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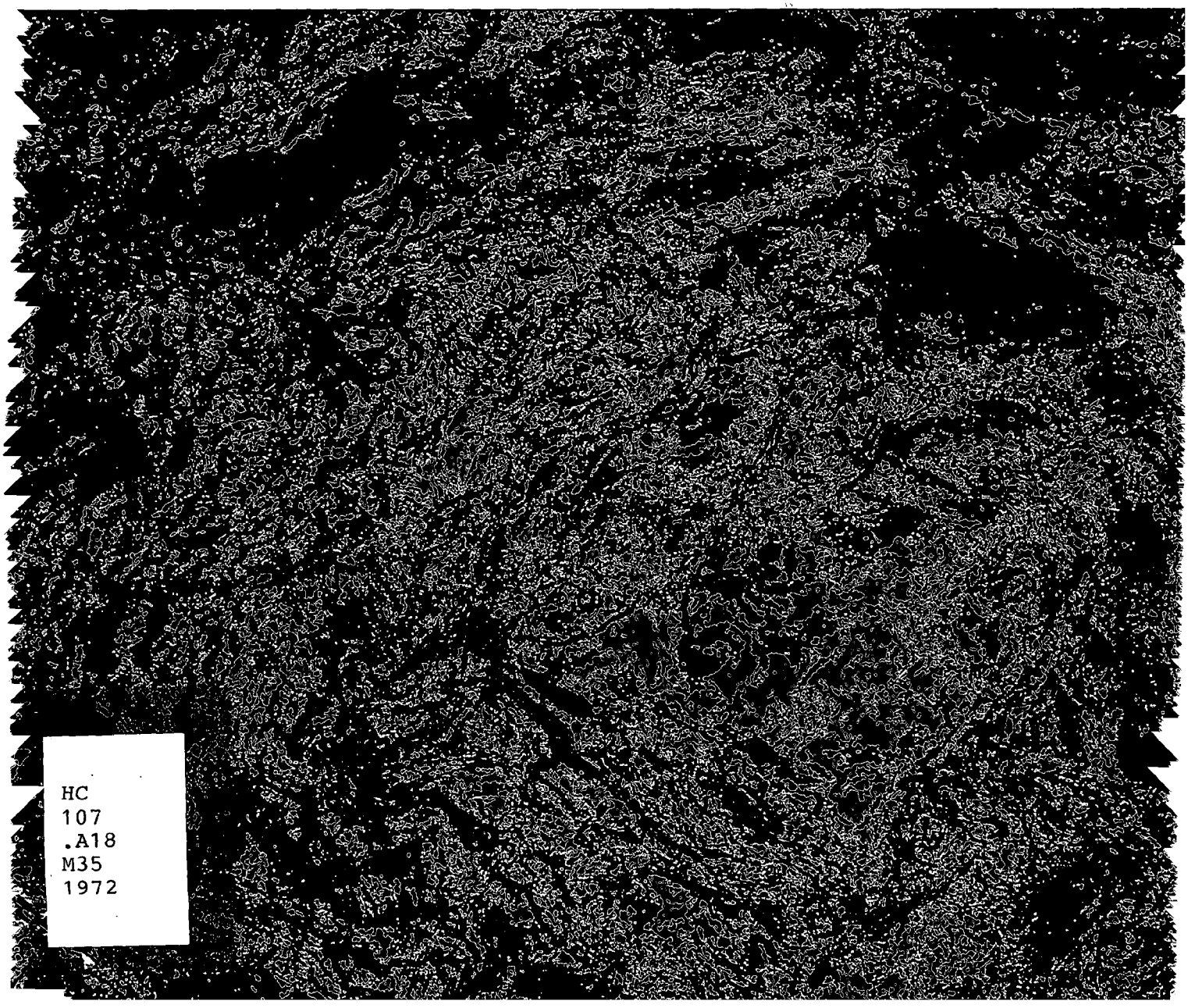
# MARINE RESOURCE DEVELOPMENT

A Blueprint by Citizens for the Northeast Pacific

PASGAP 4 • AUGUST 1972



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# MARINE RESOURCE DEVELOPMENT

A Blueprint by Citizens for the Northeast Pacific

PASGAP 4 • August 1972

Edited by Patricia Peyton

Chairman, PASGAP Publications Committee

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During the winter of 1971–72 nearly 150 distinguished citizens met in Anchorage, Alaska; Vancouver, British Columbia; Olympia, Washington; Newport, Oregon; and Honolulu, Hawaii, in order to identify priority marine resource problems and suggest action solutions. Participants were selected based on their leadership in their state or province. Among these were judges, fishermen, recreationists, legislators, environmentalists, seafood processors, port managers, developers, marine transportation representatives, resource agency heads, coastal zone managers, tourism promoters, marine surveyors, and college professors.

These were unfettered planning sessions rather than circumscribed conferences. From the standpoint of the avowed purpose of identifying priority marine problems, the results were substantial. More importantly, however, leaders from diverse marine fields joined for the purpose of sharing their perceptions, concerns, and hopes. Bonds of understanding were forged, and common causes emerged. Major regional priorities were identified and courses of needed action became clear.

This bulletin reports the results of the meetings. The information will be useful as a guide to development of marine resources in the several states and British Columbia. With this blueprint, the Pacific Sea Grant Advisory Program has a mandate for action that is international in fact.

It is hoped that the impact of this pioneering international Sea Grant venture will extend far beyond the Northeast Pacific.

Robert B. Abel
Director
National Sea Grant Program

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## Alaska Planning Meeting
## Anchorage, December 17–18, 1971
## Chairman: John Doyle

The Alaska meeting was the first of a series planned among members of the Sea Grant-sponsored Pacific marine advisory program and industrial and political leaders in individual states. The purpose was to identify clearly areas in which marine advisory programs should concentrate their efforts within the Pacific region. The group in Anchorage included five representatives of PASGAP and 13 Alaskans representing the maritime industries, particularly fishing and transportation.

After an introductory session, the group was divided into three committees: fisheries, shipping, and native communities. The committees were charged with the responsibility for producing specific recommendations for PASGAP action in the Alaska region.

In essence, these groups identified areas in which more information must be made available to the maritime public, federal agencies, and state legislators. Many of the subjects discussed concerned matters which have been poorly studied, so the topics proposed by the committees were often as much research suggestions as they were requests for information.

**Fisheries**

1. Limited entry into the fishing industry: There is a need to integrate existing and collect new information on economic and social implications of limited entry. PASGAP's role would be to disseminate all pertinent information to fishermen and to obtain their points of view.

2. Information on definition of the territorial sea: Historical fishing areas may be lost to the fishermen (i.e., Cook Inlet) with the U.S. State Department going into the territorial sea business. PASGAP could disseminate information and keep all concerned fully informed of the current status.

3. Education in business and economic matters: A need exists for assistance in native land settlements, banking, insurance, and marketing (i.e., cooperative associations). Short courses on pertinent topics should be offered in the coastal towns during seasonal slack periods.

4. Technical education for fishermen: Similar courses or workshops should be arranged to concentrate on technical aspects of the industry, such as gear handling and preparation of fish for market.

5. Three needs relating to high insurance: (a) Local shipyards with ways and lifts, possibly built with state and federal funds. (b) Information programs for fishermen on proper care and maintenance of their vessels (better maintenance would result in lower insurance rates). (c) Information on better road access to processing plants (i.e., Bristol Bay) and possibly public ownership of haul-out facilities, which again would result in lower insurance rates for the processing plants.

6. Waste disposal: About 200 small processing plants are in dire need of technical advice on waste disposal problems and existing legislation that affects them.

7. Quality control: Education in quality control is needed by processors and in proper fish handling by producers.

8. Biological education for fishermen: Fishermen need courses in basic fish biology and behavior so that they can understand better how fish management works and hence appreciate the need for regulation.

9. Coastal zone management: It was felt that too many agencies are involved in managing the coastal zone with too much competition among them. The suggestion was made that PASGAP might act as a catalyst to bring about integration and coordination of these agencies without itself becoming a "super agency."

10. Vessel design and construction: Technical information in this area needs to be published in laymen's terms so fishermen can comprehend discussions with ship builders and architects regarding designs for their boats.

In summary, the committee felt that PASGAP could play the role of integrator of existing agency expertise and information, in order to help bring the fishing industry into the twentieth century. Until license limitation is an established fact, progress is unlikely and management extremely difficult. In all of this, special attention must be paid to the social implications of any actions taken.

**Shipping**

1. Bulk cargo support for remote areas: Bristol Bay, for instance, now has no ship cargo service outside of the very short, heavy fishing season. Bulk cargo service is also needed during the months of smaller demand.

2. Remote area navigation aids: In remote areas, navigation aids are not used as often as in more heavily populated areas; however, when these aids are needed, they are needed badly.

3. Off-season jobs in remote areas: In Bristol Bay, for example, if fish processing personnel could have local sources of income outside the fishing season, there would be a much better chance of upgrading the area's work force in terms of productivity and product quality.

4. Cooperative major cold storage facilities in remote areas: If these were available in Bristol Bay or in the Bering Sea, fishing could continue the year around rather than only during a major fish run. As it is now, fishing must be geared to the periods of concentrated fish processing operations.

5. Source of financing for small processing operations in remote areas: Small processing operations can provide some competition in remote areas, benefiting the fishermen in selling their catch. After three poor seasons, there are few, if any, of the small processors left in the remote areas; their financial backing seldom permits them to survive shaky harvest years.

6. Information on various means of limiting entry into fisheries: Alaska will be voting next fall on a proposed constitutional amendment which, if successful, will make limiting entry into fisheries constitutional by whatever means the legislature decides upon. Indications are that the constitutional amendment will pass. The legislature needs up-to-date information on the advantages and disadvantages of the various ways of limiting entry into fisheries by January, 1973.

7. Establishing new markets for "exotic" fisheries products: There might be viable markets for sea urchins and abalone available in southeast Alaska. New markets have recently opened (to the Japanese) for salmon eggs, kelp, and herring roe.

8. Educational programs on fishermen cooperatives: In the general briefing, Graham Drew, University of British Columbia, mentioned that Canada's initial fisheries extension programs concentrated on educating fishermen generally on cooperatives—cooperative philosophy, credit unions, fish production and marketing. Apparently, this has not been done on a broad scale in Alaska.

9. Disposal of fisheries waste products: At present, much processing waste simply goes into the water. Some possible ideas for using this waste were discussed, i.e., using Air Force planes to distribute fish meal from the waste as nutrients for inland lakes or processing herring into meal to help manufacture Oregon pellets (a Seattle company now imports herring meal from Newfoundland to produce the Oregon pellets).

10. Oil company support in fisheries enhancement projects: Fishermen in the Cordova area fear that, once the pipeline comes through, tanker operations will seriously interfere with their present livelihood. Impressive results are reported in increasing salmon runs through enhancement projects—artificial spawning channels, gravel incubator systems, and general lake and stream rehabilitation. If the oil companies were thus willing to help the fishermen with their livelihood, the fishermen would have less to worry about and might be more cooperative.

11. Southwestern Alaska transportation problem: A ferry is needed from the south end of the Kenai Peninsula across Cook Inlet. The need also involves a road either through or around the Katmai wilderness area, now proposed as a national monument. If the road goes around, it will cross—and probably damage—numerous salmon spawning streams. If the road goes through the proposed national monument, status will require provision for a corridor to accommodate the road. In general, appropriate agencies should work with the state highway department on

each specific highway, from the initial stages of planning to the final construction.

**Native Communities**

1. Communication: Exchange of information among all resource users was recommended. One suggested means for doing this was through meetings of local citizens with state and federal agency representatives.

2. Gear limitation: Explanation of regulation and limitation is needed so that fishermen can have a voice in what will happen.

3. Sea use planning or coastal zone planning: Consideration is necessary of the impact of any project upon various resource users. There are many potential conflicts between interests of oil, timber, fishing, and recreation industries.

4. Transportation: More land transportation within Alaska is necessary, and if this goal can be accomplished, people need to know where, when, and how. It was stated that more highways may not be the best thing (sociologically) to happen to some fishing communities. Bristol Bay was cited as an example.

5. Fishery biology research on marine mammals: Research has to be done to obtain basic information on marine mammals and how they can be used economically.

6. Economic considerations: Education is needed on such basic capital gains questions as: Should fish (i.e., frozen or processed salmon) be held for a period of time in order to obtain a better price?

7. Conflict of interests between oil, fish, and timber: First, it is necessary to establish which conflicts exist and where. In some locations, oil structures are extremely harmful, while in others there is no danger. These industries need to have some coordination to help each other to the best advantage and to protect their own interests. Workshops with participation from representatives of the various public and private interests should be organized to discuss these situations.

8. Advisory boards: Advisory boards are needed to coordinate and disseminate information obtained from resource inventory studies to local people whose livelihood depends on the understanding and knowledge of local regulations.

**General Discussion**

After the committees reported to the entire meeting, a general discussion followed and three specific suggestions for research were developed by the group:

1. Beluga whales: These small whales are believed to be major predators upon both smolt and mature salmon. They also can damage fishing gear. Their populations have increased greatly in recent years, and they have become a major problem in the Cook Inlet fishery. Practical means to harvest and market belugas are probable and these should be investigated. It is understood that the Alaska Department of Fish and Game is interested in this problem.

2. Forecasting salmon runs: A pilot study was suggested to check the effectiveness of using airborne infra-red photography to identify the oil that salmon are thought to exude. Other remote sensing devices, either aerial or satellite, should be tested for their utility to Alaska's fishing industry.

3. Environmental resource assessment: Base-line studies of areas likely to be developed must be encouraged to permit reasonable assessment of the likelihood of future environmental damage. Little is known about most coastal areas of Alaska—even the existence of certain fisheries is unknown at present.

Throughout the meeting, a number of topics of general interest came up again and again in various contexts. Specific suggestions for research or for appropriate educational programs were not made, but these topics must be considered in the development of a coherent advisory program for Alaska.

1. Limited entry was of widespread interest, especially as a result of the recent introduction of this concept into the British Columbia salmon fishery. The legal, economic, and sociologic implications, as well as the advantages from the viewpoint of fisheries management, are of interest and the question was raised whether such a system could be introduced in Alaska. People should be informed about the system, and especially about the practical problems as seen by British Columbians.

2. Communications and education in the maritime communities must be improved, especially as related to problems of law, business practices, and resource management.

3. Technologic information exchange within the fishing industry on such topics as gear, processing, and waste utilization and disposal must be improved.

4. Coastal zone management is a poorly understood subject, and responsibilities appear fragmented among many using federal, state, and local authorities. Communication between the agencies and the public must be encouraged, and perhaps some consolidation and simplification of the situation can be accomplished.

5. Transportation problems in remote parts of the state are of great concern and modern technologic planning, with judicious regard for the environment, must be devoted to this issue.

Many other subjects were discussed, formally or informally, at the Anchorage meeting. Those listed are merely a sampling of topics of particular concern to the group.

British Columbia Planning Meeting
Vancouver, March 3, 1972
Chairman: Graham Drew

At the Centre for Continuing Education on the University of British Columbia campus eleven of some thirty invited participants met in two groups with four PASGAP representatives. After a brief summary of marine extension work at U.B.C., which follows, a stimulating and frank discussion resulted in the subsequent listing of marine resources needs. No attempt has been made to assign any priority to the points listed. While there is much variation in the items reported, they have one thing in common—all are obstacles to best management or development of marine-related resource use in British Columbia.

**Marine Extension at University of British Columbia**

A modest, but effective fisheries extension education program has been in operation on Canada's west coast for 34 years, and since 1938, the Centre for Continuing Education (formerly Department of Extension) has been involved in this field. Funds have been provided by the Government of Canada through its Fisheries Service, Department of the Environment (formerly Department of Fisheries).

In the earliest years the entire effort was in the field of cooperative education to help commercial fishermen manage their own affairs. Subsequently one of the major offerings was an annual three-week residential short course focusing on the scientific and technical aspects of the industry. The program was terminated in 1969, after operating for 15 years. Currently the Centre offers programs for fishermen at the major fishing communities on the B.C. coast.

In addition, nonfunded general and technical programs in fisheries have been offered for industry management personnel and staff members of government agencies. The Centre also arranges ad hoc marine programs for the general public besides specific Environmental Management Conferences for professional audiences. The latter frequently include content pertaining to marine-related matters.

**Jurisdiction**

As many as seven levels of jurisdiction may be involved in the consideration of a single resource use question. Clarification of areas of jurisdictional responsibility at various levels of government is needed. Moreover, different levels of government should work more closely together, should use similar criteria and regulations, and should communicate more effectively with their clientele groups. In short, the gap between public officials and the people affected by government decisions must be closed.

**Decision Base**

There should be more talking and thinking before deciding on the use of a marine resource, and as areas of agreement are reached on parts of a major decision, there should be prompt action. For example, many streams on Vancouver Island already have been logged while citizens are still wondering what the key decision parameters should have been before this happened.

**Coastal Zone Management**

With the most desirable ocean frontage under heavy pressure, the issue of managing the coastal zone is becoming increasingly important. Generally, short-term gains appear to take priority over long-term benefits. Tidelands ownership claims are clouded. Interest in the questions of land and water use planning and zoning could provide an opportunity to activate an educational program before major resources are sacrificed.

**Education**

The marine extension educational effort by the U.B.C. Centre for Continuing Education needs much more support than it is presently receiving in order to tackle the multitude of public educational issues involved in understanding British Columbia's marine resources and in disseminating factual information on fish and their environment.

**Training**

Today's complex interdisciplinary questions require a modification in training programs at the several terminal levels. To effect change, universities and institutions need specific information from employers on changing professional requirements.

Two needs were cited: (a) for a new professional cadre of applied oceanographers at the M.Sc. and Ph.D. levels and (b) for "hand-minded" technicians. In regard to the latter need, the demand for technicians seems to exceed the number available from British Columbia Institute of Technology. Participants wondered if this trend would continue and, if so, how information about it could be gathered and used.

**Fisheries**

A number of important fishing questions need to be examined.

1. Should there be an expanded territorial limit to protect shelf-related species from overexploitation by foreign fleets? (Do those who maintain the spawning grounds have special rights?)

2. Should there be a species-management scheme to protect salmon and tuna?

3. Should there be more adequate protection of fisheries stocks from pollution, e.g., perhaps a fisheries bill of rights (acknowledging that fish have first call on water)?

4. Forestry adds 50 cents of each dollar to the B.C. economy, but poor forest practices in the past have destroyed some fisheries. Although larger forest operators tend to be good housekeepers, smaller operators are a big problem and must be encouraged to improve their methods.

**Forestry**

1. Logging and transport debris: One-half of the total B.C. logging business is along the coast, and some 5 billion board feet per year are transported by water to various mills. These movements impinge on other people—logs hit nets of commercial fishermen; recreational boaters run into deadheads; and there is appreciable log debris along the shores of Georgia Straits. Logging is, of course, a major factor in the B.C. economy, yet there are questions to answer. How much of the debris in harbors and on beaches is natural? If the beaches were completely cleaned of log debris, what would the erosion be? What are the actual losses from logs lost from towing booms?

Portable chip mills have been tried as a means of removing log debris from beaches, but three attempts have proved unsuccessful.

Only good timber logs are salvaged by the 500 license holders of the Gulf Log Salvage Association, so debris that is full of teredo holes, sand, and small rocks is useless for anything but firewood.

2. Pulp mill effluent: It is possible to upgrade the discharge from modern mills over a period of time, but old mills are a problem. They generally are not worth the expense of upgrading, and so tend to be closed down.

3. Effect of logging on streams: More information is needed on these operations in order to make decisions. While there is information available on siltation and road construction costs relative to stream protection, more knowledge is needed on green strips. For instance, are willows the right cover for specific conditions? What width of green strip is required? Is there a standard width?

4. Wet log storage areas: Sometimes logs are collected for long periods in specific water areas prior to transport or processing. Little is known about how this collection affects the storage area environment.

**Water Transport**

The matter of polluting during water transport is confused in terms of individual responsibility and different types of pollutants (particularly for the merchant marine officer faced with on-the-scene responsibility at sea). Under present law there are very heavy fines for oil pollution or the release of oily wastes in the marine transportation situation. Slow accumulation of oily wastes is natural in shipboard operations, but there are usually no shipboard means of collecting or separating the wastes. If there were, there is usually no means of disposing of them when ships reach port. Too often the operator must ultimately dump the wastes overboard illegally.

In addition, there are marine cargo pollutants other than oil, such as barge loads of chlorine. Potential exotic chemical pollution is generally not regulated as is oil.

In each case, the master has incomplete control over key factors affecting pollution at sea such as whether he sails under specific weather conditions with various potential pollutant cargoes. Yet he bears a major share of the responsibility if a marine pollution disaster occurs.

**Informed Representatives**

A number of concerns centered on the role of the citizen in marine resource decision-making and the need for leadership development among resource user groups. Government officials attempt to obtain counsel from industry representatives or advisory councils, but how representative are industry representatives? Are future leaders being trained or groomed in decision making so that they can properly represent resource and industry concerns? Fishermen and other mariners are often at sea and unavailable for counsel.

**Information Dissemination**

Several needs for improved communication of information were cited:

1. More effort is needed to provide information to the public on marine resources.
2. Ways need to be found to stimulate general public participation in decisions before crises occur.
3. Methods must be developed to provide an adequate number of well-trained, high calibre, motivated professional educators to conduct marine resource and environmental protection programs.

**Specific Information**

Among all concerned citizens and agencies responsible for policy decisions, there exists a need for more immediate answers to questions involving hydroelectric, nuclear and applied engineering problems.

**Observations of U.S. Participants**

According to U.S. participants in this PASGAP meeting, it was refreshing to see the apparent success of the following progressive ideas:

Commercial and sports fishermen working together on common problems of pollution, habitat, etc.

Advisory committees, of long standing, aiding the activities of provincial and federal authorities.

The Canadian Government's stand of a 100-mile pollution jurisdiction in the Canadian Arctic.

Hawaii Planning Meeting
Honolulu, March 21, 1972
Chairman: John Ball

At the Manoa campus of the University of Hawaii, a total of 23 people participated in meetings that emphasized three areas of greatest concern in the Hawaiian marine scene: (1) marine recreation, (2) marine fisheries and aquaculture, and (3) coastal zone planning and management. The need for coordination between the three areas of focus was recognized, so throughout the day there was some shifting of persons between the different groups.

The groups were directed to develop a list of needs or concerns to be considered for action through Sea Grant efforts, Pacific Sea Grant Advisory Program (PASGAP) talent sharing, or other sources of combined private-public educational expertise.

**Marine Recreation**

Recreation is a diverse but highly important use of Hawaii's marine resources. Recreational resources are intensively used by visitors and residents with considerable overlapping and conflict between users and among the diverse sorts of uses. The following set of needs was identified by the marine recreation group:

1. There is a need for an authentic survey of numbers of people involved in scuba diving. This need is particularly important at this time when state concern for safety is mounting.

2. Better ways must be developed for disseminating and coordinating the large volume of water safety information already available from such sources as the U.S. Coast Guard, state and city water safety groups, and parks people at the different levels of government. It was felt that the recreation specialist of the Sea Grant program should form an advisory body on marine recreational matters.

3. Public access to the shoreline is a severe problem in Hawaii. Efforts should be devoted to indicating existing rights-of-way and developing others.

4. Water quality degradation, particularly from sewage effluent, has a detrimental effect on the value of our swimming beaches. Perhaps daily coliform-level reports should be established.

5. Public camping areas seriously lack facilities, and there is a need for planning (and regulating) this activity. The pending availability of inexpensive marine mass transit will augment this problem. Hawaii's natural aesthetic qualities must be preserved.

6. There are the beginnings of problems involving multi-use of some beach areas: scuba diving versus swimming and surfing versus swimming. These problems require attention as do the conflicts between marina harbor development and surfing–swimming sites.

7. The conflict between visitors and residents is a problem to be watched in camping and beach use.

8. The group felt that the state should anticipate the

problems in recreational submersibles when their use becomes widespread.

**Marine Fisheries and Aquaculture**

The group began with a brief review of the present Hawaiian fisheries and aquaculture situation.

The fisheries are basically two: the offshore tuna fishery and the inshore fishery for other species. The tuna resource (skipjack) can support a much larger harvest than the present commercial fishery. It was thought that the other resources in the inshore waters are being harvested to their fullest.

Because Hawaii has a high per capita consumption of fish, the local production does not meet the demand. Despite this, occasional gluts occur on the fresh fish market which greatly affect prices. Prices are generally very high because of the shortage, and importing fish by air is profitable.

Aquaculture is in the embryonic stage and is directed toward raising catfish and macrobrachium shrimp. Techniques have been developed by the Hawaii Division of Fish and Game, and one commercial enterprise is applying these techniques.

The following are needs and subjects of concern which were identified by the group on marine fisheries and aquaculture:

1. There is an increasing demand on the inshore resources by both the recreation fishermen and the commercial fishermen. It is obvious that the division of resources between these two groups will demand that some system of allocating the resources be developed.

The local islands (main Hawaiian group) are presently being fished to the limit, while the islands to the west, including French Frigate Shoals, Midway, etc., are far from being adequately utilized. It is not, however, economically feasible at this time to fish these areas for the main island markets because of the distance.

2. There are several problems inhibiting the growth of the high seas tuna fishery. The first is locating the resource. Even though it has been determined that the catch of skipjack could be greatly expanded, it is difficult to determine where the schools of fish are located. More research is needed on locating schools so that current information can be provided to the industry.

Another problem confronting the skipjack fishery is the method of catching. The present fishery is dependent upon bait, of which there are only two important species. Both species are dependent upon inshore waters for reproduction, and such waters are extremely limited in the main Hawaiian group. Fast-sinking purse seines have not been tested adequately in the mid-Pacific. This testing should be done, perhaps in connection with bait fishing.

At present, the quantity of bait is the most limiting factor in development of this fishery, and research could be directed into supplemental bait fish for this fishery. There are many potential species which should be investigated as new sources of supply. Also, research might well be done on transporting bait fish from areas of abundance, such as the west coast of the mainland.

3. Aquaculture in Hawaii at the present time is directed toward raising catfish and macrobrachium shrimp. One of the most limiting factors in the expansion of aquaculture is the cost and availability of land and water. Technology has advanced to a point where pilot projects are possible; however, to establish a viable industry, much more technology should be developed before large investments are made. So far all work has been accomplished under a P.L. 88-309 project, which is insufficient for developing technology as rapidly as necessary.

For example, disease has not yet been a problem, but basic information and the technique for control should be developed before a major problem arises.

Over the United States, and perhaps the world, there is a great deal of research being directed toward the raising of Paeneid shrimp. Members of the group expressed a concern that there may be a great deal of duplication of effort.

4. Discussions revealed that present laws relating to the coastal and marine areas of Hawaii need study and clarification. With the development of aquaculture it has become clear that some activities required are not covered by Hawaiian law. It was suggested that the marine laws of Hawaii be reviewed to determine where voids exist.

5. Education of the public on the value of the natural resources is recognized as a critical need to guarantee the future of these resources, and a program to work with the schools must be worked out. Development of educational materials and teaching aids will become more and more important if the public is to understand the management of marine resources. Currently, there are not sufficient programs within the state and federal resource management agencies to do an adequate job in this area.

6. The ever-increasing numbers of recreational boats have taken over more and more of the mooring facilities formerly used by commercial fishing vessels. This is a growing problem on all the islands but is extremely critical in the Honolulu area. The problem should be studied in order to guarantee the commercial fishing industry a suitable site for mooring, gear repair, and vessel maintenance.

**Coastal Zone Planning and Management**

In attempting to define the Hawaiian coastal zone, the group recognized that legal definitions and environmental relationships are not necessarily the same. In Hawaii the landward segment of the coastal zone legally extends one mile inland. Seaward, the zone goes out three miles to the edge of the territorial sea. Within the water seg-

ment there are two sections—the deep ocean and the littoral zone. The counties of the state of Hawaii are separated by international waters. Relating to extension of territorial waters, there appears to be no urgent need at present for the 200-mile limit.

In Hawaii it is difficult to separate land policy from coastal zone policy. Two sets of information relate to the coastal zone. In the first set, the legal proscription is contrasted to environmental relationships of drainage and other physical influences. In the second set, we contrast the extent of marine influence on the land island versus the influence of the island land masses upon the marine environment. The land areas of Hawaii are subject to four types of zoning: urban, rural, conservation, and agricultural. A shoreline setback law of 40 feet has been passed by the State Legislature; the counties are responsible for administration. This setback appears to be minimum contrasted with the 150-foot setback laws of Australia and New Zealand. Currently, a strong coastal zone management law is being discussed in the Hawaii Legislature, but it is agreed that the U.S. Congress must act first on coastal zone management legislation.

Another aspect of coastal zone management relates to land ownership. Within the state, there is a limited group of major landholders. These owners seem to favor slow, well-planned development. On the other hand, a speculation syndrome pervades smaller ownerships.

It is difficult to separate discussions on environmental questions and the coastal zone in an island state such as Hawaii from general environmental questions. During the discussions, the question of surplus energy sources came up. The group talked specifically about using sugar waste (bagasse), which is burned to generate electricity for operation of sugar refineries. A suggestion was that the state could encourage industries to generate surplus energy for use in the vicinity of the plant. Furthermore, alcohol might be distilled from molasses for truck fuel.

The problem of environmental pollution in Hawaii, as in other PASGAP states, was held to be crucial. The following examples were pointed out.

Domestic sewage from a number of cities is still dumped untreated into the ocean.

Siltation from shore-side housing developments is causing sedimentation pollution, which is killing coral reefs in Kaneohe Bay and elsewhere.

Pearl Harbor, one of Hawaii's major estuaries, is so polluted that oysters and other aquacultural species may not be harvested.

People pollution—the impact of excess human population—is being felt in several areas.

Oil removal, recycling, and heat from power generation pose problems in the coastal zone.

It was suggested that the coastal zone information specialist to be hired by the University of Hawaii should, as a major responsibility, know the "who, what, and where" of coastal zone questions and should recognize the need of the public for access to information of all sorts.

The following needs were identified by the group on coastal zone planning and management:

1. A combined program in land use, population, and environmental planning.

2. A collective expertise to prepare and assess environmental impact statements. People must be trained to prepare such statements, and evaluation methods must be developed.

3. A determination of whether coastal zone management should be separated from general land and water use management.

4. A data bank on coastal zone information from local, state, federal, and private sources.

5. An investigation of what other states are doing in coastal zone management for possible application to Hawaiian problems.

6. The compilation and publication of an environmental inventory of the Hawaiian coastal zone, using the following sources as a basis: Corps of Engineers data, Water Resources Research Center reports, University of Hawaii Atlas of Hawaiian Resources, source data on marine resources, parks and harbors reports, and specialized bulletins.

7. Beach access problems should be analyzed. Further access to military lands for public recreation should be stimulated and opportunities to use public beach areas publicized.

8. A program to foster public awareness and protection of the limited and priceless estuaries of Hawaii.

9. A detail of coastal land ownership patterns and an understanding of development priorities to aid in preparing educational programs on short-term land speculation versus long-term planned development.

10. Corollary to ownership, the need to understand human-use patterns related to quantity and quality of the land-sea surface.

11. Determination of whether state and county plans consider acquisition of coastal areas for public recreation, underwater parks, etc.

12. Use of extension bulletins to inform the public of coastal zone and environmental legislation (to shorten the lag time between enaction and understanding).

13. Preparation of bulletin on fragile dune areas, storm dunes, and the value of their retention as undeveloped land.

14. Stimulation of research to fill gaps in wave data: for example, statistics on wave diffraction and refraction.

15. Consideration of transportation questions such as the automobile ferry to outer islands and the consequent impact of increased human use of resources.

## Oregon Planning Meeting
## Newport, January 18, 1972
## Chairman: William Q. Wick

The Oregon planning meeting was held in the Oregon State University Marine Science Center in Newport. After the opening session, participants met in five subgroups in which problems were identified, discussed, and noted. In some cases, actions were recommended.

Reports of the subgroups are consolidated in this summary of the meeting. The summary is divided by major topic areas, and the observations and recommendations of the subgroups are outlined within each of the topic areas. The topics are (1) fisheries, (2) pollution and estuarine ecology, (3) planning and zoning, (4) law, (5) recreation and tourism, and (6) public information and education. A series of miscellaneous recommendations concludes the report.

### Fisheries

1. Assessment of stocks: Agencies that study and manage fish and shellfish in the Pacific rim area should intensify their research efforts in assessing the magnitude of commercially important offshore stocks of fish and shellfish. These agencies include, but are not necessarily limited to, Oregon State University, the National Marine Fisheries Service, and the Fish Commission of Oregon.

2. Foreign fishing: Fishing by foreign vessels has significantly reduced concentrations of certain species in the eastern Pacific. Many Pacific Northwest fishermen have depended on these fish for a living. Marine extension agents in the PASGAP region should keep fishermen apprised of foreign fisheries problems and their magnitude and of the position being taken by governmental agencies involved in seeking a solution to these problems. In addition, governmental decision-makers should be made aware of the feelings and attitudes of the industry through marine advisory personnel.

3. Fisheries marketing: Marketing is one of the major problems in developing the fishing industry. PASGAP should employ a marketing specialist and a seafood technologist. The marketing specialist would conduct studies on existing seafood marketing channels; existing markets; new markets; and consumer preferences. The seafood technologist would work with retail outlets on display, merchandising, packaging, and refrigeration.

4. Limited entry: An influx of vessels entering certain eastern Pacific fisheries has significantly reduced the catch-per-unit-of-effort of all vessels in those fisheries. A limited entry system may maximize total production with fewer units of gear at the same time increasing returns to individual vessels in those fisheries. PASGAP should conduct an educational program for commercial fishermen to acquaint them with limited entry. The educational program should include theory, variations, and implementation.

5. Industry-research-management relationships: Although commercial fishermen represent a wealth of knowledge on commercial stocks, their knowledge often is untapped by research and management agencies. To provide better input to research and management, an Oregon commercial fisheries advisory committee should be established to advise and consult with state fisheries leaders on problems relating to the commercial fishing industry. In addition, those who research fisheries questions should use the fishermen's knowledge by including them as cooperators in projects. An effort should be made to disseminate the results of research on a real-time basis and to help the industry to interpret and use the results of this research.

6. Publications for fishermen: A fisherman's handbook is needed for each major fishery. The handbook should include information on the following:

- sanitation and care of the catch aboard the vessel
- how to hold fish, including icing them
- a listing of allowable temperatures for holding fish, annotated with information on temperature-shelf life relationships
- criteria for a hold, including lining materials
- instruction on methods, materials, and equipment for cleaning and sanitizing the vessel
- comparison of present methods of handling catches

This publication might be sent to each new commercial fishing licensee, particularly those in the salmon trolling fishery. Workshops based on the information in the publication should be held in each of the ports. A similar educational program might be undertaken with sports fishermen with information relating to how to butcher and clean the fish and what factors cause spoilage and quality loss.

7. Need for uniformity of requirements: A variety of government agencies develop and enforce regulations and requirements that affect the seafood industry. These agencies and others also make requests for voluntary cooperation. Two noteworthy areas call for improved coordination. Regulations governing plant sanitation, product quality, and effluents from plants vary from agency to agency. Marine advisory efforts should be directed toward promoting coordination and standardization. Second, large blocks of statistical data are being required from the industry. Marine advisory efforts should be directed at developing a central data clearing and coordinating system, and encouraging the return of summaries of these data to the industry and to the public.

**Pollution and Estuarine Ecology**

1. Identifying and solving pollution problems: Pollution questions are tough for a democracy to solve and people are the biggest polluters. Categories of waste disposal include:

- domestic and industrial wastes in estuaries
- ocean waste disposal from discharge pipes, etc.
- fish processing plant offal
- oil wastes
- recreational and commercial boat and ship sewage
- log storage and handling and related logging activities
- siltation and dredge spoils in estuaries
- solid waste disposal

A combination of methods must be used to resolve these pollution problems. They include land- and water-use planning leading to zoning, research, and improved communication among principals. PASGAP can help coordinate efforts and reduce duplication. Marine advisory field staff should work with local planning groups and task forces.

2. Providing biological and ecological data on estuaries: Critical problems facing estuarine decision-makers are (1) lack of biological data relevant to dredging and disposition of spoils; and (2) lack of information about the effects of development on the ecology of estuaries. OSU and other PASGAP participants must become attuned to these and other research needs of coastal planning and decision-making bodies. Once these needs are identified, university research scientists must orient their projects to meet the needs of these coastal planning and development groups. Oregon State University should cooperate with other federal and state agencies in implementing and conducting these studies.

**Planning and Zoning**

1. Decision making requires economic inputs: There is an urgent need for comprehensive and wise land- and water-use planning in the coastal zone. The problem is compounded by traditional reliance on planning commissions, composed of unpaid citizens, with responsibility for relatively small areas, and characterized by high turnover. Economic models should be developed that can offer valid quantitative equivalents of social and esthetic values. The Sea Grant College can provide information on socio-economic and technical aspects of planning. Marine advisory staff members should work with local planning groups, encouraging the use of federal, state, and regional inputs.

2. Aquaculture should be considered in planning: Aquaculture is an important potential use of the coastal zone and it should be included in planning and zoning. Sea Grant should encourage the consideration of aquaculture as an important use.

### Law

Review of present laws needed: As people approach the problems of the coastal zone, it is clear that not all questions that need law for resolution have the laws that are required. Additionally, some of the present laws are inadequate or dated. A comprehensive review should be undertaken to identify what laws presently relate to the coastal zone and to make a summary available to people who need it. Additional laws that are needed should be developed and proposed, especially for estuaries and tidelands.

### Recreation and Tourism

1. The recreational resource has limits, too: There are finite limits to resources, including those used for recreational tourism. It is important to stress quality over quantity and even to explore some kind of limited entry. The major problem of Oregon's sea-oriented recreation is one of an influx of low-budget tourists. Adding to the problem is the heavy use during only four summer months. Promotional emphasis needs to be changed. Costs generated by tourists should be borne to a greater extent by them. Limiting entry to the coastal zone through pricing, reservations, and licenses should be investigated.

2. The recreationist should be identified: Little is known about the recreationist or about how to manage the recreation resource. Sea Grant should focus on asking certain questions like:

- Who is the recreationist?
- What sort of diversity exists among recreationists?
- What does the recreationist want?
- How do we channel recreation pressure so as to preserve the resource?

3. Aquaculture may offer recreational resource: Sea Grant may wish to explore using aquacultural techniques for providing "quest" or tourist fisheries.

### Public Information and Education

1. Multiple use of coastal zone requires understanding: The problems of multiple uses of the coastal zone make public understanding of the conflict essential. While the OSU Marine Advisory Program has made good headway in this area, there is a need to expand efforts in relation to land- and water-use planning, resources utilization and expansion, and protection of the environment. Specifically, they should develop a public education program on the estuarine systems and their important role in natural food production. There is also a need for education of local government officials so they may make intelligent decisions. There is lack of understanding of how the primary fishing industries contribute to the overall development of the tourism industry and other industries. The Marine Advisory Program should promote the understanding of the value of the primary industry to the overall value of the life and economy of the community.

2. More public information effort needed: There is a need for more public information on what the state Sea Grant College is doing. The public would like to have detailed information about individual projects, their objectives, and the long-range goals of the program.

### Miscellaneous Recommendations

Several of the subgroups appended miscellaneous observations and recommendations to their reports. They are summarized here.

- Studies are needed on the factors influencing the quality and abundance of crabs.
- The factors that influence the abundance and production of oysters should be identified.
- There should be further research into the location and abundance of albacore.
- The resources and the long-range supply of raw materials for seafood production should be identified.
- There should be further study of the use of "waste" heat in enhancement of aquaculture.
- Projects carried out under Sea Grant should be of an applied nature, but not necessarily short term. Basic research should be undertaken in those areas where there is a definite need for basic information to reach a well-defined objective.
- Oregon should have an oceanographic commission with sufficient authority to operate in the areas of policy, promotion, education, and communication.

## Washington Planning Meeting
## Olympia, January 19–20, 1972
## Chairman: Robert E. Harris

At the Olympia meeting, thirty participants divided into three discussion groups following an introductory session. The marine resource needs which these Washington citizens identified are reported here under the following headings: fisheries, information and education, pollution, tourism, and assessment of marine resources. In this report, the group's analyses of these subjects are recorded along with suggested solutions to the needs identified.

**Fisheries**

There is more capital invested in Pacific Coast fisheries than is necessary to harvest these fisheries, and some means for legally limiting entry into these fisheries needs to be devised. That device must be one which is acceptable to commercial fishermen as well as to the public. Public meetings about the necessity for limiting U.S. commercial fleet size should be sponsored so that citizens understand the economic and sociological implications of limited entry. Such meetings could lead to effective methods for implementing effective limited entry programs.

Some participants feel that the federal government ignores commercial fishermen in law-of-the-sea conferences and further, that the public is apathetic about the injustices of foreign fleets harvesting U.S. fishery resources. One group recommended that PASGAP encourage close cooperation among fisheries organizations and promote public discussions on this subject.

Loss of life and property among Pacific Coast fishermen is a serious problem. To counteract this problem, it was suggested that a broad safety-training program consisting of courses in navigation, seamanship, and safety could be coupled with industrial safety approaches and offered to commercial fishermen.

Dangers to certain Puget Sound fishes were cited by several members of the group. Herring, a bait for salmon and a major forage source for salmon feeder runs, is in danger of being overharvested. A subset of this problem is that herring bait harvesters apparently are taking quantities of young salmon as well. A second danger is that caused by developers to small salmon streams, especially those with coho runs. These streams, which may be less than 2 feet wide, are easily overlooked by developers and sometimes are inadvertently blacktopped. Programs to preserve and to artificially propagate Puget Sound fishes should be encouraged.

There was a feeling that industry can no longer contribute as much to basic fishery research and management as in the past. As a result, industry representatives felt that there is a need to broaden the base of existing salmon research by eliminating duplication of effort among various research programs and to broaden the range of research problems.

Finally, participants recommended establishment of marketing programs to promote purchases of domestic seafood, particularly of certain bottomfish and shellfish.

## Information and Education

Citizens and environmental planning groups need balanced information about the marine environment in order to make wise decisions about the uses of that environment. This thought was expressed by almost every person attending the conference.

The groups suggested both long-term and short-term approaches to fill this need:

Educational materials should be produced and made available to teachers so that pupils can be introduced to the marine environment in the schoolroom. The group felt that students who develop an appreciation for the marine environment at an early age would carry it into adult life.

Balanced information should be prepared and disseminated to the public on specific environmental issues when they arise.

Meetings and conferences should be promoted among the multiple users of the marine environment. The people attending this conference believe that it is important to get conflicting users together in small groups so that they have an opportunity to talk to each other and exchange information.

## Pollution

It is difficult to keep up with pollution regulations because they come from many sources. Federal, state, county and local agencies issue regulations, and correlation among these sources is needed so that the public and industry can comply with them.

In addition to correlating sources of regulation, the group felt that continuing attention to several aspects of waste disposal are needed. These include:

- Fish processing plant offal
- Sewage from boat and ship holding tanks
- Wastes resulting from clean-out operations aboard oil tankers
- Dredging spoils
- Heated effluent from nuclear power plants
- Heavy metal residue from metropolitan sewage treatment plants
- Pollution caused by increasing recreational uses

One discussion centered around the wisdom of universal standards for pollution control. Present regulations for disposing of fish wastes sometimes disregard practical considerations. Solutions at hand, such as installing sewage treatment plants, are not economically feasible in plants that operate only 200 hours per year. The group concluded that there is a need to educate officials enforcing pollution regulations about the overall effects of fish wastes on the environment, and about the economic impact of the regulations on industry.

## Tourism

Although the group did not attack the question of quantity versus quality, they did discuss a number of needs and opportunities for increasing tourism in Washington.

It was suggested that community colleges structure two-year training programs to provide personnel for positions as tourist information representatives and recreational guides.

An adequate inventory of Washington's natural resources (especially marine resources) is needed. A map could be developed to show resources and, where appropriate, areas in which they are found.

A central clearinghouse of recreational information for tourists was suggested, and a program was recommended to stimulate citizen interest in life-time participation in some recreational activity.

There is a need to understand the Washington tourist. Where does he come from and what does he want? (A recent survey by the Visitor Industry Council indicated that fishing and boating are the tourist's prime interests).

Finally the group recommended that the following opportunities be investigated:

- Emphasize family participation related to conferences and conventions
- Determine impact of quick travel time on recreation resources (Future Shock syndrome)
- Develop marine science environmental areas (underwater parks and natural areas of unique habitat)
- Use airlines to promote tourism (deadhead flights for tourists, inflight information bulletins on destination events, inflight promotional films)
- Prevent vandalism to recreational areas by involving local people in planning and development

## Assessment of Marine Resources

Puget Sound is a complex estuary, and for many of its uses there is insufficient information for planning future needs. The group spoke of a base-line study, including resources, economic uses, population projections, and input-output models to relate to specific study topics on biological productivity, nutrient removal, and other basic phenomena. There was some disagreement as to the need for or practicality of this approach, but it was suggested that the local advisory program might get interested groups together for an overall look at Puget Sound.

A more meaningful approach to shoreline classification was proposed—specifically, a geo-hydraulic study of marine shore systems that could result in classification and terminology with physical, biological, and legal acceptance and understanding. This was presented as basic to meaningful inventories of marine areas, biological assessments, legal interpretations—each of which has an integral part in zoning for multiple use.

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## PACIFIC SEA GRANT ADVISORY PROGRAM

The Pacific Sea Grant Advisory Program (PASGAP) is an international venture in cooperative marine extension. The program grew out of the recognition that regional marine needs could best be met through regional approaches. PASGAP members work together to identify the needs of the Pacific marine community and to help meet those needs through publications, talent sharing, and specialized projects.

PASGAP is funded by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration through the National Sea Grant Program. Current members include representatives from: University of Alaska, University of British Columbia, University of California, University of Southern California, University of Hawaii, Oregon State University, University of Washington, and National Marine Fisheries Service.

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