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# ADAPTING TO CHANGE

*Fishing Families, Businesses, Communities, and Regions*

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## Oregon Coastal Salmon Restoration: Views of Coastal Residents

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### Executive Summary

In October 1995, Oregon Governor John Kitzhaber began preparing a restoration plan for Oregon coastal coho salmon runs (*Oncorhynchus kisutch*). The plan encourages a cooperative approach between state agencies, federal officials, and community partners.

To learn about the people most affected and most likely to participate in this plan, we conducted a survey of coastal residents from November 1996 through January 1997. We received 505 responses—a 50% response rate.

Respondents' views suggest support for a voluntary, nonfederal approach to salmon restoration. While they show general support for salmon and environmental restoration, their views differ from those of many aquatic scientists on the impact of marine mammal and bird predation, use of hatcheries, and the importance of naturally spawning stocks of salmon. They show a willingness to pay modestly and to volunteer for salmon restoration, but they lack faith in government's effectiveness.

The survey shows that coastal residents' values regarding environmental and economic priorities are more reliable than demographic variables in predicting their attitudes toward salmon restoration. Responses to a question weighing environ-

mental and economic priorities had more and stronger correlations to salmon issues than any of the demographic variables. This suggests that coastal respondents will interpret and evaluate materials and information according to their beliefs, and that age, gender, income, education, and length of residence are not very helpful in distinguishing those who are willing to help restore salmon from those who are not.

Some of the survey's main findings:

- Nearly two-thirds (63%) of respondents agree with the need to protect salmon, which is comparable to the findings of other recent surveys. Just over 40% want environmental and economic considerations given equal weight, while 40% want greater consideration given to environmental factors. About one-sixth weight economic considerations higher.
- Over half of respondents say that it is "quite" or "very" important to reduce marine predation by seals, sea lions, and cormorants.
- Many people expressed a strong skepticism regarding the existence of wild fish and gave strong support to hatcheries.
- Compensation of private landowners is an important issue. Fifty-seven percent agree that "private landowners should be compensated for protecting and restoring salmon," and one-third

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are in strong agreement. People also stated that those who are responsible for the destruction of salmon runs bear a responsibility for correcting the problem.

- While 30% of respondents say they would not pay anything or volunteer any time to restore salmon, 35% are willing to pay \$10 or more per month. A third are willing to volunteer a day or more per month.
- Overall confidence in organizations and institutions involved with salmon is moderate, and often low. People are skeptical of government and want local control of restoration efforts. Respondents favor the state to lead the restoration effort.
- Many respondents feel that local people who are perceived as knowledgeable (often, recreational and commercial fishermen) are the best source

of information. Television and radio (62%), word of mouth (60%), and newspapers (45%) are the most cited information sources. Among state institutions, state agencies are most often (35%) noted as good sources. Environmental groups are mentioned by 28%, but 39% say that they have “no confidence at all” in environmental groups.

Coastal people want a “common sense” approach to salmon restoration. Most are in a “show me” mood and do not trust any information source or governmental institution. Whatever is done will have to demonstrate results, which is difficult since many restoration efforts take years to show positive effects. The survey suggests that planning and communications programs will be more successful if they recognize that people’s values affect how they perceive and receive information about salmon issues.

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## Background

Oregon wild coastal coho salmon runs (*Oncorhynchus kisutch*) have been experiencing severe declines since the late 1970s. In 1982 the Oregon Department of Fish and Wildlife (ODFW) implemented a plan, focusing on single-species management and hatchery production, to reverse the decline. The decline continued, and pressure from conservation groups and others led the National Marine Fisheries Service to investigate listing coho under the Endangered Species Act. In October 1995, Oregon’s governor, John Kitzhaber, began preparing a restoration plan to retain local control of salmon restoration efforts. The plan encourages a cooperative approach between state agencies, federal officials, and community partners. It emphasizes grassroots involvement, voluntary (as opposed to regulatory) approaches, restoration of wild salmon populations and habitats, a role for hatcheries, and a recognition that salmon are part of Oregon’s cultural identity (Governor’s Natural Resource Office 1997).

A voluntary restoration program depends on the knowledge and support of local citizens. We surveyed coastal residents to better understand their values and knowledge of salmon issues. The study also explored how coastal residents receive information about salmon; their willingness to pay and volunteer for salmon restoration; and their demographic characteristics. In addition, it asked attitudinal questions comparing environmental and economic priorities, and exploring other environmental issues, general concerns, and confidence in organizations.

The survey was mailed to coastal community leaders and residents. We received 505 responses, 50% of the potentially reachable sample of 195 leaders and 808 residents. Community leaders included a 100% sample of coastal city councilors and county commissioners, plus watershed group leaders (see “Response Bias,” next page). A random sample of coastal residents was obtained from a national sampling firm. The survey was

conducted according to Salant and Dillman's (1994) modified total design approach. The first wave of surveys was sent as voting took place for the 1996 presidential election, and the final interviews were completed in mid-January of 1997.

Coastal residents are diverse. Many have jobs that depend on the extraction of coastal resources. Others rely on recreation and tourism, where appreciation of natural resources is primary. A

quarter have lived on the coast fewer than 10 years, and a quarter more than 40 years. Thirty percent are retired. In comparison with census data the survey population is older, has more people in the \$35,000–50,000 salary range, and has fewer respondents who earn less than \$15,000 per year.

We compared coastal residents with community leaders; mail respondents with those who completed telephone interviews; and groups with different demographic characteristics including

### **Response Bias**

Our survey included a systematic look at response bias. Many surveys assume that if every respondent has an equal opportunity to respond, then nonresponse is not a problem. In a phone survey, nine calls may be made for each response (Hammond 1996). Since biases are inherent in any survey or observation of people's behavior, and contradict the statistical assumption of randomness required for generalizing results from sample populations to the larger whole (Economist 1992:106), we felt that it was important to learn something about nonrespondents. We also felt that, since the survey focuses on voluntary efforts to restore salmon, it was important to understand peoples' reasons for not responding.

We telephoned two-thirds of those who did not respond to the first two waves. Thirteen percent of these calls resulted in interviews, and 19% in direct refusals. Thirteen percent ended in what might be called a "passive" refusal where the person would not take the time to be interviewed by phone, but said they might return the survey and never did. Twenty percent of the calls went unanswered, 19% reached answering machines, and 14% of the phones were disconnected. Including refusals as responses and deducting the phones that were disconnected from the survey population gives an effective response rate of 71%.

Respondents who returned the mail survey were quite similar to the nonrespondents who were called, but many of those who were called said they felt they were not knowledgeable enough to answer questions about salmon. A higher percent of phone respondents were women with lower education levels. Phone respondents also showed significantly more confidence in the Oregon ballot measure process, federal courts, Congress, and the State System of Higher Education than mail respondents. However, the correlations are weak, and these were the only 6 of 60 variables where the two populations differed significantly. The slightly greater confidence

in 4 of 16 institutions involved with salmon does not affect our overall conclusion that coastal people have, at best, moderate confidence in government institutions.

The reasons for nonresponse can be grouped into five categories. The two largest groups include people for whom salmon restoration is not a priority and those who do not think they have anything to contribute to a survey on salmon or who do not feel knowledgeable about "fishing issues." Most do not seem aware of the broader implications of the salmon situation and do not appear to know an endangered species listing of coho salmon is pending.

A smaller group of nonrespondents contacted by phone opposed government and government involvement. These people are angry and hostile toward government, and they disregarded the survey because they equated it with government. Some of these people were more willing to talk on the phone than to fill out the survey.

Other nonrespondents include older people who feel their opinions are unimportant and who say they are passing on the decisions on to younger people. Finally, many coastal residences are second homes which are used less in the winter.

What cautions should be considered given our understanding of nonrespondents? The two largest groups of nonrespondents are currently not very concerned about salmon. They are unlikely to become involved in the restoration effort unless it directly affects one of their activities. The older people who are passing off decision making are not likely to get involved. Those who have second homes on the coast are from urban and suburban areas where support for salmon restoration is higher. The small group of nonrespondents who have low opinions of government could pose problems for salmon restoration. A voluntary program with government ties could be undermined by a small group strongly committed to an antigovernment view.

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gender, age, length of residence, education, and income. These comparisons revealed very few significant differences on issues relating to salmon (see “Community Leaders and the Public,” next page). We also analyzed peoples’ priorities regarding environmental and economic considerations, and found that these better explained different views on salmon restoration.

In evaluating differences between various respondent populations, we rely on three criteria. First, we look for correlations that have a probability of one in 1,000 of being wrong ( $p < 0.001$ ). Second, when we see a relationship, we should be able to explain why it exists. Finally, we check these results against other surveys that have been done and other observations of people’s preferences about salmon. The following tables and text include references to a number of other surveys that have dealt with salmon issues (most pertinent are Brunson and Steel 1994; Dunlap 1992; Martilla and Kiley 1994; Shindler et al. 1993, 1994; and Steel et al. 1994, 1995).

## Major Issues

The survey found strong support for salmon restoration, with 60% of respondents agreeing, “We must protect and restore salmon even if it is expensive.” Many expressed the view that all of us share responsibility for the salmon decline. The state is favored over other entities for leading restoration planning. Public views on marine mammal and bird predation, hatcheries, and the importance of wild fish differ from those of many scientists (Cone 1995; NRC 1996; Stouder et al. 1997). Respondents support compensation for private landowners who protect and restore salmon habitat, if they are not responsible for contributing to the decline in salmon runs.

While the survey provided categories for people to check, many provided comments amplifying their views. We chose some of these expressions to use as direct quotes in the following pages.

Although views were diverse, the quotes reflect common themes in the responses.

## State Leadership

Fifty percent of respondents say they would prefer the state to lead salmon restoration efforts alone or in combination with other groups, particularly watershed organizations, counties, and resource users. Of those favoring state leadership, over half listed the state as taking the lead alone. However, a substantial group does not want the government—particularly the federal government—involved at all: “It messes up everything it touches.” National surveys also show support for giving states the highest responsibility for environmental regulation and protection. Mellman et al. (1994) found the state government preferred at a rate of 37% compared to 29% for federal and local government.

One-fifth of respondents believe watershed organizations should share the lead in restoration efforts, but less than 5% would have watershed organizations leading alone. Resource users (48%), the federal government (42%), and the state (38%) are favored to finance restoration efforts. In general, people believe planning should take place at a local level while financing should be spread more broadly.

*Stop management by committee, specifically at the state and federal level. “Our people” know what’s wrong. Give them the tools.*

*Listen to the fishermen for their ideas and don’t rely on “experts” with no practical knowledge or understanding of an individual stream!*

*Let areas/regions which have made significant progress, i.e. Rogue River, Sixes, Elk, Chetco, have some reward for their efforts—don’t let the Feds dictate broad and often ill-conceived plans in areas showing good progress.*

*We are experts in Coos County!*

*People in Multnomah County don’t care what people in Coos County think.*



## Community Leaders and the Public

Community leaders make up 19% of the respondents. On most value issues, their views do not differ significantly from those of coastal residents (table 1). However, they are significantly different in their demographic profile.

Fifty-eight percent of community leaders and 45% of coastal residents who responded are very concerned about the future of coastal salmon. Community leaders see themselves as more knowledgeable about salmon issues; 59% say they are quite or very knowledgeable, compared with 36% for coastal residents. On questions contrasting environmental and economic priorities, coastal leaders tend to give greater weight to environmental considerations (figure 1), but the difference between the two groups is not statistically significant.

Coastal leaders significantly differ from residents in their support for the governor. Fifty-five percent express “quite a lot” or a “great deal” of confidence in the governor, compared to 28% for coastal residents. Leaders are more negative about the ballot measure process; 81% express little or no confidence, compared to 47% for residents. Neither group has overall confidence in the Oregon State System of Higher Education (OSSHE), with 32% of leaders and 36% of residents having little or no confidence in OSSHE.

Coastal community leaders show the greatest difference from residents in their education, income, and willingness to pay to restore salmon runs. Sixty-three percent of community leaders are college-educated, compared to 40% of residents. Leaders’ modal income is \$50–75,000, while the mode for residents is in the \$35–50,000 range. Eighteen percent of leaders are not willing to contribute anything to restore salmon runs, while a third of residents gives this response. Fifty-five percent of leaders say they would contribute \$10 or more per month, compared to 36% for coastal residents. Over two-thirds of leaders agree that greater protection should be given to salmon, and over 60% agree that “We must protect salmon even if it is expensive.”

Item	Leaders	Residents
<b>Concern about future of salmon</b> 1=not at all, 5=very	4.4	4.2 <sup>a</sup>
<b>Environmental-Economic Priority</b> 1=environmental, 5=economic	2.5	2.6
<b>Protect even if expensive</b> 1=strongly disagree, 5= strongly agree	4.0	3.8
<b>Reduce predators</b> 1=not at all important, 3=quite or very important	2.3	2.4
<b>Change endangered species laws</b> 1=strongly disagree, 5=strongly agree	2.7	2.9
<b>Improve forest management</b> 1=not at all important, 3=quite or very important	2.4	2.5
<b>Decrease hatchery production</b> 1=not at all important, 3=quite or very important	2.0	1.8
<b>Oregon ballot measure process</b> 1=no confidence, 5=a great deal of confidence	1.8	2.5 <sup>a</sup>
<b>USFW/NMFS</b> 1=no confidence, 5=a great deal of confidence	3.2	3.3
<b>Environmental groups</b> 1=no confidence, 5=a great deal of confidence	2.7	2.4
<b>Years on the coast</b>	24	28
<b>Willingness to pay (most common)</b>	\$5–10/mo	\$1–5/mo <sup>a</sup>

a. Significant at  $p < 0.05$  (based on Kendall's correlation coefficients)

Table 1. Comparisons of coastal community leaders' and residents' survey responses.

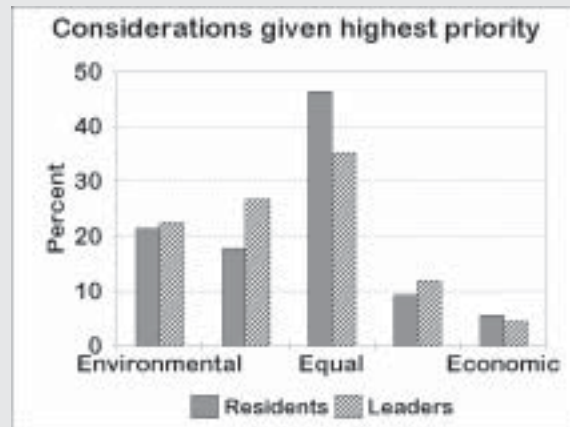


Figure 1. Frequency distribution of residents' and leaders' priority given to environmental, equal, and economic considerations related to salmon restoration.

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Oregon's salmon restoration plan is designed as a voluntary program focusing on shared solutions. Because of this focus on volunteerism, valuable lessons may be learned from ODFW experience with the Salmon Trout Enhancement Program (STEP), which is also a volunteer effort (Nigro and Wise 1995). Although we did not have a question to elicit this, it is clear from phone interviews that many people, particularly recreational fishermen, are very upset about the way the ODFW has handled STEP.

When the STEP program began, it emphasized enhancement through the use of hatcheries and hatchboxes built by volunteers. The program was based on the philosophy that single species management and human intervention could improve the status of salmon. There was a great deal of support for STEP, and volunteers donated many hours to it and became possessive of the program. The 25% of survey respondents who said someone in their household had volunteered for the STEP program were more likely to express concern about the future of salmon, and more likely to feel knowledgeable about salmon issues, than other respondents. They also were more willing to volunteer time than those who were not involved in STEP.

When STEP's management became more concerned about genetic diversity, wild fish, and ecosystem management, many volunteers were disillusioned. Some say they did not have the changes explained to them; others were not listening to explanations; and many disagreed with the changes. From telephone interviews, it was clear that this situation created opposition to ODFW.

*We, in this area, have seen a sharp increase in the number of salmon in the Umpqua River. I feel this is in a large part due to STEP and other hatchery programs.*

*STEP was extremely successful, except when Fish and Wildlife became involved.*

*Less emphasis on wild fish and more emphasis on hatch boxes. The cheapest and most successful way for gains.*

Getting people committed to a voluntary program requires clear and simple concepts. The STEP experience emphasizes how difficult it can be to change the direction of voluntary efforts once initiated. STEP attained strong support, but when biologists wanted to change it, they found it could not be changed easily.

## **Predators**

Over half of respondents say that it is "quite" or "very" important to reduce marine predation by seals, sea lions, and cormorants. This is higher than support for improved forest and farm management, and restoration of wetlands and streams (figure 2). Many people back up their views with personal observations, which have convinced them that marine mammals and birds are taking significant amounts of salmon. People with commercial and recreational fishing licenses are more concerned about the impact of predators.

*One thing I have spent much time on is observing the predators on adult and fingerling salmon . . . One cormorant will eat at least 100 [fingerlings] a day so what chance have they of surviving? I don't think the farmers and loggers have near the impact on the salmon survival they are blamed for. I don't trust any politician on this matter because they don't hear both sides. They hear only what they want to.*

*Get rid of the sea lions! Why are they protected?*

*Do something about the imbalance of population of salmon and seals. Pendulum has swung too far in favor of the predators.*

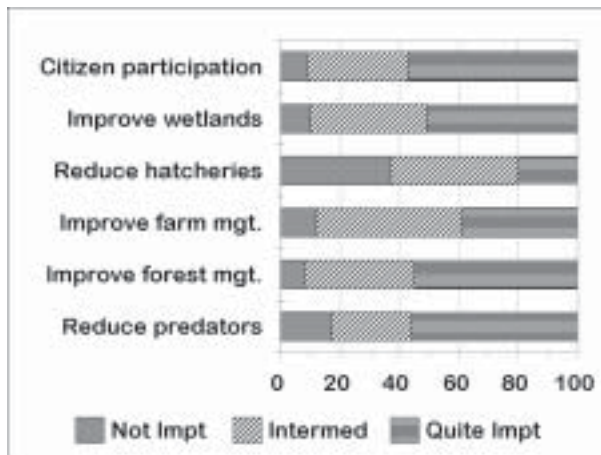


Figure 2. Frequency distribution of all respondents on the importance of given factors for the future of salmon.

Just under a fifth of respondents say that decreasing marine mammal and bird populations is not important at all. Those favoring the environment are somewhat less concerned with reducing the number of predators, and much less willing to change endangered species laws to achieve this reduction (figure 3). A national survey in November 1994 found that 71% of respondents generally supported the Endangered Species Act (Mellman et al. 1994). Greenberg (1995) obtained similar results on the same question.

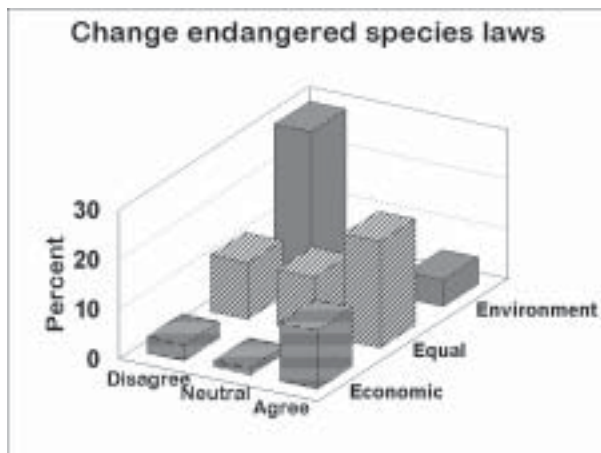


Figure 3. Frequency distribution of environmental, equal, and economic priorities on changing endangered species laws.

## Hatcheries and Wild Fish

Most respondents reflect the view that the salmon decline is a production problem. Nearly half state that it is “not at all important” or “not very important” to reduce hatchery production (figure 2). A Portland focus group reported by Elway (1995:2) found, “Portland participants associated ‘salmon’ with eating. . . . Few seemed to make any connection between hatcheries and the decline in wild salmon . . .”

When discussing hatcheries during telephone calls, many people expressed a strong skepticism regarding the existence of wild fish, saying that hatchery stocks were taken from wild fish; that hatchery fish interbreed with wild fish; and that after all these years there is no difference between the two. When asked the question, “Do you think it is important to decrease hatchery production?” a common response was, “Why would you want to do that?” Many people view those who support wild fish to be extremists.

*I believe the state’s “wild fish” program is defective. Either abandon this or explain it more fully to the public. The rivers should be completely full of salmon.*

*More hatcheries, not less—IF the wild population is depleted.*

*As the hatcheries were eliminated, so were the fish runs. How, after all these years, can anyone distinguish between a hatchery and wild fish? They have intermixed for all of my 74 years. Why is the so-called saving of wild fish so important now? Did someone finally wake up?*

## Compensation

Compensation of private landowners is an important issue. While 16% disagree with the statement “Private landowners should be compensated for protecting and restoring salmon,” 57% agree—and one-third are in strong agreement. People discussing the issue of compensation felt that those who are responsible for the destruction

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of salmon runs bear a responsibility for correcting the problem. Their comments reflect the diversity of views regarding landowner responsibility:

*I do not believe individuals should be compensated for repairing damage to the environment that they have caused!!!!*

*Big land owners are doing a damn good job.*

*Farmers should be held accountable for the poisoning of any or all water ways.*

*Rules being put on farmers are too extreme. The laws are totally ridiculous. Saying cattle ruin the environment is stupid.*

Over half felt that improved forest management was important (figure 2). If landowners were asked to do things that were costly, respondents felt they should be compensated.

A survey of nonindustrial private landowners, industry foresters, and logging operators (Hairston and Adams 1996) looked at support for the new Water Protection Rules added to the Oregon Forest Practices Act in 1994. The majority supported the new stream rules. Three-fourths noted the desirability for having the rules include “compensation or incentives for timber owners.” When asked about the level of loss due to the new rules, most indicated their actual losses were small; however, this was only a year after the new rules were enacted.

### ***Willingness to Pay and Volunteer***

Thirty percent of respondents say they are unwilling to pay to restore salmon, and a third are unwilling to volunteer time. Over a third would pay more than \$10 per month, with 17% willing to pay more than \$20 per month. Forty-seven percent are willing to volunteer a half day or more per month, while a quarter of the respondents would both volunteer and pay. Many of the respondents who say they are unable to pay or volunteer are older people with fixed incomes and health limitations. In addition, many people say they have little faith in the ability of government to spend their money wisely. Some reserve their

willingness to pay or volunteer until they know what program is being proposed. Responses to the question, “What would stimulate you to become involved in salmon restoration?” included:

*A confidence that my efforts and/or money were part of a cohesive effort with specific goals.*

*Willingness of environmental groups to honor and respect my constitutional property rights.*

*Bottom up, non-regulatory, co-operative efforts can often be done with very little cash outlay.*

*We all had a part in the damage done—we all should pay our debt!*

The average amount respondents are willing to pay is about double (\$7 versus \$4) the amount from the Oregon Progress Board study also done in 1996. The two surveys used different scales (table 2). Higher income people are more willing to pay for salmon restoration, while more knowledgeable people are more willing to volunteer. Half of the respondents said that they or a household member had helped with beach cleanup, while a quarter had participated in STEP.

A number of “willingness to pay” studies have been conducted (table 2). Coastal respondents are on the high side in their average willingness to pay. This may be partly due to the fact that community leaders have a higher willingness to pay than do residents as a group. Olsen et al. (1991) summarize surveys giving a range of \$3 to \$9 per month (constant [1996] dollars) for salmon and steelhead in 1989. In 1996 the Oregon Progress Board found 26% willing to pay more than \$7 per month, while 22% said they would pay nothing (OPB 1996). A 1996 Washington survey found 75% of households willing to pay \$8 per month “in new taxes if the money was earmarked for fish and wildlife” (WDFW 1997).



Coastal (1996) categories	None	\$1/ month	\$5/ month	\$10/ month	\$20/ month	>\$20/ month	Avg
Coastal (1996) percent	30	15	20	19	8	9	\$7/month
Oregon Progress Board (1996) categories	None	\$1-3/ month	\$4-6/ month	\$7-10/ month	>\$10/ month	Don't know	
Oregon Progress Board (1996) percent	22	28	18	15	11	6	\$4/month
Marilla-Kiley (1994)			68% would accept \$5 per month increase in electric bills	33% would not accept a \$10 per month increase			
Olsen et al. (1991)							\$3-9/ month (1996\$)

Table 2. Willingness to pay estimates from various studies.

### Communicating with the Public

Because of the level of distrust for government, communicating with the public is difficult. Overall, confidence is very low. People say, “I just don’t know who I can trust,” or “All the information is biased.” Other surveys show that devolving government responsibilities to local authorities and smaller government is well understood and preferred by the public (Greenberg 1995:3).

The average confidence level for institutions and organizations is just below moderate (a ranking of 3.0, on a scale of 1–5, figure 4). The confidence level in the coastal survey is comparable to ratings for a 1994 Linn and Lane County survey (Steel et al. 1994b; Shindler et al. 1995); however, coastal respondents have more confidence in industry groups than do residents of Linn and Lane Counties. The U.S. Congress has the lowest rating, and the Forest Service has the highest rating, in the Linn and Lane County surveys.

Why do coastal respondents prefer state planning for coastal salmon restoration when they have low regard for government? Coastal respondents express a preference for more local control in

planning for salmon restoration, but they also recognize that the task is beyond local capabilities. The state is the lesser of several evils. Further, the confidence question was worded as “Oregon state agencies,” and a negative feeling for one agency may extend to all agencies. Those giving highest priority to the environment also had more confidence in state agencies. Of those giving priority to economic considerations, 38% expressed little or no confidence in state agencies. Among those who give priority to environmental considerations, lack of confidence in state agencies dropped to 22%.

A statewide survey conducted at the same time as this survey also included a question about confidence in universities. The responses received from coastal counties show the universities ranked behind the governor and Oregon business (Steel 1997). The public’s views of state employees and universities were equal.

Phone interviews suggest that people feel the universities are self-serving, and that the State System of Higher Education is competing for money that is needed for K–12 education. In addition, respondents feel that university scientists are distant and ignorant of coastal problems.

Universities are also associated with controversies and policies regarding marine mammals, hatcheries, and forest and land use practices. Several organizations earn high public confidence in national surveys. For example, the Mellman Group (1996) found a great deal of trust in National Geographic (68%), the National Oceanic and Atmospheric Administration (49%), and Public TV (42%) as sources for information on ocean protection.

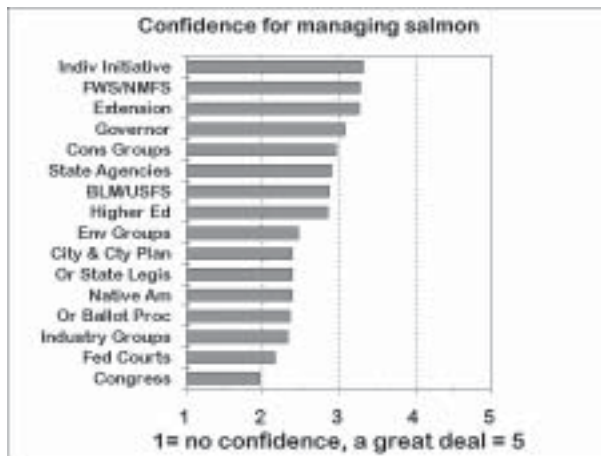


Figure 4. Levels of confidence by coastal respondents in organizations and institutions.

As would be expected, those who give greater consideration to the environment also give greater support to environmental groups as sources of information. However, many respondents say that environmental groups have “gone too far.” Those who weight environmental and economic considerations equally, and those who emphasize the economy, are quite negative about environmentalists. MacWilliams et al. (1995) say, “. . . among people who place a high value on protecting the environment, many people describe environmentalists as ‘extremists.’” Many respondents expressed a desire for a moderate, centrist approach.

People are interested in getting more information about salmon-related issues; however, no pattern emerged regarding what type of information they want. “All of the above”—which in-

cluded basic information, history, discussion of restoration projects, updates on government practices and policies, watershed group information, how-to fact sheets, and addresses for more information—was the most common response. People’s information needs are associated with their personal situation and their knowledge of the salmon problem.

Many suggest that the information needs to be tailored to specific situations.

*The public in general needs easier access to unbiased information on many important issues. TV and most mass media is too colored or homogenized, yet very influential!*

*I understand the need to protect and restore streams, but I don’t understand how wetlands affect the salmon.*

*[Need] a better education to the people, like me for instance.*

Eighty-five percent of respondents say they receive their information from multiple sources. For example, of the large number of people who get their information by word of mouth (60%), only a small percentage (7%) relied *solely* on word of mouth. Television and radio (62%) and newspapers (45%) are the other most cited information sources (figure 5), but only 5% reported that they got their information solely from one of these sources. Many respondents feel that knowledgeable local people are the best source of information. Recreational and commercial fishermen are generally perceived to be knowledgeable and are a frequently mentioned source of word-of-mouth information. State agencies are cited as good sources by 35% of respondents; environmental groups are cited by 28%.

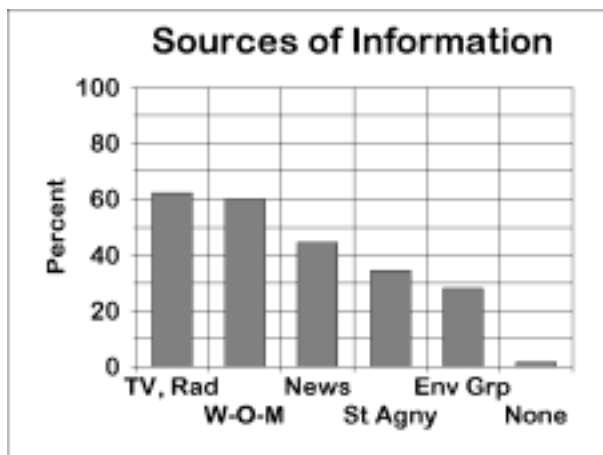


Figure 5. Sources of information mentioned by coastal respondents.

## Environmental versus Economic Considerations

Demographic variables such as age, gender, income, education, and length of residence (see “Demographic Differences,” next page) highlight very few significant differences among coastal respondents. This could be explained by inadequacies in the survey, or it may be that demographic differences are not as important as coastal respondents’ values. The survey reveals that values

regarding the environment are more significant shapers of opinion than any demographic factors.

One important tool for measuring values, which has been used in other surveys, weighs individual preferences on environmental and economic considerations. Table 3 compares this survey with others on this question. As in the other surveys, environmental considerations tend to outweigh economic ones, while the majority favors a balance between the environment and the economy. Even when the question is asked slightly differently, the weight is toward the environmental side. Of Oregonians asked to react to the statement “Environmental protection will become more important than economic growth,” 28% said this was “very desirable” and 25% said this was “somewhat desirable” (Oregon Business Council 1993). In December 1994, Peter D. Hart and Associates asked a nationwide sample about laws to protect the environment. Forty-one percent said the laws “don’t go far enough,” while 18% said they went “too far.”

Nearly two-thirds (63%) of respondents to our survey agree with the need to protect salmon. This finding is comparable to other survey results (table 4). Respondents who favor economic consider-

Survey	Priority to environmental conditions	Environmental and economic factors should be equal	Priority to economic conditions
Coastal (1996)	40%	44%	16%
Lane County (1994)	33%	40%	27%
Linn County (1994)	27%	40%	33%
Oregon (1991)	37%	44%	19%
National (1991)	42%	47%	11%
Oregon Progress Board (1993) categories	Environmental protection over economic growth very or somewhat desirable	Neutral on environmental protection and economic growth	Environmental protection over economic growth very or somewhat undesirable
Oregon Progress Board (1993)	54%	15%	28%

Sources: Linn and Lane County (Steel et al. 1994b; Shindler et al. 1995); Oregon and National (Shindler et al. 1993; Steel et al. 1994a); Oregon Progress Board (OPB 1996).

Table 3. Comparison of surveys on whether priority should be given to environmental or economic considerations.

## Demographic Differences

Salmon are commonly perceived as a men's issue and a fishing issue. Nearly three-fourths of the responses are from men, in part because sample names were taken from phone books, where men are often the only family member listed. When called, more women than men answered the phone, but they frequently deferred to men in answering questions about salmon. While 47% of men said they were quite or very knowledgeable, half as many women gave this response. Occasionally, when a man refused to do the survey a woman in the same household responded to it instead. In some phone calls, a man told a woman not to answer the questions, and she declined to finish the survey. The high percentage of men responding reflects the view that the salmon problem is perceived as a fishing issue, which is an activity done more by men. Of male respondents, 73% had a recreational fishing license in the 1990s, compared to 38% of the female respondents.

Many surveys find that women favor salmon and the environment more than men (Rudzitis et al. 1995:14; U.S. News and World Report 1996:14; Smith and Steel 1997:610). This is less clear among coastal residents. In a question comparing environmental and economic priorities, women favor environmental conditions at 47% compared to men's

38%, while 12% of women favor economic conditions compared to 17% for men, but these differences are not statistically significant (chi-square = 3.7, not significant at  $p > 0.44$ ). However, women did have significantly greater confidence in environmental groups (chi-square = 26.6 and is significant at  $p < 0.0001$ ), and women with significantly lower incomes showed a willingness to pay more for salmon restoration than men.

Few of the responses correlate with age or length of residence on the coast. Ages range from 18 to 95, and length of residence from 1 to 92 years. The average and median age of respondents is 57. This is not out of line with other surveys, but reflects the absence of young people in the survey population.

Older people are less willing to pay for salmon restoration; however, age does not differentiate coastal residents in any patterned way. People who have lived on the coast longer are more likely to give greater weight to economic considerations.

Two-thirds of coastal respondents say they have had some college education, have completed college, or done postgraduate work. More highly educated people disagree with the statement that "public preferences should prevail when they conflict with the judgment of resource professionals." Those with higher incomes also show a greater willingness to pay for salmon restoration.

ations are significantly different from those favoring environmental considerations (table 5). Those giving economic priority are more likely to want to reduce marine mammal populations, more supportive of changing endangered species laws, less likely to want to change forest and farm management, more protective of private landowners, less interested in protecting wetlands, less interested in protecting salmon, and less willing to pay or volunteer to restore salmon. Coastal respondents who show more support for the environment are more confident of the federal courts, environmental groups, conservation groups, and the Extension Service.

The priority given to environmental and economic considerations has more and stronger correlations than any of the demographic variables. Table 5 compares some of the correlations on several key questions. Note the higher and greater number of significant correlations for

values compared to demographic variables. This suggests that coastal respondents will interpret and evaluate materials and information according to their beliefs.

The role of values has another important implication for understanding how coastal residents relate to salmon issues. Value differences suggest that coastal respondents see different ways of managing the coastal ecosystem to assure the future of salmon. Those who give higher priority to environmental considerations tend to be closer to the views expressed in the Coastal Salmon Restoration Initiative. On several major issues, however, the views of coastal residents are divided and may be at odds with the values reflected in the plan. Clearly, communication and education should be a primary focus of any restoration plan. The coastal public's values and beliefs differ from many of those expressed in the restoration plan.



"Protect Salmon"			
Survey	Agree	Neutral	Disagree
Coastal (1996)	63	24	14
Linn County (1994)	57	24	19
Lane County (1994)	69	18	13
Portland (1993)	71	21	8
Oregon 1991(a)	55	21	25
National 1991(a)	69	10	12
Oregon Progress Board 1993 categories	Very & somewhat important	Not too important	Not at all important
Oregon Progress Board 1993 Percent	91	6	3
a. Salmon not mentioned by name. Mention was of fish and wildlife habitats. Sources: Linn and Lane County (Steel et al. 1994b; Shindler et al. 1995); Portland (Brunson and Steel 1994); Oregon and National (Shindler et al. 1993; Steel et al. 1994a); Oregon Progress Board (OPB 1996).			

Table 4. Percent agreeing and disagreeing that greater protection should be given to salmon.

## Conclusions

Coastal respondents are a diverse group who range widely on salmon issues. Value differences explain this diversity more effectively than demographics. Planning and communications programs will be more successful if they recognize that people's values affect how they perceive and receive information about salmon issues:

*I would like to know if all groups involved realize the problem with salmon is the population explosion of our species. Salmon will stay extinct as does the passenger pigeon, the wild bison, etc.*

*Fencing streams was an environmental wacko idea. Surprised it wasn't voted in.*

*Outlaw all driftnets at sea by any country.*

*Stop the clearcutting.*

Salmon compete with other issues for coastal residents' attention and resources. In a question asking respondents to rate the importance of various issues, investing in education ranked highest, followed closely by increasing family wage jobs, restoring commercial and recreational fisheries, and reducing crime. Efforts to restore

salmon will be more successful if they can be tied to broader environmental concerns such as clean water, healthy streams, and care for the physical resources of the coastal region. Tying salmon restoration to the economic interests of coastal residents will make it more successful.

People express concern over extreme approaches. What is considered extreme varies according to personal values, but people want salmon restoration efforts to take a clear and fair approach based on sound information. "Common sense" is the term often used to describe this approach. Greenberg (1995:5) says,

"The concept of 'common sense,' indeed the words themselves, now pervade the public discourse about government." An Idaho focus group study found, "On virtually every environmental issue, these voters demand reason, compromise and balance" (Lake Research 1995).

*Money is not my priority. Show me a productive plan and time and money will follow . . .*

*All parties working toward middle for effective plan!*

Some aspects of government have higher rankings than others, but in general, confidence in government's ability to effectively handle coastal salmon issues is low. Whatever is done will have to demonstrate results, which is difficult since many restoration efforts take years to show positive effects. For convincing the public to participate, carefully measured and well-communicated results of salmon restoration efforts are vital. The public is in a "show me" mood and does not trust any information source. They check results against their experience and the reviews of their neighbors.

For the restoration initiative to earn support from coastal people, the gaps between government

Issue	Economic priority avg.	Equal priority avg.	Environ priority avg.	Leaders avg.	Women avg.
<b>Future of salmon</b> 1=not at all concerned, 5=very concerned	3.9 <sup>a</sup>	4.1 <sup>a</sup>	4.5 <sup>a</sup>	4.4 <sup>b</sup>	4.2 <sup>c</sup>
<b>Change endangered species laws</b> 1=disagree, 5=agree	3.9 <sup>a</sup>	3.4 <sup>a</sup>	1.9 <sup>a</sup>	2.7 <sup>c</sup>	2.6 <sup>c</sup>
<b>Improve forest management</b> 1=not important at all, 3=quite or very impt.	2.2 <sup>a</sup>	2.5 <sup>a</sup>	2.6 <sup>a</sup>	2.4 <sup>c</sup>	2.5 <sup>e</sup>
<b>Improve farm and pasture management</b> 1=not important at all, 3=quite or very impt.	2.0 <sup>a</sup>	2.2 <sup>a</sup>	2.5 <sup>a</sup>	2.3 <sup>c</sup>	2.3 <sup>c</sup>
<b>Compensate private landowners</b> 1=disagree, 5=agree	3.7	3.7	3.5	3.5 <sup>c</sup>	3.5 <sup>c</sup>
<b>Protect and restore wetlands</b> 1=not important at all, 3=quite or very impt.	2.1 <sup>a</sup>	2.4 <sup>a</sup>	2.6 <sup>a</sup>	2.4 <sup>c</sup>	2.5 <sup>c</sup>
<b>Protect salmon even if expensive</b> 1=disagree, 5=agree	3.0 <sup>a</sup>	3.6 <sup>a</sup>	4.3 <sup>a</sup>	4.0 <sup>d</sup>	3.9 <sup>c</sup>
<b>Federal courts</b> 1=no confidence, 5=a great deal of confidence	1.7 <sup>a</sup>	1.9 <sup>a</sup>	2.7 <sup>a</sup>	2.2 <sup>c</sup>	2.3 <sup>e</sup>
<b>Environmental groups</b> 1=no confidence, 5=a great deal of confidence	1.3 <sup>a</sup>	1.9 <sup>a</sup>	3.6 <sup>a</sup>	2.7 <sup>c</sup>	3.0 <sup>a</sup>
<b>Cooperative &amp; Sea Grant Extension</b> 1=no confidence, 5=a great deal of confidence	2.9 <sup>a</sup>	3.1 <sup>a</sup>	3.6 <sup>a</sup>	3.6 <sup>e</sup>	3.6 <sup>a</sup>
<b>Number of correlations significant at p &lt; 0.001:</b>					
<b>Values variables</b>			23 of 40	6 of 40	4 of 40
<b>All variables</b>			30 of 60	11 of 60	7 of 60
<p>a. Kendall's correlation coefficient is significant at <math>p &lt; 0.001</math> when comparing economic, equal, and environmental considerations, leaders and residents, women and men.</p> <p>b. Kendall's correlation coefficient 0.12, <math>p &gt; 0.006</math>.</p> <p>c. Kendall's correlation coefficient is not significant at <math>p \leq 0.05</math> when leaders and residents, women and men.</p> <p>d. Kendall's correlation coefficient 0.08, <math>p &gt; 0.047</math>, not significant.</p> <p>e. Kendall's correlation coefficient -0.09, <math>p &gt; 0.02</math>, not significant.</p>					

Table 5. Comparisons of averages and correlations with selected salmon issues.

and local interests, the misunderstandings between scientists and citizens, and the differences between environmental and economic interests must be bridged. These gaps, misunderstandings, and differences are considerable. Planners make the assumption that science is on their side, while coastal residents' experiences often lead them to different conclusions. Coastal residents are not in a mood to accept scientific findings that conflict with their experiences and the experiences of those whom they see as knowledgeable. They will have to be convinced of the wisdom of any planning based on alternative views. This will necessitate a clearer understanding of how coastal ecosystems

work to support salmon, and a clearer communication of the facts.

*The objective of the authors is to accurately represent the diverse views expressed by coastal residents responding to the survey. We appreciate the comments and help of Ken Bierly, Flaxen Conway, Pat Corcoran, Bob Malouf, Jim Martin, Jay Nicholas, Jay Rasmussen, and Tom Shafer.*

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