

national dialogue partners : american association of port authorities boat owners association of america center for marine conservation the coastal society coastal states organization consortium for oceanographic research and education pacific coast federation of fishermen's associations national fisheries institute national oceanic and atmospheric administration national ocean industries association

Summary of Forum Proceedings • March 22, 1999

NATIONAL DIALOGUES:
Forum on the Future of Coastal Stewardship
March 22, 1999 • Washington, DC

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EXECUTIVE SUMMARY

What will the coast be like in the year 2025 if current trends in growth, water quality, and fishery resources and food supply continue? Can careful planning and investing truly steer the country towards a distinctive, diverse and rich coastal future? The National Oceanic and Atmospheric Administration's National Ocean Service (NOAA) has gathered a diverse group of coastal stewards to think about and discuss these questions and more through a series of forums called the National Dialogues on Coastal Stewardship. These coastal stewards, or National Dialogue Partners, include: American Association of Port Authorities, Boat Owners Association of the U.S., Center for Marine Conservation, Coastal States Organization, The Coastal Society, Consortium for Oceanographic Research and Education, National Fisheries Institute, National Ocean Industries Association, Pacific Coast Federation of Fishermens' Associations.

In hopes of continuing the momentum from the 1998 Year of the Ocean efforts and to increase capacity for coastal stewardship, these partners convened a Forum on the Future of Coastal Stewardship. Along with representatives from the partner organizations, representatives from state coastal management programs, national estuary programs and estuarine research reserves, other non-governmental organizations and coastal industries—about 50 coastal stewards total—participated in the Forum to identify major issues and trends and begin to understand the consequences of those trends over the next 25 years.

Using an electronic audience response system, participants judged the emerging importance of specific trends or issues in eight different theme areas and assessed the preparedness of their own organization or agency to deal with them. The eight theme areas include: 1) population and settlement patterns; 2) social changes, such as increasing cultural diversity and the growth of the middle class; 3) economic and resource activities, such as recreation and tourism, water-borne commerce, and fisheries and aquaculture; 4) environmental quality, including issues of nonpoint and point source pollution, and habitat protection; 5) coastal hazards, including climate change, and mitigation of natural hazards; 6) management responses, including consideration of governance structures, and management capacity; 7) enabling technologies; and 8) education and public awareness.

Based on the responses, participants felt best prepared to deal with the increase in marine recreation and tourism, and least prepared to deal with larger issues such as population growth and settlement patterns in coastal areas. Also, nonpoint source pollution was voted as a very important concern for which participants' felt they were not well prepared to deal.

Population growth and its many consequences for the coast by 2025 was identified by participants in working groups as a key issue to be understood and managed. Participants also felt the existing institutions and resources were inadequate to address issues overall; and that the primary responsibility for stewardship should be at the state and local level.

Efforts to inform the public and energize organizations, and even individuals, to be strong coastal stewards will become increasingly important to the success and the future of coastal management as the number of activities and users along the coast continue to increase. Stewardship implies adopting ethics and behaviors and taking actions that preserve, protect and develop environmental well-being and economic prosperity. The task of stewardship is a continuous challenge for all of us.

INTRODUCTION

Stakeholders in the future of the coasts met for a dialogue on coastal stewardship. The informal partnership responsible for convening the meeting includes the American Association of Port Authorities, Boat Owners Association of America, Center for Marine Conservation, The Coastal Society, Coastal States Organization, Consortium for Oceanographic Research and Education, Pacific Coast Federation of Fishermen's Associations, National Fisheries Institute, National Oceanic and Atmospheric Administration (NOAA), and the National Ocean Industries Association. These National Dialogue Partners are using the momentum gained during the 1998 Year of the Ocean to develop and increase the nation's capacity for coastal stewardship.

Objectives

This meeting began a dialogue about the future of coastal stewardship. Its goal: to identify major issues and trends, and begin to understand the consequences of those trends over the next 25 years. Results of this forum will be available to everyone, disseminated to all participants and with their agreement, put on the Internet at a National Dialogue web site¹. The national dialogue will go on in other forums and in other forms, including roundtable discussions at Coastal Zone 1999 (CZ99) in San Diego, California, and through a visioning process soon available on the National Dialogue web site. The partners hope that the spirit and results of the dialogue will create new partnerships, visions, and agreed-on actions for better long-term stewardship of the coast.

Meeting Framework

A summary of forces and factors shaping the coast over the next quarter century was presented. These topics are largely based on the NOAA's National Ocean Service Special Projects Office team report, *Trends in U.S. Coastal Regions 1970-1998*², and divided into the following eight sections:

- Population and Settlement Patterns
- Social Changes

¹National Dialogue Web Site URL: <http://state-of-coast.noaa.gov/natdialog/index.html>

²National Oceanic and Atmospheric Administration. 1999 (on-line). Trends in U.S. Coastal Regions, 1970-1998. URL:http://state-of-coast.noaa.gov/natdialog/coastal_trends/index.html

- Economic and Resources Activities
- Environmental Quality
- Coastal Hazards
- Governance and Management
- Enabling Technologies
- Education and Public Awareness

These topics are summarized below. Participants were asked to vote on the importance of these issues for the next 25 years of coastal stewardship and the relative preparedness of their organization or agency to deal with them. Audience response technology, which captures votes anonymously, was used to record their votes. Participants' responses and their comments on the use of this technology are also summarized below.

Participation

Using the response system 48 forum participants identified their primary professional affiliation. Of this group, 38 percent identified themselves as from local, state, or regional government, 29 percent as representatives from non-governmental organizations (NGO), 13 percent as academics, 11 percent as from the federal government, and 9 percent as users of coastal resources.

Coastal Perspective: Among the group, 40 percent held a national perspective on the coast, 38 percent identified with the Atlantic coast or Caribbean U.S. territories, 10 percent identified with the Pacific, 8 percent the Gulf of Mexico, and 4 percent the Great Lakes.

Length of Professional Experience: Fifty-eight percent had more than ten years of professional experience with coastal stewardship. The rest had ten years or fewer.

Audience Response-Morning Session: Participants were asked to use their electronic voting devices to respond to topics in the eight sections presented in the morning session.

After each topic was briefly presented, participants were asked at least two questions:

1. How important is this topic for the next 25 years of coastal stewardship?
2. How prepared do you feel your organization or agency is to deal with this topic in coastal areas?

For each question, participants had a five-point scale. Samples of how the responses were displayed are shown in the charts below. In this summary responses are interpreted across the five-point scale as follows:

Question 1.

1	2	3	4	5
Not important	Somewhat important	Moderately important	Important	Extremely important

Question 2.

1	2	3	4	5
Not well prepared	Somewhat prepared	Moderately prepared	Well prepared	Very well prepared

The responses to additional questions are interpreted in a similar way. Participants responded quickly to each topic as it was presented. Not all participants responded to all questions.

Why an Audience Response System was Used: The electronic audience response system enables participants to respond immediately and anonymously to information as it is presented to them, and to see how the group as a whole responds to the information. Although the responses can be sorted by demographics—professional identity, region, length of experience, etc., readers should be cautious about putting too much analytic weight on the results because the participants did not have the opportunity to discuss and review their responses, or the questions.

ISSUE AND TREND IMPORTANCE: ORGANIZATIONAL PREPAREDNESS

The trends briefly described below are selected from the many significant forces shaping the coast. They will determine coastal resources and uses and influence coastal management and policy. The trends reflect human pressures on the coast through growing population, consumption of resources and the increasing demands of human presence and activities.

1. Population and Settlement Patterns

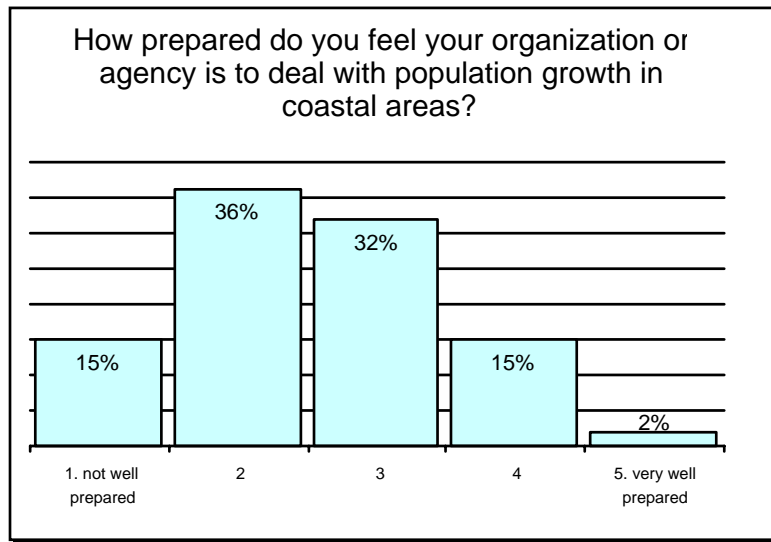
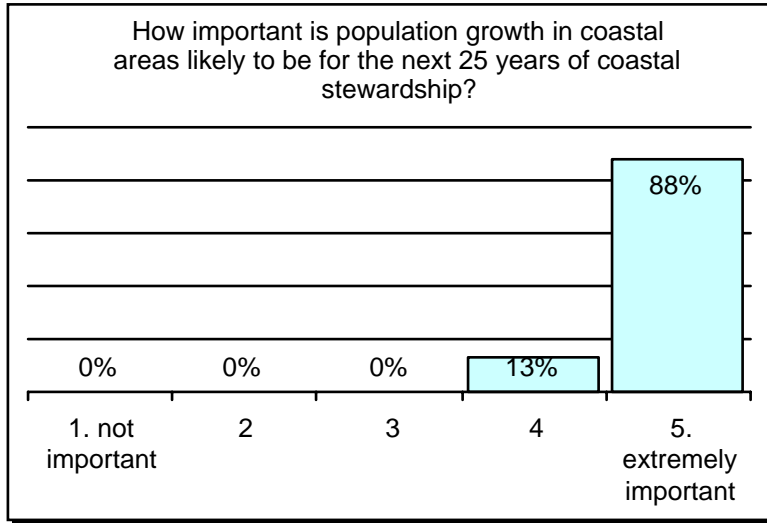
The coastal population, now already crowded, is projected to increase by more than 15 percent by 2015. Population growth creates economic prosperity and improves regional infrastructure, but compromises the natural system. States and localities are beginning to channel public investment for infrastructure into those areas most able to accommodate growth without deleterious impacts.

Audience Response

The group was about equally divided on the importance of foreign immigration into coastal areas, split by quarters among levels of importance 2, 3, 4, and 5, with 5 the highest, very important.

Most (91 percent) felt internal in-migration was very important or important for the next 25 years of stewardship in the coastal zone. Regionally, 100 percent of the Gulf of Mexico participants, 75 percent of the Atlantic, and 71 percent of the participants with a national coastal perspective thought it was very important.

A majority, 88 percent, believed population growth in coastal areas is likely to be extremely important over the next 25 years, but that their organization or agency was somewhat or moderately prepared (68 percent) to deal with population growth in coastal areas.



Settlement Patterns: Settlement patterns (where people choose to live/work) were felt by nearly everyone (95 percent) likely to be important or extremely important for the next 25 years of coastal stewardship. Most (57 percent) felt their organization or agency was only somewhat prepared to deal with future settlement patterns in coastal areas. Those with fewer years of professional experience in the coastal zone were less likely to think their organization or agency was well prepared. Of the regions, the Gulf of Mexico representatives had the most confidence that their organizations were prepared.

2. Social Change

Thirty years ago most Americans behaved as if they believed resources were essentially infinite and could be exploited forever. Today marine resources and coastal areas are known to be finite and capable of being harmed or lost by human activities.

The environment has been transformed from an issue of limited concern to one of universal concern. There is now much better public understanding of the ocean's importance to human health. About 560 organizations now focus on coastal natural resources and environmental issues.

Middle class attitudes now dominate U.S. society. These attitudes include insistence on process and law, regard for quality, a decline in regard for arbitrary authority, and ambivalence toward risk.

Audience Response

Most of the group (72 percent) felt the growth in and dominance of middle class values to be important and moderately important for the next 25 years of coastal stewardship. Those with a Pacific coast or a Great Lakes perspective were much more likely to consider middle class values extremely important. However, 73 percent felt their organization or agency was somewhat or moderately prepared to deal with the growth in and dominance of middle class values.

Growth of Urban Populations: Metropolitanization in the US is at 80 percent and will continue to grow in numbers as the population grows. Core city dwellers have little awareness of the coastal zone, except for occasional local issues, and maintain a mixed attitude toward biota.

Audience Response

In a vote, most of the group (89 percent) felt the growth of urban populations is likely to be moderately to extremely important for the next 25 years of coastal stewardship.

On a revote after discussing this question, 58 percent disagreed with the assumption underlying the question (an urban mindset), indicating that this is a complex topic and could benefit from more discussion. Representatives of NGOs and users of coastal resources were more likely to disagree with the underlying assumption.

Rising Cultural Diversity: Cultural diversity in the US is rising with an increase in the proportion of the population made up of ethnic groups.

Make-up of US Population
[thousands]

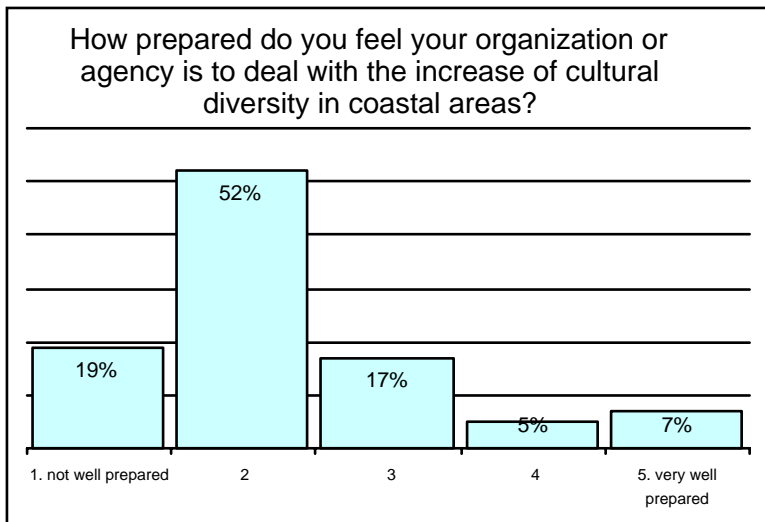
	1998		2025	
Total	270,002		335,050	
White	195,786	(72.5%)	209,117	(62.4%)
Black	34,537	(12.8%)	47,539	(14.2%)
Asian	10,480	(3.9%)	21,965	(6.6%)
Hispanic	29,566	(11.0%)	58,930	(17.6%)

Source: US Bureau of the Census, *Statistical Abstract of the United States: 1998*, (118th edition) Washington, DC 1998.

Audience Response

Most members of the group (67 percent) felt the increase of cultural diversity likely to be moderately important to important for the next 25 years of coastal stewardship. Twenty percent thought it was very important. Regionally, Gulf of Mexico and Pacific coast representatives were most likely to think cultural diversity very important.

More than 70 percent of participants felt their organization or agency was not prepared or somewhat prepared to deal with the increase of cultural diversity in coastal areas.



3. Economic and Resource Activities

Recreation and Tourism: Recreation and tourism account for half or more of total marine-related economic activity. Waterborne commerce, energy and mineral production, and fisheries account for most of the rest. Much more can be done to understand, document, manage and promote marine recreation.

Audience Response

A high percentage (83 percent) felt the increase in marine recreation and tourism was likely to be extremely important for the next 25 years of coastal stewardship.

On preparedness, 45 percent felt their organization or agency was moderately prepared and 30 percent, prepared, to deal with the increase in marine recreation and tourism in coastal areas.

Waterborne Commerce: US waterborne foreign trade is projected to continue to grow at an average annual rate of 3.7 percent. Domestic waterborne trade is also growing and becoming more diverse. The nation's 145 major ports need to keep pace with the growth in trade. Two other important areas of change are the rapidly changing intermodal freight transportation market and the increasing number and complexity of environmental regulations that pertain to ports.

A neglected constituency, in terms of waterborne commerce, is the people and businesses outside the coastal zone dependent on parts and raw materials coming into ports.

Audience Response

The importance of modernizing ports (investing in new infrastructure) for shipping and commerce in the next 25 years was estimated by 88 percent of the group to be moderately to extremely important. Those who thought it is extremely important were from the Federal, state, and local government sector.

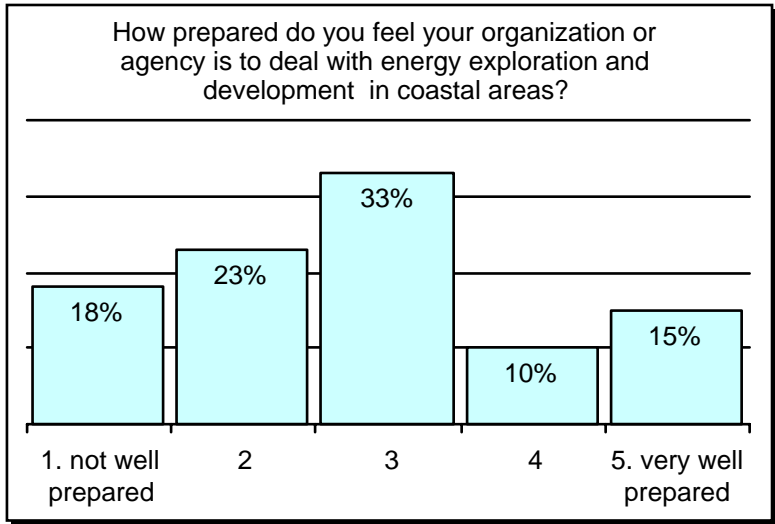
Among the group, 27 percent had visited a port facility within the last month, 36 percent within the last year. Seven percent had never visited a port facility.

Energy Exploration and Development: About 50% of oil consumed in the US is imported by ship, and the reliance on imported petroleum is slated to grow to 60% by 2010. An increasing fraction of domestic offshore oil and gas is from wells drilled in deep water in the Gulf of Mexico. Rapid and dramatic technological advances, coupled with relief from paying royalties, have combined to encourage the trend towards deep water. Current models suggest federal offshore lands contain 50% of the nation's remaining undiscovered oil and gas resources.

Audience Response

Energy exploration and development was considered to be extremely important in the next 25 years of coastal stewardship by 34 percent of the group, 26 percent felt it important, and 21 percent of moderate importance. More than half of NGO representatives thought it was extremely important, three-quarters of the Federal group thought it would be only somewhat important. Half of those with a Great Lakes or National coastal perspective thought it would be extremely important.

Of the total group, 74 percent felt their organization or agency was not well prepared, somewhat prepared or moderately prepared to deal with energy exploration and development in coastal areas.



Fisheries and Aquaculture: US fishery landings have increased over the past 50 years, but have now reached the maximum capacity. For some marine species, recreational landings represent a significant and growing proportion of the catch. Degradation and loss of coastal habitats, with other factors such as overfishing, are constraining the contribution of fisheries to world dietary needs at a time when population growth and rising affluence are increasing demand for food. Aquaculture holds some promise as an alternative to wild harvest but has environmental problems of its own.

Audience Response

Of the group 61 percent felt fisheries and aquaculture issues would be extremely important in the next 25 years of coastal stewardship.

Their estimate of how well prepared their organization or agency is to deal with fisheries and aquaculture issues in coastal areas was equally divided on both sides of the scale with 36 percent in the middle, at moderately well prepared.

4. Environmental Quality

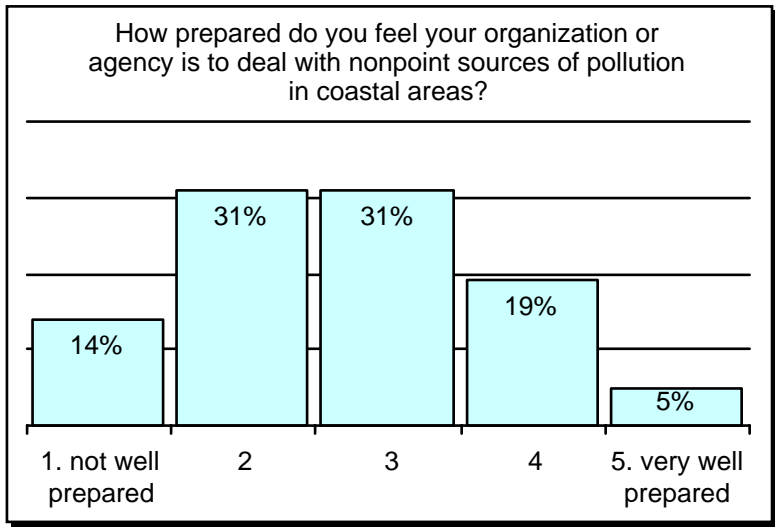
Coastal oceans and estuaries are among the most threatened. Environmental stresses include nutrient overenrichment, bacterial contamination, chemical pollution, oxygen depletion, oil and grease spills and contamination, and planned and unplanned habitat alterations. Two of the outstanding successes in controlling point sources of pollution include more widespread wastewater treatment and higher levels of treatment throughout the US, and elimination of most ocean dumping and greater control over the disposition of materials dredged from navigable waterways.

The remaining one to two-thirds of pollutants contributing to the degradation of coastal and marine waters is from non-point sources, which include runoff and seepage from agricultural and urban areas, and air deposition onto land and into water.

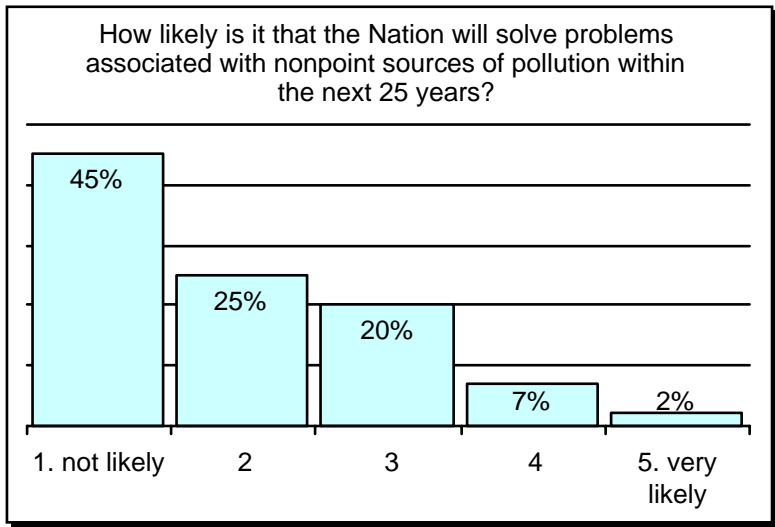
Audience Response

Point sources of pollution were considered by all but 19 percent of the group to be moderately to extremely important in the next 25 years of coastal stewardship. Of the group, all but 10% felt their organization or agency was moderately to very well prepared to deal with point sources of pollution in coastal areas.

Non-point sources of pollution were considered by 81 percent to be extremely important in the next 25 years of coastal stewardship, and by 19 percent, important. Most (62 percent) felt their organization or agency was somewhat or moderately prepared to deal with nonpoint sources of pollution in coastal areas.



Asked if the nation was likely to solve problems associated with nonpoint sources of pollution within the next 25 years, 70 percent thought it was not, or only somewhat likely to do so. Representatives of local, state, and regional government, with NGO members and those with longer experience in coastal stewardship were the most skeptical.



Coastal Habitats: Coastal habitats are critical but undervalued and little discussed in terms of overall problems in coastal areas.

Audience Response

Of the group 86 percent felt protection and restoration of coastal habitats to be extremely important in the next 25 years of coastal stewardship. Forty percent felt their organization or agency was moderately prepared to deal with protection and restoration of coastal habitat with about 20 percent on either side of this estimate. In a separate vote, the Environmental Protection Agency and NOAA representatives voted by 71 percent to be somewhat or moderately prepared to deal with protection and restoration of this habitat.

5. Coastal Hazards

Climate Change: The theory that global warming will make storms more severe and more frequent is under intense study. One thing is certain—that sea level is rising in many regions and that global warming may possibly speed this process. A rise in sea level and increased storm frequencies could accelerate erosion and associated habitat loss, increase salinity, alter tidal ranges, change sediment and nutrient transport patterns, and increase coastal flooding.

A growing number and value of structures, businesses, and other manifestations of economic activity have increased the exposure of the US population to damages from coastal hazards.

Audience Response

Nearly half of the group (49 percent) felt climate-related changes (e.g., sea level rise, changes in the frequency and magnitude of storms) to be extremely important for the next 25 years of coastal stewardship. The strongest support came from those with an Atlantic or national coastal perspective, from NGOs, academics, and users of coastal resources.

Of the total group, 79 percent felt their organization or agency was not or somewhat prepared to deal with climate-related changes.

Response and Mitigation: The effects of losses from coastal storms are being mitigated by 1) better predictions, forecasts, and warnings that enable timely and targeted preparations and evacuations of high hazard areas; 2) building codes that incorporate hazard resistant construction standards; and 3) guidelines for siting of structures in areas where they are less likely to suffer wind or water damage.

“Soft” measures—beach nourishment, less hard protective structures—are being increasingly relied on to protect the nation’s sandy shorelines.

Audience Response

Half of the group felt preparing for coastal hazards will be extremely important for the next 25 years of coastal stewardship, and 28% believed it will be important. Of the group, 42 percent felt their organization or agency was moderately prepared to deal with coastal hazards, with 42 percent feeling they were not prepared or somewhat prepared to deal with it.

None of the group felt the nation was well prepared or very well prepared to deal with coastal hazards. Forty-one percent felt the nation was somewhat prepared, 34 percent moderately prepared, with 24 percent saying not well prepared. The Federal representatives were the most confident, with the academic and users of coastal resources the least.

6. Management Responses

A complex and often fragmented framework of laws, regulations and practices governs oceans and coasts. Three fundamental trends are occurring to address this situation.

First, since 1973, the idea of the oceans as a “commons” has been supplanted by principles codified in the Law of the Sea Convention that (a) recognize the rights of nation-states to establish 200-mile exclusive economic zones over ocean resources and uses, and (b) authorize regional management arrangements for ocean uses. Second, federal environmental mandates have established special ocean and coastal management areas, and increased the national capacity to plan for and manage the coastal zone. Third, integrated management approaches are coming into use that bring together diverse stakeholders to address economic, environmental and social demands placed on finite ocean and coastal resources.

Audience Response

In a vote on who will have primary responsibility for management of coastal areas for the next 25 years, the group was interestingly divided, 18 percent felt this to be the federal government, 28 percent the state government, 10 percent regional government, 36 percent local government, and 8 percent the private sector.

Among the total group 60 percent felt that existing institutions (public and private) are inadequate to govern and manage coastal resources for the next 25 years, and 85 percent felt that existing institutions have inadequate resources to govern and manage coastal resources for the next 25 years.

7. Enabling Technologies

Communications and information technology affect everything and therefore have consequences for coastal stewardship. They can help reach out to new constituencies and bring in new ideas, such as through Internet-based affinity groups, remote voting, or videoconferencing. The cost of telecommunications is declining and will probably reach the point of zero consideration as bandwidth capacity increases. Remote sensing, imaging technology, smartness are all helping to bring new data and new ways to present and analyze information.

Audience Response

Of the group, 78 percent indicated that advances in communications and information technology will be important or extremely important for the next 25 years of coastal stewardship. Local, state, and regional government representatives most strongly supported this position.

Voting on readiness, 71 percent indicated that their organization or agency was moderately or well prepared to deal with advances in communications and information technology, but only 15 percent felt their organization or agency was very well prepared. The academic, and then the federal representatives were the most confident.

Alternative Sources of Energy: Alternative sources of energy, such as natural gas, gas hydrates, and solar (wind), are being developed. Potentially important stand-alone energy sources include fuel cells, solar, and turbines, which range from portable to large enough to be a backup at a central power station.

Audience Response

Sixty percent of the group considered alternative/new energy sources to be important (30 percent) or extremely important (30 percent) for the next 25 years of coastal stewardship. Local, state, and regional government representatives, as well as users of coastal resources were the strongest advocates of alternative energy sources' importance, along with those holding a Gulf of Mexico coastal perspective.

Only 13 percent considered their organization or agency well or very well prepared to deal with alternative/new energy sources. Most (61 percent) felt their organization or agency was moderately or somewhat prepared to deal with new sources of energy. Twenty-six percent said not well prepared.

8. Education and Public Awareness

Education and research training at the interface between science and engineering will be necessary to create the next generation of scientists and engineers who can solve environmental problems. Future coastal professionals must recognize the need to work with experts from other fields, such as geology, hydrology, soil, crop, and forest sciences--in dealing with impacts on coastal resources.

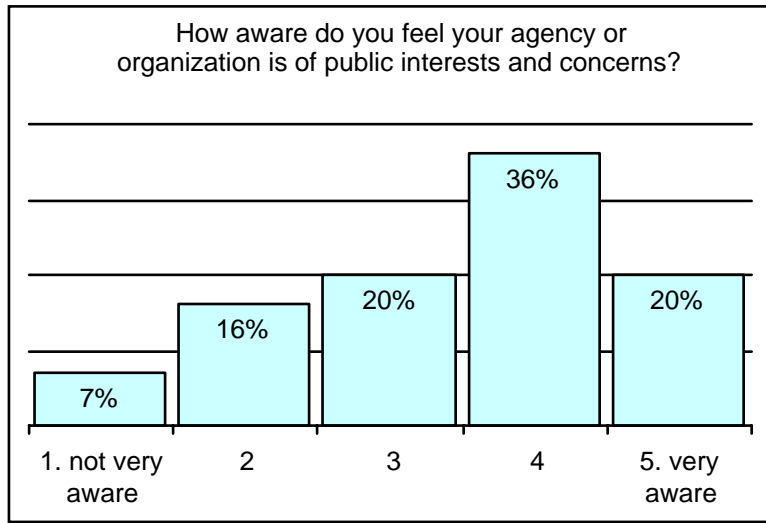
Audience Response

The education and training of future coastal professionals will be extremely important for the next 25 years of coastal stewardship for 81 percent of the group. Only 8 percent felt their organization or agency was very well prepared to educate and train future coastal professionals. Most (76 percent) felt their organization or agency was moderately or well prepared to educate and train future coastal professionals.

Public Awareness: Increasing public education that leads to greater awareness of coastal issues is an important factor in successful stewardship of the coast. Ways to do this include reaching out to young children to change attitudes about coastal stewardship, helping the media understand the function of coastal resources and their values, and reaching the new immigrant, the core urban dweller, and non-coastal zone person.

Audience Response

Almost all, 93 percent, felt public awareness of coastal activities and environments is extremely important for the next 25 years of coastal stewardship. Twenty percent felt their agency or organization is very aware of public interests and concerns, 36 percent aware. Users of coastal resources were most confident about this, as were those with a Pacific coast perspective.



CONSEQUENCES OF TRENDS

In the afternoon, the participants divided into five working groups to consider key trends and forces most likely to influence coastal stewardship in 2025. The following list compiles the trends voted most important by each of the groups: The working groups also considered the potential long-term consequences for several of these trends. The facilitators presented a summary of each group's conclusions.

Key Trends and Forces

- The demand for fisheries is on the rise.
- Institutions are incapable of adequately (proactively) addressing coastal stewardship issues.
- The population in 2025 will overwhelm coastal carrying capacity.
- Technology will continue as a major influence on lifestyle and decision making.
- Changes to natural systems will have a profound effect on the environment.
- Economic activity in coastal areas is increasing.
- Global marine and coastal resources are deteriorating.
- Habitats are being lost.
- Non-point source pollution is rising.

- Global climate is warming.
- Water quality is declining.
- Competition for fresh water is becoming fiercer.
- The intensity of inland activities in coastal watersheds is increasing.
- Understanding of ecosystem functions is growing.
- Non-consumptive conflicts of uses continue.
- Support for marine conservation is rising and falling with the economy.
- The government continues to be unresponsive.
- Demand for tourism and recreation is growing.
- The public is demanding more involvement in management.
- Public understanding of coastal issues is improving.

Trend Discussions

A number of additional trends, forces, issues, and problems were identified and discussed in the group sessions. Notable among these were:

- environmental issues and trends
- emerging hazards
- governance issues and trends
- economic and social issues and trends
- trends and problems related to population growth in coastal areas

Environmental Issues and Trends: The problems in all environmental areas are growing more complex because of the growth and diversity of external forces. Among those discussed were solid waste issues, storm water runoff, nutrient problems in coastal waters, and the clean-up of toxics from past practices. In light of this, groups discussed whether restoration and clean-up gave a false sense of resolution and security.

The groups discussed impacts on fisheries and mammals, noting that these environments are being invaded by non-indigenous species, and pressured by human uses.

Having more information about environmental problems as well as more knowledge and understanding were mentioned as factors important to future management of environmental issues.

Emerging Hazards: Long-term issues, such as global warming, climate change, changes in global weather patterns, and sea level rise, were all mentioned as issues of potential future concern.

Governance Issues and Trends: Discussion about future coastal management at local levels covered several topics. These included issues of funding, local capacity and resources to make important coastal decisions, the influence of large corporations at local levels, and possible local access conflicts.

The nurturing of effective partnerships to manage coastal issues was mentioned but concern was also expressed that as a partner, government did not have the flexibility of structure to be effective.

Economic and Social Issues and Trends: Economic growth is likely to increase demand on coastal resources, in waterborne trade, waterborne transportation, waste dumping, dredging, exploitation of new resources such as gas hydrates, and new recreational technologies.

Working groups also discussed potential impacts of inequities in economic growth, with the affluent able to use more of the coast's resources. Coastal management might include new programs and initiatives to address population and economic diversity.

Trends and Problems Related to Population Growth in Coastal Areas: A mixture of social and environmental issues will arise from population growth. Some of those discussed in the groups included the increasing popularity of the coast, urban sprawl into sensitive habitats, accountability for development, and a rise in leisure time, particularly among the growing number of retirees, leading more people to want to spend some of that time at the coast.

Exploration of Trend Consequences

Several trends identified as among the most significant for 2025 were explored in greater depth in work group discussions by examining their immediate and long-term consequences. For the most part, these discussions revolved around the impacts of more population and

human activity in and around coastal areas. Discussions typically covered issues similar to the two below.

Non-point Source Pollution is Rising: Among the primary consequences are rising nutrients, toxins, organics, heavy metals, algal blooms, and the general degradation of water quality. Longer term, this trend could further reduce fisheries and raise new public health issues, with impacts on tourism.

The Population is Becoming Denser: A denser population creates greater social complexity, with new needs for housing, health care, and law enforcement. Work groups, however, saw its primary impacts being on natural resources. These impacts increase the competition for space and use of coastal resources.

Work groups discussed whether human organizations were up to the task of managing the complexity of coastal issues. The long-term impact of technology, particularly information technology, on coastal management also came up in the group sessions.

Institutions Continue to be Incapable of Adequately (proactively) Addressing Coastal Stewardship Issues: The discussion noted that degradation of the environment will be seen as a drop in the quality of life. As people become frustrated with the quality of coastal stewardship delivered by today's institutions, their concern, action, and regional cooperation may lead to better governance.

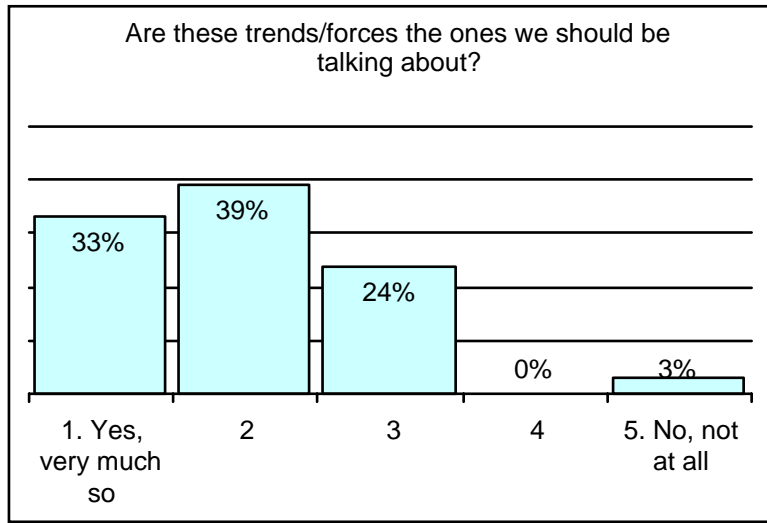
Technology will Continue as a Major Influence on Lifestyle and Decision-making: Technologies bring both benefit and risk to coastal areas. Some lead to more use of coastal resources. Others will provide tools for restoration and remediation. On balance, solutions must not depend entirely on technologies.

Technologies also create shifts in human activities and lifestyle changes. People may move to the coast or rural areas to live and telecommute to the city for work. As they rely more on computers and on virtual environments, their connection with nature and natural systems may diminish.

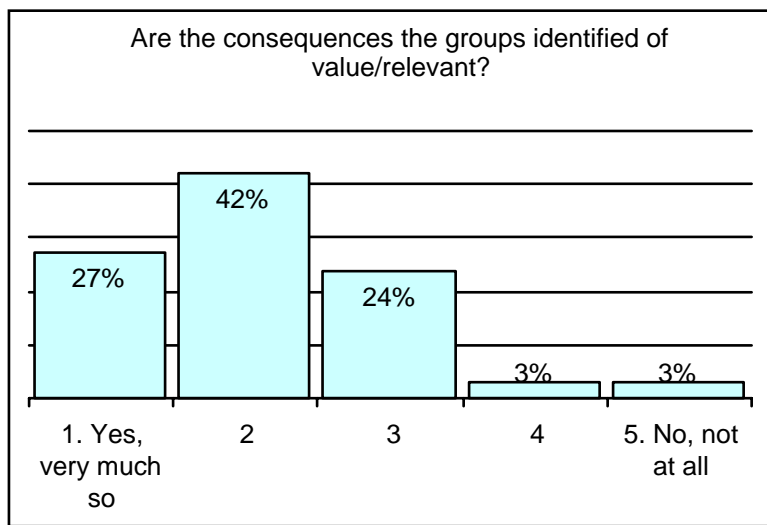
The increased flow of information, it was noted, creates management issues. Among these are the difficulties of sorting and using information effectively, the opportunity for creating greater public awareness, and the need to use information as a tool to increase citizen involvement and support.

Audience Response

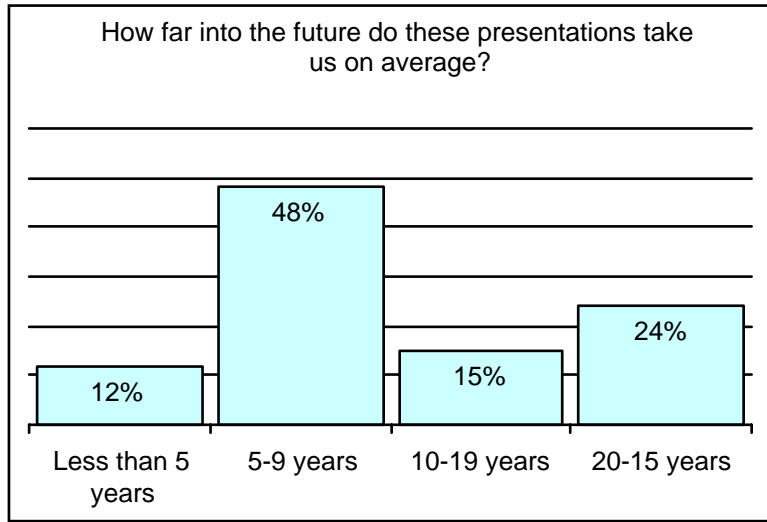
After hearing facilitators present the results of these work group discussions, participants were asked if these trends and forces are the ones we should be talking about. Overall, their response was favorable.



Participants were also asked if the consequences identified are of value, and/or relevant. Again, the response was mostly favorable.



A third question asked how far into the future did the groups' work go, as represented by the presenters. Most people, 48 percent, said 5-9 years, with 24 percent voting 20-25 years.



CLOSING

Discussion at the end of the day gave participants a chance to air their reactions to the forum and bring up other points they felt to be important. These points included:

- Dealing with the many negative forces and challenges of coastal stewardship
- Making these dialogue sessions more challenging for people who are experts in their fields
- Considering the value/relevance of using audience response systems in coastal stewardship dialogues
- Valuing the great progress made so far in coastal stewardship
- The challenge of looking to the future of coastal stewardship

Dealing with the Many Negative Forces and Challenges of Coastal Stewardship:

Participants asked themselves: do we get more pessimistic the longer we remain in the field? Voting on the question, 55 percent said no, 45 percent yes. Those with more than 10 years in coastal issues were more positive (69 percent). Of those with 10 or fewer years' experience, 67 percent said they might become more pessimistic.

Possible Explanations: When one is new and does not know one's way around, it seems difficult to accomplish anything. As one is more familiar with the system, one can manipulate it to achieve long-term goals. Those who have stayed longer than 10 years have stuck around because they are optimistic.

Comment: One has to think about where the opportunities are in order to get a new and more positive direction. It was also suggested that developing a positive vision of the future could be useful. If one has a vision of what is wanted, then one can decide how to get there and work towards that.

Dialogue Sessions should be more Challenging for People who are Experts: With the collection of experts on coastal issues in the room, some participants said they would have been more challenged if the questions asked had focused on solutions to the problems. A lot of questions posed were of the type that might be posed to a focus group of citizens. It would be more useful to strategize specific issues that could lead to progress in the next few years.

Value of Using Audience Response Systems in Coastal Stewardship Dialogues: More responses are possible using this technology because of its immediacy and anonymity. However, the technology was not especially productive given the small expert audience, except as a test and demonstration for a larger target group. As an alternative, some of the participants suggested, the questions could have been answered prior to the meeting through the mail.

It was noted that use of the audience response system in this way is a model for a possible approach in dialogue with the people the forum's participants work with.

Valuing the Progress made in Coastal Stewardship: So much has been achieved, participants pointed out. It would be misleading to leave the forum thinking that tremendous progress has not been achieved. And it will continue to be achieved. The day focused on trends that will be challenges, and, as a result, glossed over what has been accomplished.

The Challenge of Looking to the Future: Looking into the future was the goal of the day. Most participants believed the discussion took them five to nine years in the future, at most.

Many of the participants have been working 10-15 years on coastal issues. They believe these issues have great longevity. Coastal managers 20 years from now will be dealing with many of today's trends.

Coastal management is influencing the trends. The rate of degradation of the environment has been slowed. Many issues will take on a different form, but will remain issues. Some trends are broadly similar over time, but will have new nuances and regional issues, such as population growth.

Forecasting Emerging Priorities: Participants disagreed whether they could usefully say what the priorities should be 25 years from now, because public attitudes are changing. For example, the public threshold for accepting degradation is probably dropping. There is now a worse but acceptable level of air pollution. Other big changes must be accounted for in thinking about future priorities. An example is the size of the ecosystem that can be affected.

Today's recognition and identification of problems and corrective actions taken are setting into motion specific responses. One participant commented that environmentalism is popular today, but would the dollars and support be there 25 years from now?

Facilitators' Comments: The facilitators' experience in working with organizations and their future priorities demonstrate that:

- Looking 25 years out clarifies and makes explicit the assumptions we hold about the future.
- Trying to determine what the priorities will be in 25 years sharpens the focus on what needs to be done today and why it needs to be done.

Comments on the Morning Presentation of Coastal Trends: In summing up the morning presentation and their opportunities to respond to the trends and issues, participants made the following comments:

- There was no chance for personal interpretation of questions.

- Discussion was very “led.”
- Votes were often just a confirmation of a pre-stated point of view with no means of challenging the underlying premise.
- Discussion and presentation was too rushed for most issues.
- Participants were not always clear on how to identify themselves—whose interests they were supposed to be representing.
- Some sectors were not well represented at the session, such as the research/academic community.

Evaluation

Asked what was their single and second biggest takeaway from the day, the greatest number of participants valued the new contacts they made.

	Single biggest takeaway	Second biggest takeaway	Total takeaways (sum of two votes)
<hr/>			
	Number of participants reporting		
<hr/>			
New contacts	27	25	52
Exposure to different perspectives	21	16	37
None of the above	18	16	34
Usefulness of audience response system	12	16	28
Ideas for own activities	15	9	24
New information	3	9	12
Changes in the way I think about what I do	3	9	12
<hr/>			

APPENDIX

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