so that all the participants are developing policies or plans on the same timescale. It should be noted that projecting and planning into the long-term is difficult for most people to do. One participant, who currently works on salmon issues, said the 100 year timescale of the project "forced me to look up from the usual day-to-day stuff and look at future projections." A participant with a background in fisheries biology sees a "reluctance or inability to project out 100 years" adding that "time goes quickly" and for anyone who thinks it doesn't, the participant suggests "look[ing] back to 1907 and see how much has changed and how fast. Look back at fish populations in 1907."

The fourth lesson learned is that if the goal of the project is to garner a variety of ideas, suggestions, or policy prescriptions, then the project should not try to come to a consensus. In the process of consensus building information will be lost and ideas will be watered-down. One participant felt strongly that the diversity of thought and ideas was the whole purpose of the project and that coming to consensus would have been cumbersome and would detract from the diversity of thought because you wouldn't be able to include them all. Many participants expressed the view that it would have been "impossible" or "very frustrating" to come to a consensus because of the diversity of ideas and policy prescriptions presented by project participants. Another participant stated that "the project should not have tried for consensus. I believe the purpose was to stimulate and, perhaps, lead the debate. As the authors showed, there is no 'one' answer." The participants goes on to say that many of the chapters presented plausible, workable possible futures and that, ultimately society must decide what to do.

The fifth lesson learned is that a small fraction of technocrats believe that the solutions to complex natural resource issues are scientific and therefore only scientists

and technocrats should be invited to participate. Most of the participants and observers said that the Salmon 2100 project and book used a good variety of perspectives. It should be noted that the vast majority of the participants and observers are not technocrats. One participant said that they were unable to agree with all of the perspectives and policy prescriptions but that they all need to be there. Several other participants echoed this sentiment that while they might not agree with all of the ideas and viewpoints presented by the Salmon 2100 project, their inclusion was important. On the flip side, one observer felt very strongly that participation in the project somehow "anointed people as salmon experts who aren't" and that there was an overall "pretense of science" in the project.

And finally, the sixth lesson learned is that you can never make everyone happy. No matter how carefully you write the question, how esteemed all of the participants are, how thorough your research for the forecast is, or how various the resulting policy prescriptions are, someone somewhere will think that you should have done the whole thing differently, or not done it at all. One participant, who objected strongly to the diversity of opinions presented in the project and book, said that "the project was flawed by the inclusion of folks who don't deserve to be taken seriously." An observer, who objected to the basis for the project, said that the "core policy drivers are all…opinion – they haven't been through a scientific review" and that overall "the choices are not as Draconian as are presented in the book." Even those people who seem happy with the project and answer in the affirmative when asked: "Knowing what you know now, would you participate in the Salmon 2100 project or something similar to it again?" but then say that if they were to do something like this again that they would want more knowledge about the other authors, perhaps even some say in who the other participants would be. This participant was quick to add that other participants would not be chosen based on name recognition or being a "big name" but rather their views would play into the decision.

Future projects that tackle developing policy prescriptions to address natural resource issues will face some of the same challenges that were faced by the editors of the Salmon 2100 project. Despite having learned several lessons from the Salmon 2100 project, some hurdles are difficult to avoid and others are almost impossible to avoid at this point. People should not be invited to participate in a project only to be used as scapegoats, so those who are invited to participate must be treated fairly and their ideas and perspectives respected equally. Before a project gets out of the planning stages a relatively comprehensive forecast of the likely future for the natural resource or species in question should be developed. Without a common jumping off point for developing ideas, or framework to react to the participants will likely not know where to begin and the policy prescriptions are liable to be relatively incomparable when placed side by side. While participants may fight you on this because it is challenging, projecting into the long-term (50-100 years into the future) is necessary for two reasons: 1) it is a long enough time period that it smoothes out many of the wrinkles caused by climatic, political, and oceanic cycles; and 2) because people and policy are both slow to change the extended time scale allow time for most necessary changes to occur.

While it is extremely tempting to try to create a consensus so that you have a neat, tidy, unified final product to unveil for the public and policy makers, if a diversity of ideas, perspectives and policy prescriptions is really your goal, a consensus will erase many of those various ideas, perspectives and policy prescriptions. If you have invited an extremely diverse group of people to participate, it is entirely possible that consensus would be impossible to achieve anyway. Again, if you want diverse ideas, suggestions and solutions to the natural resource policy challenge you are tackling, do not invite only people from one agency, or only academics, or only wheat farmers, or only limnologists who work for state fish and wildlife. I am not suggesting that all people who work for agencies will come up with exactly the same ideas, or that any of us has been so inculcated into our workplace that we no longer have original thoughts, or that all wheat farmers have the same background, beliefs and training. That being said, similar people do tend to end up in similar places, and working on one issue for decades within the confines of your particular job may result in a bit of tunnel vision.

Now for the two lessons that we can learn from but that we cannot necessarily avoid the next time out. The fact that a small number of technocrats want only scientists working on coming up with solutions to natural resource conundrums is something that may or may not change in the future, as more and more universities and colleges encourage an interdisciplinary approach to just about everything. Some of those technocrats may be swayed by professional interactions with intelligent people with different disciplinary backgrounds in projects like the Salmon 2100 project. And finally there is the reality that you cannot please everyone. No matter how carefully you plan everything out and how inclusive or exclusive you are in your invitations to participate, and how well you have crafted your projections for the future state of the natural resource or species in question, someone will find something to complain about. You should focus on achieving the goals you set for yourself and your project.

My project suffered from a lack of focused time; that is adequate time after the question had been clearly determined and the analysis tool well understood. The interview questions had been developed to investigate a slightly different question and so there are questions that I would have liked to have had responses to for the analysis that I did not ask in the course of the interviews. As is the nature of qualitative research any and all categorizations and analysis is subject to my own personal biases, assumptions and understanding of the issues at hand. Someone else doing the same project might have come up with slightly different results, though the analysis tool would likely point them in the same general direction. Likewise, conducting the project using a different analysis tool would likely result in slightly different findings. Further research is needed into the policy implications of using a project, such as the Salmon 2100 project, for brainstorming solutions to natural resource policy conundrums, such as salmon recovery. Further research is also needed to investigate the grey area between science and policy making and determine how to address the

gap that is evident between those who are trained as scientists and those who are trained as policy makers and analysts.

I do not possess any ability to see into the future so there is no way that I can say for sure which policy prescriptions will work, and which will not. I hesitate to even speculate. The Salmon 2100 project participants put considerable time and effort into developing comprehensive policy prescriptions to address the future of wild salmon in the Pacific Northwest, but we cannot forget that the vast majority of the participants are not policy makers or policy analysts. This does not mean that their efforts or their ideas should be dismissed. They should be read and considered for what they are; proposals. The social construction framework was incredibly useful and effective in analyzing the likelihood of these policy prescriptions making it onto the political agenda. I think the gut reactions to certain policies that came out of the interviews reflect common understandings that there are certain groups in our society that set the agenda and have the ability to direct benefits their way while deflecting any real burdens away from themselves. This serves to underscore the applicability of the social construction framework to issues such as salmon recovery in the Pacific Northwest.

Bibliography

Ashley, K.I. (2006). Wild Salmon in the 21st Century: Energy, Triage, and Choices. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.71-98). Maryland:American Fisheries Society.

Bailey, L.L., & Boshard, M.L. (2006). Follow the Money. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.99-124). Maryland:American Fisheries Society.

Birkland, T.A. (2005). *An Introduction to the Policy Process*(2nd ed.) New York:M.E. Sharpe.

Bisbal, G.A. (2006). Learning to Decide and Deciding to Learn: Conduits to Wild Salmon in 2100? In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.151-171). Maryland:American Fisheries Society.

Blumm, M.C. (2002). *Sacrificing the Salmon: A Legal and Policy History of the Decline of Columbia Basin Salmon*. Book World Publications.

Brannon, E.L. (2006). Engineering the Future for Wild Salmon and Steelhead. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.175-192). Maryland:American Fisheries Society.

Buchal, J.L. (2006). The Philosophical Problem in Salmon Recovery. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.193-205). Maryland:American Fisheries Society.

Clark, W., Mitchell, R., Cash, D., & Alcock, F. (2002). Information as Influence: How institutions mediate the impact of scientific assessments on global environmental affairs. *John F. Kennedy School of Government Harvard University Faculty Research Working Papers Series*.

Committee on the Status of Endangered Wildlife in Canada. 2007. Retrieved November 29, 2007, from http://www.cosewic.gc.ca/eng/sct1/index_e.cfm

Curtis, J. & Lovell, K.L. (2006). Lasting Wild Salmon Recovery versus Merely Avoiding Extinction. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.207-231). Maryland:American Fisheries Society.

Dey, I. (1993). *Qualitative Data Analysis: A User-Friendly Guide for Social Scientists*. London:Routledge.

Ferrey, S. (2004). *Environmental Law: Examples & Explanations*(3rd ed.). New York:Aspen Publishers.

Fisheries and Oceans Canada. (2007) *Species at Risk Act*. Retrieved November 28, 2007, from http://www.dfo-mpo.gc.ca/species-especes/home e.asp

Gosling, J.J. (2004). *Understanding, Informing, and Appraising Public Policy*. New York:Pearson Longman.

Governor's Salmon Recovery Office. (2007) *Salmon Recovery Regions*. Retrieved January 16, 2008, from http://www.governor.wa.gov/gsro/regions/default.asp

Hartman, G.F., Northcote, T.G. & Cederholm, C.J. (2006). Human Numbers – The Alpha Factor Affecting the Future of Wild Salmon. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.261-292). Maryland:American Fisheries Society.

Knudsen, E.E. & Doyle, E.G. (2006). Science and Technology Are Essential for Sustaining Salmon Populations and Their Ecosystems. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.311-332). Maryland:American Fisheries Society.

Lackey, R.T. (2002). Restoring Wild Salmon to the Pacific Northwest: Framing the Risk Question. *Human and Ecological Risk Assessment*, *8*, 223-232.

Lackey, R.T., Lach, D.H., & Duncan, S.L. (2006). *Salmon 2100: The Future of Wild Pacific Salmon*. Maryland:American Fisheries Society.

Lackey, R.T., Lach, D.H., & Duncan, S.L. (2006a). Policy Options to Reverse the Decline of Wild Pacific Salmon. *Fisheries*, *31*, 344-351.

Lombard, J.H. (2006). The Keys to Success: A Landscape Approach and Making Economic Work for Conservation. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.363-391). Maryland:American Fisheries Society.

MacDonald, D.D., Knudsen, E.E. & Steward, C.R. (2006). Salmon in the 21st Century: Managing Human Activities to Achieve Long-Term Sustainability of Pacific Salmon and Steelhead Populations. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.393-409). Maryland:American Fisheries Society.

Martin, J.T. (2006). Climate and Development: Salmon Caught in the Squeeze. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.411-423). Maryland:American Fisheries Society.

Michael, J.H. (2006). People, Salmon, and Growth in Western North America: Can We Accommodate All Three? In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.425-443). Maryland:American Fisheries Society.

Nicholas, J.W. (2006). Saving Salmon – and people – in the Next Century. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.445-464). Maryland:American Fisheries Society.

Rahr, G., & Augerot, X. (2006). A Proactive Sanctuary Strategy to Anchor and Restore High-Priority Wild Salmon Ecosystems. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.) *Salmon 2100: The Future of Wild Pacific Salmon* (pp.465-489). Maryland:American Fisheries Society.

Rees, W.E. (2006). Human Nature, the Growth Imperative, and the Precarious State of Wild Pacific Salmon. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.491-515). Maryland:American Fisheries Society.

Rhoads, B.L., Wilson, D., Urban, M., & Herricks, E.E. (1999). Interaction Between Scientists and Nonscientists in Community-Based Watershed Management: Emergence of the Concept of Stream Naturalization. *Environmental Management*, *24*, 297-308.

Save Our Wild Salmon. (2005) *Transporting Goods on the Lower Snake River*. Retrieved January 16, 2008, from http://www.wildsalmon.org/library/transport-lowersnake.cfm

Schneider, A.L., & Ingram, H.M. (2005). *Deserving and Entitled: Social Constructions and Public Policy*. New York:State University of New York Press.

Schneider, A.L., & Ingram, H.M. (1997). *Policy Design for Democracy*. Kansas:University of Kansas.

Schneider, A.L., & Ingram, H.M. (1993). Social Construction of Target Populations: Implications for Politics and Policy. *American Political Science Review 87*, 334-347.

Schneider, A.L., & Ingram, H.M. (1990). Behavioral Assumptions of Policy Tools. *Journal of Politics 52*, 510-529.

Species at Risk Act. (2007) *Public Registry*. Retrieved November 29, 2007, from http://www.sararegistry.gc.ca/default_e.cfm

Steel, B.S. (2006). Saving Wild Salmon: Moving from Symbolic Politics to Effective Policy. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.517-532). Maryland:American Fisheries Society.

Stout, B.B. (2006). Thanksgiving 2101 – A Salmon Story. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp.533-550). Maryland:American Fisheries Society.

U.S. Fish and Wildlife Service Endangered Species Program. (2007) *USFWS Threatened and Endangered Species System (TESS)*. Retrieved November 29, 2007, from http://www.fws.gov/endangered/

White, D.D., & Hall, T.E. (2006). Public Understanding of Science in Pacific Northwest Salmon Recovery Policy. *Society and Natural Resources*, 19, 305-320.

Whyte, W.F. (1986). On the Uses of Social Science Research. *American Sociological Review*, *51*, 555-563.

Williams, J.E., & Pister, E.P. (2006). Lifestyles and Ethical Values to Sustain Salmon and Ourselves. In R.T. Lackey, D.H. Lach & S.L. Duncan (Eds.), *Salmon 2100: The Future of Wild Pacific Salmon* (pp. 577-596). Maryland:American Fisheries Society.

APPENDIX

Interview Questions

1. How did writing your chapter for the Salmon 2100 Project affect you? How did this experience affect you personally? Knowing what you know now, would you participate in the Salmon 2100 Project again? Would you do things differently or the same?

2. Do you believe that the results of the Salmon 2100 Project have made a difference in your own life, in the lives of the public, and/or to policy makers?

3. How have you and/or people you know reacted to the ideas put forth in the Salmon 2100 Project?

4. Have you or people you know challenged the analysis of the current state and projected future for wild salmon in California, Oregon, Washington and southern British Columbia? Do they accept it? Do they really understand it? Ultimately, do you think the analysis is right or wrong?

5. If you were a participant in the Salmon 2100 Project, do you believe that your policy prescription was a probable scenario? **OR** If you were not a participant in the Salmon 2100 Project, do you believe that any of the policy prescriptions presented a probable scenario?

6. Do you believe that preparing feasible salmon policy is a matter of educating the public and policy makers, coming up with more accurate or definitive science, or both or something else entirely? If the public had all the facts, do you believe they would change policies regarding salmon?

7. How do you think we should measure the "success" of salmon policy? Do you think the Salmon 2100 Project used the right participants, or a good variety of perspectives? Do you think that your views/perspective got a fair hearing in the course of the project? Should the project ultimately have attempted to come to a consensus?

8. Commonly policies require some level of compromise. With that in mind, in your opinion, who wins and who loses (or who wins and who pays) with salmon policy?

9. Do you think that salmon policy is an issue that can be ultimately defined as an urban versus rural issue?

10. How were the project leaders? Were they reasonable? Did they attempt to push you down a particular path or line of thinking? Were you pressured by the organization you work for (if not retired) in the process of participating in the project?