

Without A Change in Direction, We'll Get Where We're Going:

Writing a Future for Wild Salmon

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The authors of all chapters faced an unusually difficult challenge in responding to the question about wild salmon in 2100. They had to prescribe policy when most were unaccustomed to doing so, and they had to project their results out over a century. To explore the nature of their complex task, the editors asked them a number of questions, including how did you grapple with the futuring aspect of the challenge? Have you been pressured in your career, explicitly or implicitly, to spin salmon science in a certain way? What does the salmon problem teach us about the role of science in society? And finally, is the salmon issue too wicked to be resolved?

Without a Change of Direction, We'll Get Where We're Going: Writing a Future for Wild Salmon

Sally L. Duncan, Denise H. Lach, and Robert T. Lackey

Introduction

As the early drafts of Salmon 2100 chapters filtered in, some authors lagged behind, others confessed to being stressed by the task, and several ultimately turned down the chance to participate. Comments started to emerge about what a difficult challenge this was and about the strange bedfellows to be found between the covers of the proposed book. From across the country came warnings about the scurrilous and even perilous political nature of the project. Diverse authors had been given open season to speak their minds, dream their solutions, and write the future for wild salmon, specifically with no direction from their employers. Why the struggle? Why the fuss? Was it because of those two perverse constraints on their assignment: the 100-year time frame, and the relentless nature of human population pressure in California and the Pacific Northwest? Or were other peculiar forces at work behind the scenes?

After several spirited discussions among the organizers about what the Salmon 2100 project had unleashed, it was proposed that an epilogue be written to address some of the sociological aspects of writing for *Salmon 2100: The Future of Wild Pacific Salmon*. There was little doubt about the emergent wickedness of the salmon problem (see Lach et al., this volume), but now it seemed the wickedness expanded beyond the salmon problem itself, deep into the relationships between science and society, between personal policy preferences and professional responsibility and between the way we think and our ability to transform human systems.

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The views and opinions presented in this chapter are those of the authors and do not necessarily represent those of any organization.

To explain the unanticipated social disturbance surrounding the publication of the anthology, we posed a number of hypotheses. Did the incipient angst reflect a scientific worldview unaccustomed to tracking the applied consequences of its findings and deeply uncomfortable with taking a policy position calling for advocacy or persuasion? Was there an inbuilt lack of faith in the public, in the bureaucracy, or in technology to solve this or any of our looming environmental problems? Is it too difficult to separate purely scientific issues from social issues? Were emerging solutions likely to be too draconian, too offensive to let us sleep at night? Were we all ultimately too tied to the idea of the rational, or to the canons of traditional scientific methodologies, to step into the mire outside the box?

We wanted to investigate two primary questions of our own, with the help of our writers: do the constraints of the 100-year view and the population driver completely reframe the wild salmon problem? And,

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when all the dust has settled, what role does science really play in our society? These questions, we correctly assumed, would bring forth better ones about how we construct our knowledge and what capacity we have for transformative thinking when a crisis looms. As for the issue of whether some invited

authors should appear in this anthology or not, Robert Lackey summed it up succinctly: “If people think we have invited our enemies to write chapters for this book, my question is, who are our enemies?”

Our methodology for assessing the opinions of the project participants was necessarily simple, in the interests of staying within the time frame demanded of a timely publication. We invited all our authors, including the three who had dropped out after accepting the assignment, to be interviewed by phone, promising them confidentiality for their answers and anonymity in the resulting analysis and chapter. Only 1 of the 30 directly declined; 3 did not respond. Our sample, then, was of 26 salmon people—thinkers, advocates, scientists, policy wonks, activists, academics, consultants, and some fitting several of those descriptions. They were all asked the same core open-ended questions, with follow-up questions as the interviews progressed.

The core questions were

- Has the writing process changed your thinking about salmon issues in any way?
- What kinds of intellectual, professional, social, and personal challenges did you face in writing your chapter?
- How did you grapple with the futuring aspect of the challenge?
- Have you been pressured in your career, explicitly or implicitly, to spin salmon science in a certain way?
- What does the salmon problem teach us about the role of science in society?
- Is the salmon issue too wicked to be resolved?

Following the transcribed interviews, answers were coded into categories and examined for themes and emergent properties that might address our key questions.

Three strong themes emerged among responses. The first was the apparent need to change current modes of thought and step out of our comfort zones. The second was the distinctly misunderstood role of science in society and political decision making, and the third covered a range of power imbalances—political, ideological, and social. These three themes will be discussed here, followed by a section on the potential transformations suggested by their interaction.

Operating out of Kilter: Three Themes

Are We Thinking Straight? Or Is Thinking Straight the Problem?

Specifically regarding the exercise of writing chapters for the book, most participants recognized and appreciated the need to step away from professional affiliations and speak without censors, real or perceived. One suggested that the challenge had given all the writers the chance to be agents of change; others spoke of the need it created to move outside their comfort zones. There were political as well as social aspects to these comments: almost every interviewee could recall incidents in which political spin had been applied to findings or in which release of findings was contingent upon watering them down or strategically reframing them, “artful dodging” as one salmon advocate called it. If one subscribes to the framework of symbolic politics, this should not be a surprise. In the context of its being an almost universal answer from people about their professional and agency/nongovernmental organization work, it is surely a sobering reality check. People on all sides of the wild salmon conservation issue commented that political interference and manipulation of science is a serious problem in many institutional settings.

For those writers struggling with developing policy prescriptions, it was frequently their removal from the comfort zone of professional science that was the problem: they have not previously been in the business of recommending or even evaluating policy. For many the greatest challenge—which several acknowledged they had not met—was projecting their approaches out 100 years. They knew, of course, that the changes of the last century have been momentous, to say the least, and that the pace of such change is highly unlikely to abate. Several claimed this difficulty was exacerbated almost irretrievably by the massive uncertainties that global climate change poses.

Some found that the Salmon 2100 challenge had been helpful with the thinking internal to their home agencies or organizations, and their managers had been supportive of their expressing their ideas in such a forum; for a few, the disclaimer printed

with every chapter was an absolute requirement by their employers, who distanced themselves completely from anything written on the subject of salmon restoration by their employees. In at least one case, travel funding to attend a professional meeting was withdrawn unless the employee in question abandoned his

plan to present his Salmon 2100 findings there. Several writers, as noted, declined the invitation to participate, some withdrew after struggling with the assignment for several months, and some continue to feel quite queasy at the prospect of appearing in print between the same covers as “wackos, children, and hired guns.” Nonetheless, they ultimately participated in the belief that it was better to be in the game than standing on the sidelines and that they “would create allies and enemies no matter what they said.”

Such divergence of opinion can be precisely what engenders stalls in policy, and so we call upon science to resolve the issues. We are, in this and many natural resource arenas, just beginning to address the almost incomprehensible complexity of the dynamic world in which we live. Ecologists and biologists are enmeshed in investigating the role of perpetual ecosystem dynamics, far removed from ideas of predictable stages of development or of equilibrium. Simultaneously, social scientists—for whom social dynamics are nothing new—are querying the transition zone between ecological dynamics and the ongoing effectiveness of human decision making, which is now understood to be far from rational. What do we do when everything is a

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moving target, including science and values? Many of the authors recognized that the study of dynamic systems is somewhat ahead of our ability to think about it:

Most of our ways of thinking are linear thinking, which is appropriate for maybe a couple of years. But linear thinking is like flat earth thinking. If you only go a short distance it works pretty well, but if you go far out, it looks ridiculous. We're going to have to realize that with unpredictable change all around us we still rely on predictive models, but we need something that works better than that and produces results. If we're going to take a complex, non-linear, adaptive, shifting, bigger perspective, we require a bigger worldview.

Several authors pointed out that linear thinking allows us to appease ourselves with short-term and often narrowly focused solutions, such as hatcheries represent when managed purely for the commodity objectives of commercial and sport fisheries. Under a short-term time frame, others noted, any problem can be defined narrowly and is highly subject to the current social will; thus, policy choices remain symbolic, and billions of dollars are spent with nothing productive happening relative to the overall challenge.

Building on these ideas, several authors addressed the resultant decision-making structures that allow us to prescribe "death by a thousand cuts" to any natural resource. Comments focused on two particular aspects of decision making: the cumulative impacts of multiple decisions and the absence of explicit choices. Two authors expressed these as follows:

People like instantaneous solutions. They look for silver bullets, and try to compartmentalize issues, find the evil. If you find it, then you can put the stake through the heart. No one factor or decision took us to this point, we decided to go this way many times with many decisions. Salmon didn't do anything, it was all about us, a collection of decisions. Thus it will take a collection of decisions to put us in a different place.

There needs to be public awareness through public discussion: if we make these decisions, we're eliminating options. Right now that discussion isn't happening, the public is not aware of what they're likely to lose... Until the consequences of our decisions are fully disclosed, this will remain a problem. They may say we don't want wild salmon, but at least if they do it should be based on good information, knowing what their decision *means*.

The suggestion was made that salmon science had been mystified—either by withholding information, or making it highly technical, or specifically not relating it to lifestyles—in order to reduce public access to

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it. Too often, another noted, our trade-off decisions, when we finally understand that is what they are, are mutually exclusive. Several authors also pointed out that we are in the habit of thinking that big-stick federal laws are what will “save the resource,” if any-

thing can, but in fact, in many ways, they do not have the power of state laws, nor the in-depth understanding that local, watershed-level involvement creates. The thinking that federal legislation will save the day, in other words, is one of those truths that needs to be unveiled for the myth that it is.

Several other habits of thought were identified as barriers to policy progress. Scholastic tradition and even nonscientific approaches are not accustomed to changing scales easily. Moving from the creek to something of the scale of the Columbia, Fraser, or Sacramento/San Joaquin watershed, from the urban transport network to the river bed, and from the watershed council meeting to global climate change demand of us perspectives for which we have no training. Is such training possible? More to the point, how hard have we tried? they asked. We are accustomed to thinking in what we call rational terms, but some writers were willing to acknowledge that what is needed to change our direction on salmon restoration is little short of religious fervor, whether it be for salmon themselves or for more obscure matters such as sublethal effects of

temperature change or the nuances of salmon genetics. In another example identified by the interviewee as politically incorrect, how clearly do we think about what regional population increase specifically means? In some areas, the influx of new residents is dominated by people from non-Western cultures. What do we know of their views about the environment? Will they affect the level of concern for any natural resource restoration attempts?

So we might ask, is calling upon the best available science, as policy makers perpetually do, the answer or just another example of symbolic politics?

Have We Ever Used Science to Make Policy?

Universally, authors have reflected on whether science has a role in the policy process and found answers that they did not necessarily like. Among the descriptors of the role of science, "...a legitimate but limited role...science is not going to change the law alone"; "...a compass but not a guide.." "...not in the driver's seat..." "...not a strong instrument, used only to meet the political needs of the day." One author expressed the widely held view thus:

Science has to be the core of our hope for truth—in its truest form it is a search for the truth, the best we can understand it. From there, the decisions that occur are some kind of acceptance or rejection of that science, to various degrees...But a lot of times decisions are made through the political process with corporate influence, sometimes with pressure from environmental groups, or decisions end up in court. Science is feeding into that all the way, but whether any one of those decision making processes includes or values science is another question. Science is *always* subject to the process.

Thus, the denial of scientific findings can continue despite the sheer volume of support for politically unpopular positions. More bluntly, one writer observed that we live with the myth that we have a science-based society, but in fact, our society is ideologically based and science is constrained from informing policy by social and religious beliefs. Another expanded on this idea:

Scientific information is not the same thing as policy. The question here is about society, and the direction that we want to go. There's a common fallacy across the board that science contains ethical imperatives. Science is very powerful, but it provides no direction to tell you what would be a better way to live as a human.

Another point of view among the writers holds that amassing scientific knowledge is not the challenge—we're pretty good at that—but that science does not do a good job of addressing complexity, whether because of the old adage of learning more and more about less and less or because of the habit of short-term thinking that produces simplistic solutions. Whatever the case, the tenets of science are coming increasingly under fire. One author suggested that

There are good people who have been on the front lines and have spoken up, but nonetheless the work that's been done on non-linear dynamics and complexity theory is challenging many of the assumptions of traditional science and academia.

Or should we just accept that we are very bad at addressing change? Authors variously described this latter idea as anything from denial of proven realities to a cop-out, to "a bureaucratic pile of horse patootie." We can certainly address change with the help of science, they believe, because we have done it before, when and if we wanted to. However, only a few of the authors interviewed believe that science can resolve the particular challenges faced by the quest to sustain wild salmon. Not by itself.

Other confounding factors add to the confusion about how science can contribute. There are vast holes in our data about the ocean, for example, leaving the larger part of most salmon life cycles poorly understood. In addition, we routinely combine social and scientific concepts for our own purposes—minimum

flow was cited as a prime example of a scientific concept with purely social roots, and shortages of water was offered as an example of language betraying the underlying problem. Several authors also believe that the hunt for money to fund research can overwhelm the hunt for truth via the scientific method; as a result, there has been a huge investment in information that is not being used. Thus, concluded one agency scientist, in light of the misuse or nonuse of science, blaming it for the failure of salmon restoration is nonsense.

Several writers observed that scientists are politically naïve to see themselves as working in the public interest with the political context as it is. Short-term politics, not science, they said, guide future decisions about the environment. And thus, the gnarly question raised by several interviewees: what is the responsibility of scientists?

Who Holds the Power?

If politics rules the environment, then the imbalance of power that allows purely symbolic politics to dictate priorities needs to be changed and fundamentally, according to a number of the interviewees. Two factors emerged as making the imbalance inevitable:

Because each agency or group manages its resources for its benefit, you have multiple groups trying to manage the same resource, using their own philosophical and ecological perspectives, so naturally you have conflicts because they all have their own agenda.

As time goes on, fewer and fewer people will have the personal connection with salmon when they were abundant. I grew up when that first trip over the bar to fish salmon was a rite of passage, and that particular fishing place is now closed. That loss of connection is going to start having an effect.

With confusion over the role of science, barriers built into the ways we think, and a loss of personal connection to the salmon, the situation appears ripe for symbolic politics to filter priorities and deflect attention from environmental policy realities. Several authors raised the question of whether the challenge

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posed in the writing of this book did not have failure built into it, with so many unknowns affecting the outcome. Nonetheless, all agreed that time and human population may in the end trump all other aspects of the problem if they are not dealt with. Others wondered whether we or our society are fit to tackle

a problem like restoring wild salmon, indeed whether salmon pose “...too wicked a problem to be resolved under a democratic government. Either we have to have very altruistic people who will support other environmental causes as well, or we need a benign dictatorship.”

Among the political pressures against the harsh measures required to face wild salmon restoration, development powerfully combines the commerce and population drivers. One writer summed up the majority opinion:

Some of the authors may be apologists for human development, and still believe that hatcheries will be good enough, that we don't have to worry about wild salmon. But I don't buy that at all, I'm much more of a conservationist. We're in the canary in the coal mine situation. If we give up on the wild salmon, we give up on ourselves.

The cost of some of the proposed changes was addressed directly by few of the authors, but in interviews, more of them acknowledged that cost of lifestyle changes will create a massive barrier, despite the

ironic fact that cost of current restoration efforts may be just as high or higher. In fact, economic issues were among the most intransigent, compelling, and overriding issues affecting the future of wild salmon, according to most authors in interviews. The economic system (see Lackey et al., Chapter 3, this volume) should perhaps be at the head of the list of potential transformations.

Back into Balance: Transforming Our Approach to Salmon Restoration

Without having specifically been asked about transformations, certainly without hearing that particular description of the fundamental changes needed to give wild salmon—and indeed much else—a fighting chance in the next century, every author interviewed seemed to believe we are on a deeply misguided track. A seriously wrong track, in fact. The three themes around which their responses clustered ultimately suggested the need for transformations in three related areas. In no particular order, these were the challenges of decision making in a multifaceted democracy, the difficulty of comprehending complexity within our social and ecological worlds simultaneously, and the failure of our current economic structures to adjust to ecological trade-offs.

“Are we trapped by our linear trajectories, regarding money, values, and the future?”

Taking on the economic systems of the Western world may seem somewhat dramatic, but those authors who suggested it (and it should be noted that they included more than just the ones writing about economic aspects of the problem) listed current economic system versus wild salmon as a choice that needs to be recognized explicitly.

We came to the conclusion that we're talking about a major overhaul, if wild salmon are going to flourish. It will take a major reinvention of economic structures and practices. So we're proposing an ethical vision of sustainability that has to be ground-tested under fire, and as William McDonough has said, it's a new industrial revolution.

Testing it under fire, however, has its own challenges. Who is willing to run the tests and under what level of fire?

The trap is we make trade-offs and decisions that are mutually exclusive. Then the only way you have to make the choice is to make the money comparison. Land prices rise more rapidly than fish prices in the market place. In fact the scarcity value of everything rises, but not at the same rate. Thus you can very rapidly lose if you only have the money criterion to use.

Others commented that any economic reinvention will need a strong emotional base to be successful, along with the partnerships and renewed community to override the appeal of consumerism. For example, a cost-benefit analysis run on the Fraser, where strong emotional attachment does indeed seem to be what is protecting wild salmon, would make it very clear that logically and financially the public should opt against conserving salmon. This finding provides a “wonderful case study of the notion that monetary valuation doesn't work as well as emotional” and dovetails with the idea that compensation needs to be localized.

Underscoring the fundamental nature of the changes needed, not just in economic systems, but in the very way we think, various authors asked some version of the question, are we trapped by our linear trajectories, regarding money, values, and the future? They pondered the role of money in scientific research, the

fallacy of seeking single solutions, and how issues are diluted and confusion seems inevitable when even genuine caring runs head-on into complexity.

Several feared, as noted, that the challenge posed in the Salmon 2100 project sets the book up as predicting the failure of any attempts to save wild salmon; another wondered if the nature of the questions set us up automatically for a technological fix. Asked another,

What if we sow discouragement with our assessment, and by doing so, change the ability to affect human attitudes and priorities? Have we done the fish any favors then?

Solutions to these higher-order quandaries, the kind not directly addressed in the chapters, were not immediately forthcoming. Every interviewee admitted that in his or her darkest hours, the wild salmon problem seems indeed too wicked to be resolved in favor of wild salmon, particularly in a culture where apparently democratic structures now appear to be part of the problem and there are no incentives for much-needed institutional change. We are repeatedly capable, it seems, of compromising biology to harvest fish and doing it to satisfy a segment of the voting public that has a strong following. Or, to use another choice posed by several authors, giving up the ethical questions of sustaining wild fish to satisfy material desires.

All participants believe in the worthiness of the Salmon 2100 project, and all believe that there *are* solutions that will help conserve wild salmon if that is the goal society chooses. They spoke of the need for

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reframing our questions, embracing cross-disciplinary thinking, and finding points of connection between ethics, theology, and science. Several invoked the age-old philosophical question, how ought we to live? Several spoke of using salmon as a great integrator, an icon representing our resolve to change. Others spoke more simply

of the ethical responsibilities of scientists to keep pursuing the truth, even when despair seems the more logical choice.

Among the authors, the verdict is in: transformation is essential. Without it, the wild salmon will not survive in sustainable numbers. Universally, they acknowledged the problem is not the salmon, nor the science. Yes, we have met the enemy. So now we need to learn how to grapple with complexity in meaningful ways. We need to figure out what to do with knowledge that conflicts with experience when our fixes are not fixing any more. We need to create intellectual space for ideas and solutions from outside the current set of choices. And we need to face up to the personal and professional price for fighting against the current. As one interviewee concluded,

The place we ended up at was appreciably more radical than we would have expected. But we're not comfortable or uncomfortable with it, because we're not comfortable with many other things that are happening, like Oregon becoming a rainy New Jersey. This is just where the question has to go.

Uncertainties abound within the challenge given to our authors. Will population increase by more or less than the factors mentioned in Chapter 3? How do we confront the changes that may come in the next 100 years, given how fast change is proceeding now? And climate change? If climate change proceeds at even a low-level pace, one ecologist noted, salmon management issues will be reduced to second-order questions.

If Salmon 2100 achieves nothing else, according to a number of the chapter authors, it will at least have

rattled the cage of current thinking, angering some and satisfying few. It will have reminded us that money is being spent on, even poured into, a problem that we are demonstrably failing to solve because we repeatedly fail to recognize its larger human and societal dimensions.