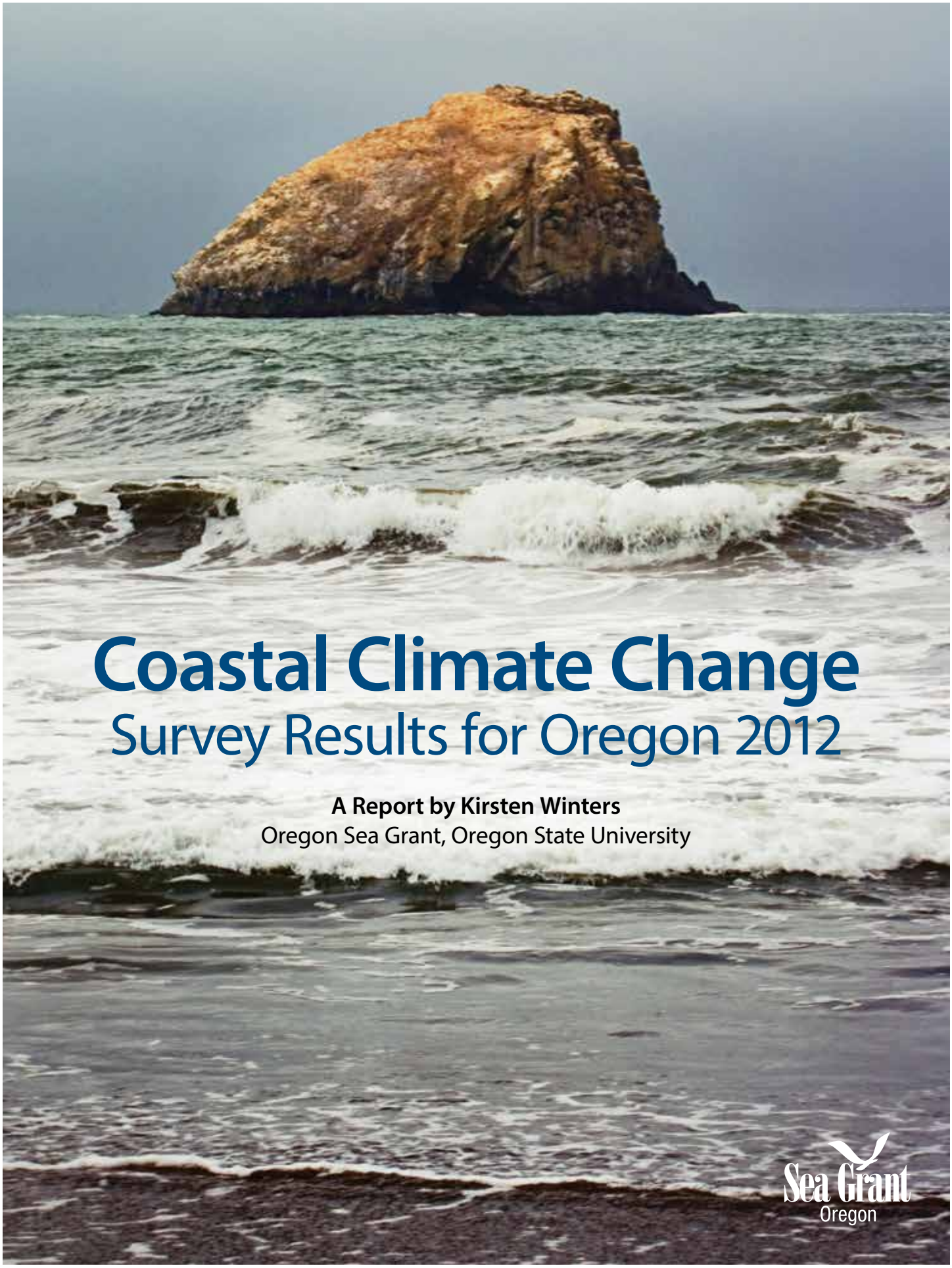

Coastal Climate Change

Survey Results for Oregon 2012

A Report by Kirsten Winters
Oregon Sea Grant, Oregon State University

Sea Grant
Oregon

Contents

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NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

OSU Oregon State University

Executive Summary

This report contains details from a survey conducted in May 2012 of Oregon coast elected officials, coastal professionals of the public sector, and other coastal professionals on the topic of climate change planning. The survey was based largely on a previous needs-assessment conducted on the coast of California, and is part of a national study on coastal communities and climate change adaptation.

Major findings feed into Oregon Sea Grant's objective of better understanding how to support coastal communities and their planning. We found that most coastal professionals believe and are mostly sure that their communities will experience the local effects of climate change, but that many (40 percent) coastal professionals were not currently involved in adaptation planning. We found that of the communities involved in planning, most were still in the first phase ("understanding") of climate change planning. Climate change planning ranks low on the list of priorities for coastal professionals, and most believe that while their professional efforts toward addressing climate change would benefit the community, a combination of governments and other organizations should initiate a local response to the likely effects of climate change.

We surveyed coastal professionals on other topics important to our objective of better understanding how to support planning. Knowing that worldviews and values affect adaptation planning

processes (Kahan et al., 2011; Ekstrom et al., 2010), we asked about worldviews and found there was little polarization in our test population. Barriers to climate change planning supported this finding—opposition to climate change planning was not encountered by as many coastal professionals as expected; instead, *lack of agreement over importance of climate change effects* and *lack of urgency regarding climate effects* were rated highly as hurdles to planning. This finding is consistent with the finding that other potential stressors to the community, such as preparing for tsunami/earthquake hazards and the economy, are taking priority. Finally, we asked about what specific information needs coastal professionals had. Most needed was information about diverse environmental and social considerations: the cost of climate adaptation, how to communicate climate risks, flooding or saltwater intrusion, species and habitat vulnerability, social and economic vulnerabilities, and predictions of ecosystem impacts.

Findings from this survey will be communicated to coastal professionals, including through the creation of both this report and expository videos. For the videos, experts on various main insights or themes of the survey will be interviewed to reflect on climate change adaptation planning on the Oregon coast. Data from the survey will also be used in a national report that will compare findings from other states and regions where a mostly identical survey was conducted with local coastal professionals.

Introduction

Oregon Sea Grant administered a survey to professionals in Oregon coastal counties, including planners, other public employees, and elected officials, to understand their climate-related views and barriers to climate change adaptation—including information needs as well as differing attitudes, values, behaviors, and social constraints. The survey results will be used to inform Sea Grant and its partners as they assist coastal communities in their preparations for the effects of climate change.

This Oregon survey was conducted as part of a larger, national Sea Grant research project[1] to understand the status of coastal communities and their climate change adaptation. While the results reported here will serve the local interests of Oregon elected officials and other coastal professionals, the key findings also will be used to better understand how Oregon compares with other states participating in the study.

1 Funded in part by the National Sea Grant Office and its Hazard Resilient Coastal Communities focus team.

Methods

Questions for the national survey were based in large part on a needs assessment survey conducted by California (Hart, Grifman, Moser, Abeles, Myers, Schlosser, and Ekstrom, 2012), through discussions with about a dozen Sea Grant partners from states participating in the national survey, and on the recommendations of external reviewers. One goal of the national study was to create a bank of questions to be used consistently by other Sea Grant programs for the main section of the survey. State-specific questions comprise a second and optional section of the survey. The Oregon survey uses the national survey questions, questions from an earlier Oregon Sea Grant climate survey (Borberg, 2009), and new ones created by the research project leader, Joseph Cone.

Once the Oregon questions were written and reviewed by others, project staff created e-mail lists of elected officials, county heads of departments, and other key contacts from coastal communities, generally obtaining the e-mail addresses from those available online. Not all coastal communities could be, or were, included.[2] Other participants for the survey came from a list of respondents from a similar study conducted in 2008, which sampled Oregon coastal managers and practitioners (Borberg, 2009). In other words, the current sample comprised

2 Statisticians would term this population sample a "purposive sample," which draws the survey population from groups with predefined qualities that have been chosen with a particular purpose in mind. While this sampling technique does overweight the opinions of subgroups represented in this report (e.g., elected and other coastal professionals), sampling proportionality was not the primary concern in this study, which instead sought to gain timely and targeted insight into the subject of climate change adaptation and planning on the Oregon coast.

two distinct groups—one that had been previously surveyed in 2008 on the same topic, and one that had not been surveyed previously. It should be noted, too, that the 2012 survey contained questions that were different from the original survey administered in 2008, and that data collected is not panel data (as would be used in a longitudinal study). Reminders to participate in the online survey (SurveyMonkey.com) were sent twice over the course of three weeks, and the survey closed in the fourth week. Results were then downloaded into SPSS and analyzed.

Survey Population and Response Rate

Of the 353 who were queried, 140 people responded to the survey, for a response rate of 40 percent. The survey population was in two groups: some of those who had been surveyed during 2008 (n = 107), and those newly surveyed in 2012 (n = 241). Table 1 contains information about response rates of the two groups.

There were 92 out of 241 *new* individuals who participated in 2012, and 48 out of 107 respondents who had been queried in 2008 participated again in 2012.

Work Affiliation

The survey population, as mentioned earlier, comprised three broad categories of profession: elected officials, coastal professionals in the public sector, and other primary work affiliation. Table 2 contains specifics by profession.

The term "elected officials" includes mayors, city council members, county commissioners, tribal officials, state legislators, and other local elected officials. It should be noted that port commissioners did not respond to the survey, though some were queried. The term "coastal professional, public sector" includes town/city manager, planners, water resources managers, harbor-parks-or beach managers, community development departments, public works/transportation department, wildlife/natural resource department, emergency services department, planning/zoning board members, conservation commissions, and other volunteer boards. Finally, the term "other primary work affiliation" included consulting engineers, local NGOs, national or international NGOs, and other work affiliation.

Table 1. Two groups were queried in 2012, including those who had participated in a 2008 survey.

Years different groups were surveyed	Response rate for group on current 2012 survey	Percent proportion of responses by group on the 2012 survey
In 2008 and 2012	(n = 48/107) 45%	34%
Just in 2012	(n = 92/241) 38%	65%

Table 2. Respondents categorized their primary work into three broad groupings.*

What is your primary work?	Response (n=140)
Elected officials	26
Coastal professional: public sector	70
Other primary work affiliation	21
Skipped question	31

*Some respondents reported more than one primary work affiliation.

Results

The Big Picture

The first two questions of the survey focused on how informed participants thought they were and whether they believed the climate was changing. All survey takers responded to these questions, and most people reported being either moderately (56.4 percent) to very well informed (27.1 percent) on the effects of the changing climate in their area. As to whether respondents believed the climate in their area was actually changing, 59.3 percent reported "Yes," 17.9 percent reported "No," and 22.9 percent reported "Don't Know." While more than 83 percent of respondents claimed to be informed on the effects of the changing climate, only 59 percent of those same respondents think climate change is, in fact, occurring in their area. In other words, being *informed* about climate change does not necessarily mean being *convinced* that climate change is occurring. That said, the *majority* of respondents on this survey reported believing that the climate is changing in their area. (See Figure 1.)

In addition to being asked about their belief in local climate change, participants were asked *how sure* they were that the climate was or was not changing. This question derives from a national study on global warming conducted by the Yale Project on Climate Change and the George Mason University Center for Climate Change Communication in 2009 called *Global Warming's Six Americas 2009: An Audience Segmentation Analysis.* The *Six Americas* study measured (1) whether people believed in global warming, and (2) how strongly they felt about their beliefs. The study categorized people into six broad segments: *Alarmed, Concerned, Cautious, Disengaged, Doubtful,* and *Dismissive* (Maibach, Roser-Renouf, and Leiserowitz, 2009). The Oregon survey, though not as extensive as the *Six Americas* survey and evidence, measured how sure people felt that the local climate is or is not changing. Of the 140 people surveyed, 19 felt extremely sure that the local climate is changing, 42 very sure, 22 somewhat sure; and, by comparison, 1 not at all sure the climate was *NOT changing*, 10 somewhat sure the climate was *NOT changing*, 11 very sure about no change, and 3 extremely sure about no change. (See Figure 2. Note: This figure does not represent the 32 people who skipped the question.)

Oregon coastal professionals from this sample are not polarized, and most are "mostly sure" that there will be local climate effects. This finding is important when considering how to support professionals in adaptation planning, a major objective for Sea Grant.

Figure 1. Do you think the climate in your area is changing?

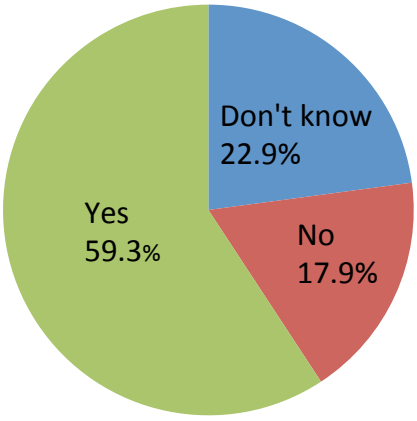
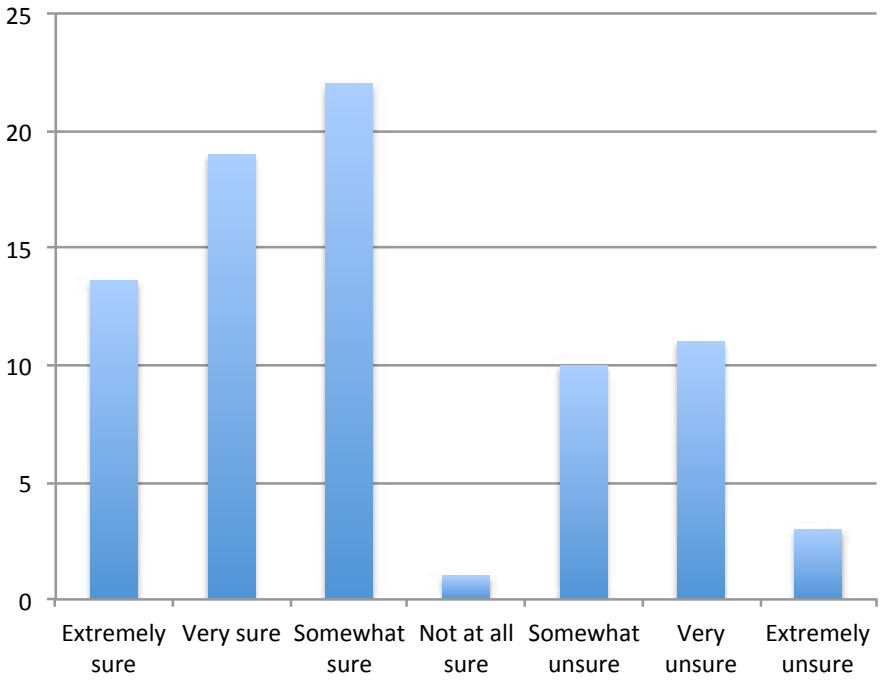


Figure 2. Range represented by percentages of people reporting how sure they were that climate change was either happening or NOT happening in their area (n = 108).



Adaptation

The survey measured how coastal professionals were addressing adaptation to climate change on the coast. The definition of adaptation used for this study contains an expansive view of strategies and actions that "can range from short-term coping to longer-term, deeper transformations, aim to meet more than climate change goals alone, and may or may not succeed in moderating harm or exploiting beneficial opportunities" (Ekstrom and Moser, 2010: 1). This definition and the adaptation framework from Ekstrom and Moser were used to measure and label phases of adaptation planning. Specifically, participants were asked whether they were: *understanding the problem, planning adaptation actions,* or *managing the implementation* (Ekstrom and Moser, 2010). Respondents were also asked about potential barriers or hurdles to adaptation planning respondents they might have experienced.

When asked about their phase of climate-change adaptation planning and implementation, 40 percent of respondents reported their communities were not currently involved. Additionally, on an *individual* basis, 44.4 percent said they were not involved professionally in planning to adapt to the effects of climate change. This may be because their current job duties are not directly designated toward dealing with climate change. Those respondents in communities involved in climate adaptation planning reported to be in either the understanding, planning, or implementing phase. In the *understanding* phase were 39.2 percent; the planning phase—16.9 percent; and the implementing phase—3.8 percent (n = 130). Those respondents who were involved in phases of climate-change adaptation planning ranked "personal motivation to address the issue" highest as a prompter for involvement, and "regionally or locally specific information showing potential impacts" second (Table 3).

It should be noted that adaptation strategies and management plans play more of a role in prompting adaptation planning than government mandates (5.6 percent reported as prompting). Also not playing a major role in prompting a response are *recent events such as storms and flooding,* as well as *other, outside models for planning; more funding;* and *community support.*

Hurdles to Planning

Another focus of the survey was to understand what hurdles, defined as obstacles that can be overcome, participants have encountered, overcome, or not encountered. Of note, respondents reported that the most-encountered hurdles to planning were (1) *lack of agreement over importance of climate change effects* (56.8 percent of respondents) and (2) *lack of urgency regarding climate effects* (54.7 percent). Additionally, very few respondents reported overcoming these hurdles (3.6 percent, 4.3 percent respectively). In contrast, certain hurdles were not rated as challenges. For example, few respondents (19.4 percent) were "unclear [on] how climate change relates to my job" (this hurdle was overcome by 15.1 percent, and not encountered by 41 percent) (Table 4).

The hurdles of *lack of agreement of importance* and *lack of urgency* over the topic of climate change might be

Table 3. Top responses (>15 percent) reported as prompting respondents to become professionally involved in planning to adapt to the effects of climate change. (Respondents were allowed to choose more than one; thus the total exceeds 100%.)

Prompt (respondents could choose more than one prompt)	**Participants prompted by percent (%)**
Personal motivation to address the issue	26.6
Regionally or locally specific information showing potential impacts	23.4
Update of general plan, local coastal plan, or emergency management plan	19.4
State-level climate adaptation strategy	15.3
NOT involved [in planning to adapt to the effects of climate change]	44.4
No response/skipped question	11.0

Table 4. "What hurdles have you encountered, overcome, or not encountered?" (By percent [%])

	Encountered (%)	Overcome (%)	Not encountered (%)	No response/ system missing (%)
Lack of agreement over the importance of climate change effects	56.8	3.6	18.0	21.6
Lack of urgency regarding climate effects	54.7	4.3	16.5	24.5
Unclear how climate change relates to my job	19.4	15.1	41.0	24.5
Explicit opposition from coastal development interests	15.1	2.9	54.7	27.3
Explicit opposition from other coastal stakeholders	18.7	2.9	50.4	28.1

interpreted in a few ways. The responses could signify that, while climate change is an issue to be dealt with, other issues are more pressing. In addition, while *lack of agreement over importance* might signify debate over whether climate change is real, other hurdles that identify conflict and debate, such as "*explicit opposition from coastal development interests*" and "*explicit opposition from other coastal stakeholders,*" were encountered by fewer than 20 percent of the reporting respondents. In sum, it seems fair to interpret that respondents don't see climate change planning as critically important or urgent, though most respondents agree climate change is occurring.

The survey also asked about other concerns in the community and environment, in order to show where climate change ranked as a stressor during the next 10 years. In relation to other concerns, "local effects of climate change" ranked near the bottom for *personal level of concern.*

It is interesting to note that respondents seemed not to confuse *climate change effects* and *extreme weather*, and said they were less concerned about climate change effects. Prioritization of other concerns over climate change effects is consistent with the results found when participants identified hurdles: there is a lack of urgency for dealing with climate change as well as a lack of agreement over the importance of the issue. Given that, how should climate change planning be initiated and by whom? (See Table 5.)

Table 5. "What is your personal level of concern about these potential stressors on your community during the next 10 years? Not all may apply." (By percent [%])

Community stressor	Percent (%) of respondents who are moderately to extremely concerned about various stressors
Weak economy	71*
Tsunamis/earthquakes	70*
Extreme weather	63
Inappropriate development	55
Limited capacity of local governments	60*
Climate change effects	46
Population growth	29

** Majority of respondents represented here reported being "extremely concerned" about these topics.*

Taking Initiative for Planning

When asked who should initiate a local response to the likely effects of a changing climate, both elected officials and other professionals overwhelmingly selected "a combination of government and other organizations."

None of the respondents felt that the private sector, NGOs, or universities should initiate the planning, and very

Table 6. "Who should initiate a local response to the likely effects of a changing climate (select one)?" (By percent [%])

	Elected officials	Other coastal professionals	Undesignated profession
Federal government	8.3	9.5	3.2
State government	12.5	11.9	6.5
Regional government	—	6.0	3.2
County government	8.3	6.0	3.2
Municipal government	8.3	4.8	—
Combination of government agencies	20.8	17.9	6.5
Private sector	—	—	—
Local/national NGO	—	—	—
University	—	—	—
Combination of government and other organizations	25.0	32.1	25.8
Grass-roots citizen initiative	—	2.4	—
No one, no response needed	16.7	3.6	9.7
System missing/no response	—	6.0	41.9

few thought citizens should initiate planning. It seems that elected officials and other professionals alike agree that initiative should come from a partnership of institutions. (See Table 6.)

Survey takers were also asked to reflect on whether their professional actions to plan for climate change might benefit the community. Overwhelmingly, most respondents felt their actions on the subject could be beneficial (Table 7).

In light of these findings and reflecting on the earlier finding—that so many communities were not currently involved in climate change planning—it might be concluded that lack of current involvement in climate adaptation planning has to do in part with job duty assignment, rather than beliefs about the benefits of professional actions on the topic.

Table 7. Responses to "My professional actions to plan for the local effects of climate change could benefit the community." (By percent [%])

	Strongly agree/agree	Neither agree/ disagree	Disagree/ strongly disagree
Elected	52.1	34.8	13.0
Other professionals	64.6	29.3	6.7
Undesignated profession	54.6	27.3	18.2

Toward Assisting Communities with Climate Change Planning

Representative national surveys have demonstrated how Americans' interpretation of the risks associated with climate change is influenced more by the groups with whom they identify than by their comprehension of climate science, and that that group identification leads to polarization (Kahan et al., 2012). The Oregon survey took into account this concept by measuring worldviews of our survey population. The survey included questions from the Cultural Cognition Project (CCP), a well-known and -cited research group that has conducted numerous studies demonstrating through experiments and survey research how worldviews affect the use and acceptance of climate science (Kahan et al., 2011). The CCP and the Oregon Survey approach topics

such as climate change adaptation planning with the understanding that individuals are "well-equipped to understand which stances towards scientific information secure their personal interests" (Kahan et al., 2012: p. 3). The CCP's previously tested, valid, and reliable Likert Scale questions (Figure 3) were used in the Oregon survey to measure respondents' worldviews. The Oregon study looked specifically at the continuum distinguishing the *individualist* from the *communitarian* worldview. This continuum measures "attitudes towards social orderings in which the individual is expected to secure his or her own well-being without assistance or interference from society [individualist] versus ones in which society is obliged and empowered to secure collective welfare in the face of competing individual interests [communitarian]" (Kahan et al., 2012: p. 735). (The Oregon survey did not measure the other continuum in the study, which determines whether a respondent has a *hierarchical* or *egalitarian* worldview, because the standard CCP question was too difficult to integrate into the study.)

Like the original survey from which the questions were taken, variables 2, 5, and 6 (Figure 3) were reverse-coded to be consistent with the other variables. Next, a reliability analysis was conducted for responses on the Oregon 2012 survey, and the Likert Scale questions were found to be a reliable measure (Cronbach $\alpha = .889$) of the participants' worldviews. A scaled index was created using the *compute* function on SPSS from the six questions. The scores from the six questions were summed (with variables 2, 5, and 6 reverse coded to be consistent with the other variables) so that the more *individualistic* scores scaled lower on the index, and the more *communitarian* scores scaled higher. In other words,

Figure 3. Likert Scale questions from CCP's survey

People in our society often disagree about how far to let individuals go in making decisions for themselves. How strongly do you agree or disagree with each of these statements? [strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree]

(1) The government interferes far too much in our everyday lives.

(2) Sometimes government needs to make laws that keep people from hurting themselves.

(3) It's not the government's business to try to protect people from themselves.

(4) The government should stop telling people how to live their lives.

(5) The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.

(6) Government should put limits on the choices individuals can make so they don't get in the way of what's good for society.

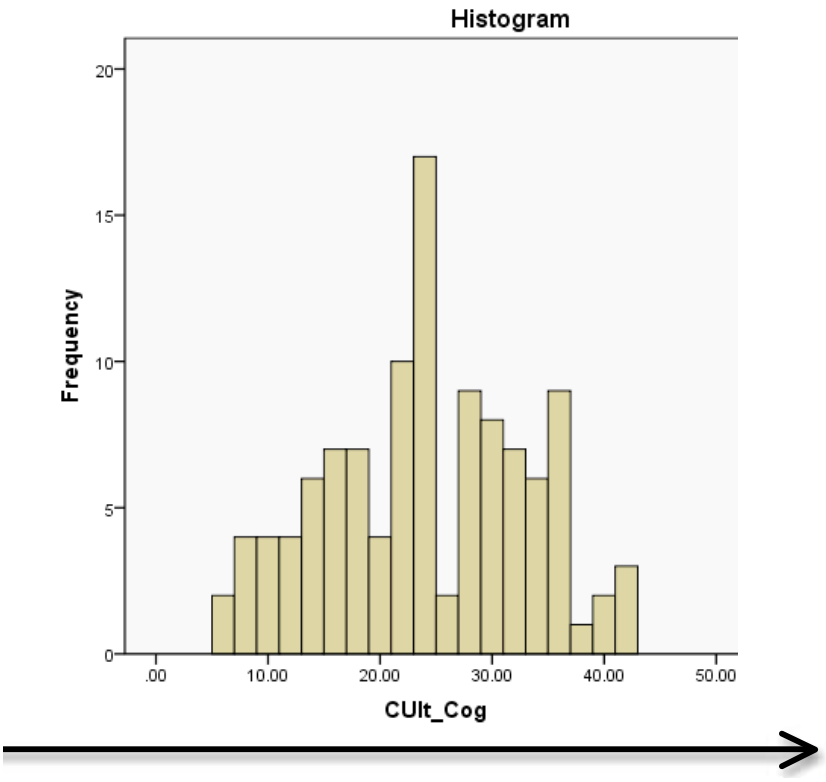


Figure 4. Distribution of responses on the individualist to communitarian axis. The x-axis designates how strongly participants agree or disagree with statements. A score of 50 signifies strongly identifying with the communitarian worldview.

if participants strongly agreed with the statement "Government should put limits on the choices individuals can make so they don't get in the way of what's good for society," and other statements that were indicative of a communitarian worldview, they would score *higher* on the scaled index. Figure 4 is a histogram showing the distribution of responses on the index.

Most of the responses centered toward the middle of the index, signifying that while there are some differences in worldviews of respondents, there is not extreme polarization in the respondents to this survey. The same analysis was run with two different groups to see if polarization existed within the smaller populations of elected officials and other coastal professionals (Figure 5).

When divided by profession, a few patterns can be seen. According to these results, those elected officials who answered the survey lean toward the *individualistic* worldview. These patterns are most likely due to the sample-within-sample size differences. For example, the *other coastal professionals* (n = 80) are a greater proportion of the overall sample size from the first histogram, and therefore closely mirror the tendency. The *elected officials* (n = 23) are a much smaller sample and proportion of the original overall population. On the whole, and in contrast to CCP surveys of a broad sample of Americans, Oregon survey respondents are not dramatically polarized. This seems to make more feasible the initiation of a single, concerted effort to support coastal professionals. It should be noted, however, that this index does not reflect the views of the 37 respondents who skipped the question.

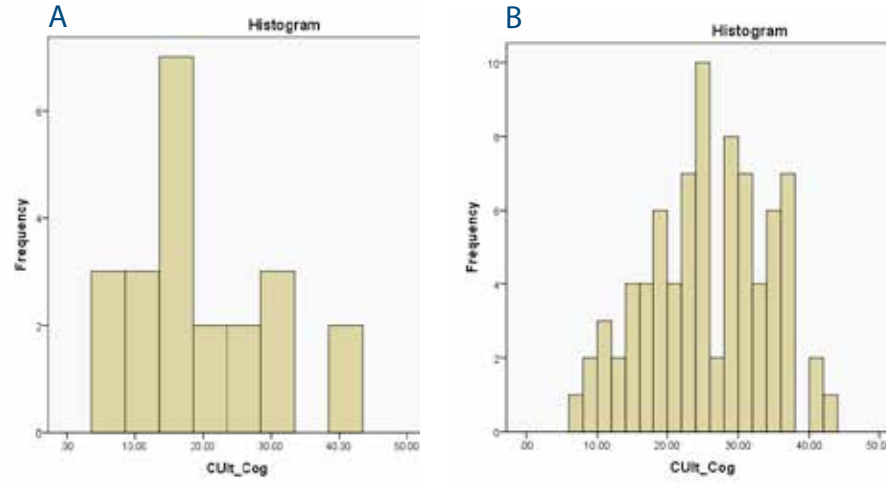


Figure 5. Distribution of responses on the Cultural Cognition Index by profession: (A) elected officials, and (B) other coastal professionals.

Information Support

In addition to determining whether diverse cultural worldviews of respondents would be an important factor in communicating with them, the survey measured what types of information were needed. Participants were asked to rate topics based on whether or not they had the information they needed. Over half of respondents rated having only some or none of what they needed on all the topics presented (Table 8). Respondents most often reported having *none* of the information they needed about the cost of climate change adaptation. Considering both those who had "none" or only "some" information, communicating about climate change and its risks ranked at or near the top of information needs. Additionally, respondents reported needing local climate predictions on the decadal-to-century scale, and predictions for ecosystem impacts. Not as needed was information about local climate predictions on the seasonal/annual scale, sea level rise, shoreline change, and social vulnerability; however, it is important to note that over half of respondents reported they had only some or none of what they needed to know on all of these topics. These results show a palpable information deficit.

These results are interesting and important to Sea Grant and other climate information providers for at least two reasons. First, it seems that coastal professionals are looking for information concerning climate change topics in general (despite assertions at the start of the survey that most felt themselves moderately to well informed). Second, coastal professionals who responded to this question are looking for information on some usually overlooked topics: the cost of climate adaptation, communicating climate risks, and ecosystem impacts.

What's Changed Since 2008?

As mentioned earlier, Oregon coastal professionals in the public and private sector were given a similar survey in 2008. Due to small differences in study population and big differences in survey questions, data from the 2008 survey can be compared only loosely with data from 2012; however, there are some noticeable trends. For example, regarding information needs, coastal professionals continue to want to know more about the economic costs of climate adaptation to the community. Also similar to findings in the 2008

survey results, coastal professionals are not hearing much urgency about climate change. Additionally, while most coastal professionals continue to believe there will be local climate change effects, they continue to report that the locus of initiation and leadership should come from other places—specifically a combination of agencies and institutions outside of the community, as reported on the 2012 survey.

Table 8. Information needs.

Topic	Percent (%) that have *some of what they need to know*	Percent (%) that have *NONE of what they need to know*	Sum of percents (%) in columns 1 and 2
Local climate predictions: seasonal to annual	36.7	15.1	51.8
Local climate predictions: decadal to century	43.2	15.8	59.0
Sea level rise	45.3	11.5	56.8
Shoreline change	39.6	17.3	56.9
Flooding or saltwater intrusion	38.8	20.1	58.9
Predictions of ecosystem impacts	38.1	22.3	60.4
Ocean acidification	39.6	17.3	56.9
The spread of invasive species	39.6	19.4	59.0
Species habitat vulnerability	39.6	20.1	59.7
Social vulnerability	33.1	23.0	56.1
Economic vulnerability	38.1	21.6	59.7
Cost of climate change adaptation	25.2	36.0	61.2
Information about communicating climate risks—specifically	35.3	26.6	61.9
Information about communicating climate change—generally	38.8	20.9	59.7

Conclusions

Findings from this survey give Sea Grant and other coastal programs a few leads on how to support coastal professionals in climate change adaptation. Those respondents who completed the survey were not divided in their attitudes but rather held similar views on local climate change effects. Confirming this finding is the discussion of hurdles: coastal professionals reported *not* encountering the type of explicit opposition that one might expect over such a politically charged topic. Looking more closely, the biggest hurdles were lack of importance as a topic of concern and lack of a sense of urgency. Climate-change adaptation planning just isn't as big a priority as other stressors on the community. Nearly half of the communities and assigned professional responsibilities of respondents are *not currently involved in* climate-change adaptation activities. And while more than half of respondents felt they were moderately (56 percent) to well informed (26 percent), respondents continue to want more information on many of the topics. Also, respondents generally felt that their professional actions on climate change planning would benefit the community.

Survey respondents believed climate change presented a lower-level stressor on communities in 2012 and for the next 10 years, compared to some others such as weak economies and tsunamis. Coastal professionals know about the topic of climate change adaptation, but they also feel the need to get more information about it—especially the potential long-term effects and cost of dealing with them. In general, they are not necessarily ready to take targeted measures or the lead in implementing planning. With regards to the framework for addressing barriers to climate change adaptation (Ekstrom and Moser, 2010), most coastal professionals

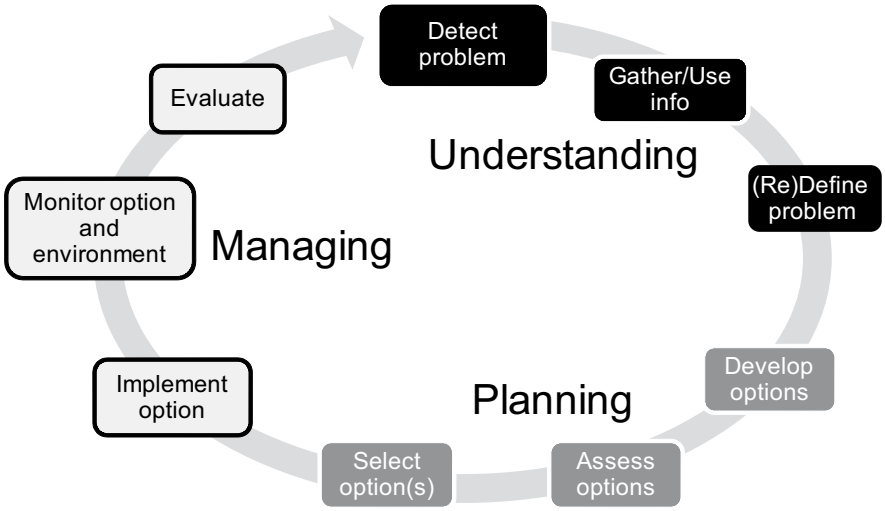


Figure 6. Ekstrom and Moser's phases and subprocesses throughout the adaptation process (2010).

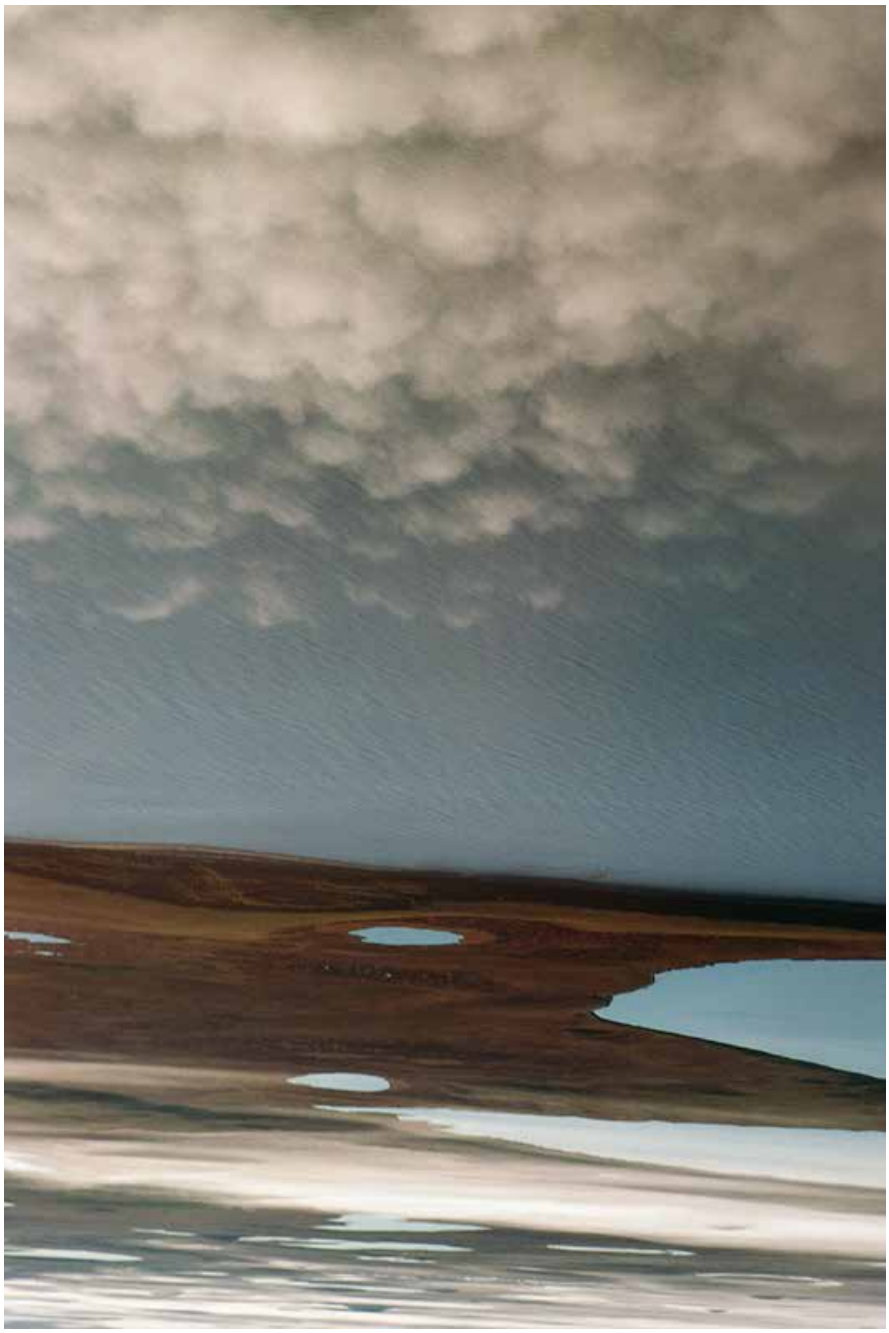
responding to this survey are in the phase of trying to *detect* whether climate change will be a problem in their communities (Figure 6).

The model for addressing barriers to adaptation planning defines three "pieces" of the puzzle over time: the actors, the larger context in which they act, and the object on which they act (Ekstrom and Moser, 2010). "Actors" (Oregon coastal professionals) are not seeing climate-change effects as reaching the threshold of their concern in a way that would prompt their initiating action. Coastal professionals want to know more about the long-term effects; are looking to trusted groups of trained professionals and leaders (i.e., a combination of agencies and institutions) outside of the community to take initiative; and want to better understand the related costs.

Additionally, Ekstrom and Moser in their framework discuss three crosscutting barriers through all phases of planning. These are *leadership, resources* (especially in science-heavy planning and management), and *values and beliefs* on risks and how to address them (2010). Using this framework, the top cross-cutting barrier experienced on the Oregon coast is *leadership* and who will take initiative for planning. Respondents are looking elsewhere for this leadership. The second cross-cutting barrier, in this case, is a question related to *resources* (i.e., how much is this going to cost? What will actually happen in the next 10 to 100 years?). And while the question of *values* exists in any management decision, these respondents do not strongly express differences in viewpoints.

Five key topics that might be addressed by Oregon Sea Grant and its partners are interrelated. First, Oregon coastal professionals continue to feel a lack of urgency (as in 2008) and to sense a lack of importance when it comes to planning for effects of climate change. Finding a way to analyze and address this hurdle is key. Second, exploring and providing information on the specific topic of ecosystem impacts could instruct long-term planning. Third, offering tools and information for understanding the costs of climate change adaptation would be valued by the

survey population. Fourth, demonstrating the many initiatives already being taken in the state and beyond on the topic of climate change adaptation—especially those by leaders and in various partnerships of institutions and agencies—could increase understanding of *leadership* on the issue, and increase potential for building networks and partnerships at the local level. Finally, highlighting the myriad resources for all needed information from the survey, and showing how to communicate the findings of these resources, could increase communication opportunities with survey respondents who reported having some or none of the information they needed on many climate-related topics.



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