

Trends

Incorporating
Guideline

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Contents



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Introduction

The reader response to the theme issues of *Trends* magazine has been extremely favorable. We have, in the past year, tried to touch on areas of interest to our readers—to explore topics in some depth and to cover a range of activities.

To date we have featured issues on making parks and recreation areas accessible to the handicapped, historic preservation as an important area of park development and activity, communications efforts for park and recreation people and finally, trends in environmental education. Future issues will focus on recreation programming, maintenance and other topics which our readers have expressed interest in exploring in depth.

This summer issue of *Trends* covers a range of topics—a mixed bag of information and insights on issues which affect us all—in both large and small facilities at every level—federal, state and local parks and recreation areas. Once a year we hope to bring our readers a grab bag of articles submitted by you and others interested in areas of activity in parks and recreation.

This issue includes a number of articles on the international parks movement. An introduction by Robert Milne, Chief, International Affairs Division of NPS, highlights some of the reasons for turning our attention to the global parks movement. Following Milne's article, there is a short description of an international seminar for park and recreation managers in countries all over the world.

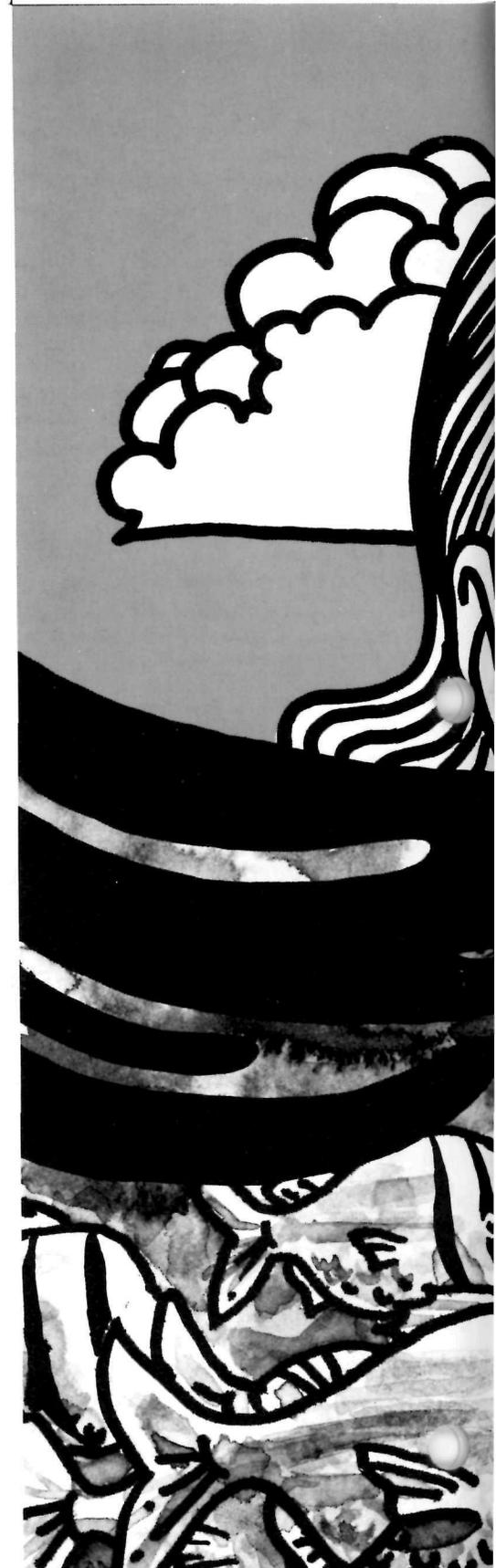
Marine parks is the focus of an article by Alan H. Robinson, an aquatic biologist for the National Park Service's Southeast region at Bay St. Louis, Mississippi. The article includes both the philosophical and practical considerations for developing marine parks. As a further illustration of the importance of sharing ideas, the article is an excerpt from a paper Robinson delivered at an International Conference on Marine Parks held in Tokyo this past May. Another piece on biosphere reserves touches on a growing international program sponsored by UNESCO.

The International section of this issue dominates both the Who Can You Turn To? feature as well as a piece on international exchange programs.

On the domestic front, an article on the activities of the Nature Conservancy and an article on financial management of state parks provides some practical information on programs of relevance to every park manager.

Finally, a piece excerpted from an address by the former head of California's state park system, William Penn Mott, talks about the changes parks need to make to adapt to contemporary needs.

Hopefully this special mixed bag issue has a little something for everyone whether you are interested in Man and the Biosphere or financial planning at the state park level.





Looking at the International Side of Things

by Robert Milne

The global park movement has expanded dramatically in recent years as more and more countries recognize the need to protect and preserve natural and cultural resources. More than 100 nations have now established over 1400 national parks and equivalent reserves.

Not too surprisingly, park managers in Africa, Europe, Asia and Latin America find themselves facing many of the same problems we face in this country. While some solutions they adopt are based on our experience in this country, there are an increasing number of innovative approaches to resource and visitor management to be found on every continent.

Obviously, the various international levels of technology, the spectrum in availability of resources and differences in culture, could provide a wealth of information to park managers at every level throughout the United States.

As a result of our current national foreign policies and now global environmental concerns, I think we will see a significant increase in the implementation of international cooperative agreements,

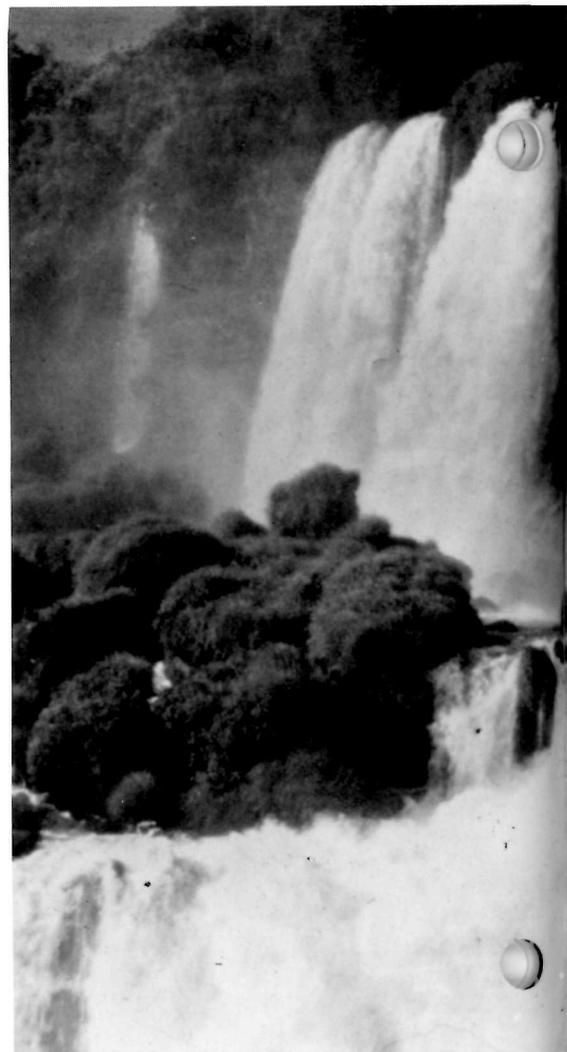
commissions, multinational programs, and bilateral exchanges that will encourage the co-mingling of park professionals. The following articles on exchange programs and the international seminar are only samples of the kinds of activities which will continue to expand. If we face the challenge of being thoughtful and responsible park managers, we cannot ignore the global context in which we operate—a new and exciting position for all of us involved in parks and recreation.

There are a number of specific examples of the value of sharing ideas across international boundaries. The chemical immobilization of large mammals is now a basic research and management tool. The procedure for this technique was initiated and developed by an African veterinary physiologist who exported his ideas to North America.

Other countries are involved in programs which we might benefit from as well. In Japan, where parks are an important resource for the highly populated islands; the government has developed a system of inexpensive vacation villages because the land values exceeded the capacity of private developers to cater to all but the very wealthy.

Japan is also developing urban parks built on islands made of solid waste packed in large sealed concrete coffer dams. The beautifully landscaped island parks in Tokyo Harbor will be visited by millions. Turning solid waste problems into badly needed recreational open space in a city that has baseball diamonds and driving ranges located on roof-tops may be a view into our own future.

In Germany, an area of about 11,000 acres called Lunenberger Heath has been set aside to perpetuate the pastoral scenic landscape of 15th century Germany. As a composite historical site, people live in and work in the villages located in the area. The park managers have gone to great lengths to preserve the total landscape experience. Roads within the park are dirt and cobble. The automobile is largely excluded. People get around by foot, horse or carriage. Portions of the land are farmed in traditional style with-



Lake Atitlan National Park, Guatemala



Iguaza National Park, Argentine



Mt. Cook National Park, New Zealand



out tractors. The bulk of the land is used for raising livestock which have been carefully back-bred to the historic period. The whole area has been so well preserved that it recently was recognized by the Council of Europe as a unique conservation endeavor.

In Mexico, lands selected for protection as national or natural resources are often populated by peasants who were given the land during the Mexican Revolution. The *Compasinos*—groups of people living in collective or communal arrangements, living off the land, are not uprooted and relocated by government designation

of their land as a preserve. Rather than uproot them, the government works with the people training them to manage park facilities and allowing them to reap the profits from visitor facilities which they are often hired to build and the sales of crafts. From start to finish, the development of the area enhances opportunities for local residents to earn a living in a style non-consumptive of the natural resources that they are committed to protect.

There are numerous other examples of efforts by other nations to build better and equivalent reserves. In this issue you will read Alan H. Robinson's thoughts on the development of marine parks—an area of park development which has implications for virtually every country in the world. You will also read about the international

seminar held each year as we cement our relationships with park officials in other countries through sharing of ideas. The section on *Who Can You Turn To?* offers suggestions for additional resources on the international park scene.

We are only beginning to share in the vast resource of experience and knowledge held by park people all over the world. We hope that you share our enthusiasm for learning about other nations' activities.

Anza Borega State Park

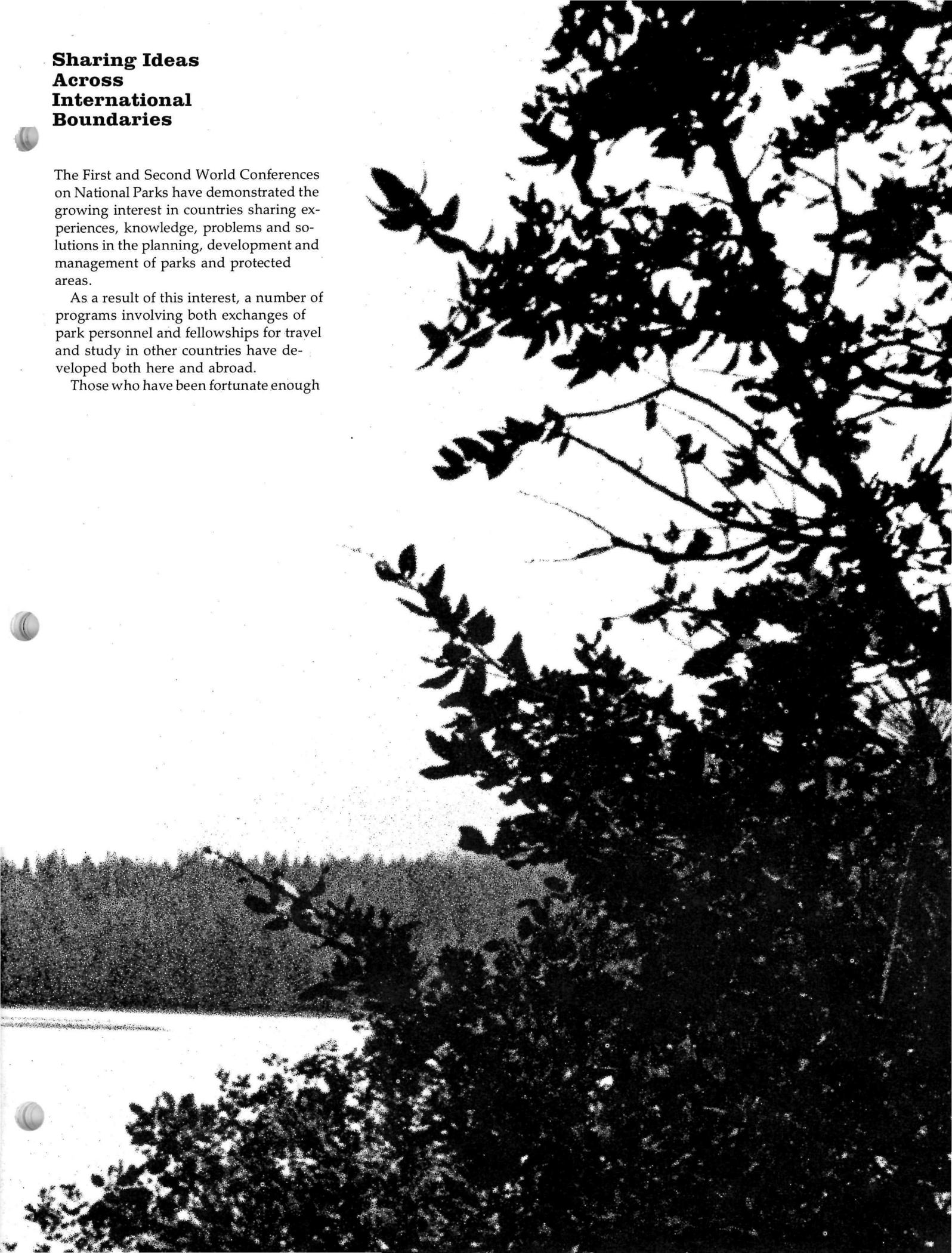


Sharing Ideas Across International Boundaries

The First and Second World Conferences on National Parks have demonstrated the growing interest in countries sharing experiences, knowledge, problems and solutions in the planning, development and management of parks and protected areas.

As a result of this interest, a number of programs involving both exchanges of park personnel and fellowships for travel and study in other countries have developed both here and abroad.

Those who have been fortunate enough



to participate have gained new insights into the problems they face at home, and have been able to share their own experiences with their hosts in other nations.

The National Park Service operates a limited exchange program with counterpart agencies in other nations as a method of employee training. A number of national and international organizations sponsor training and fellowships for park managers and others interested in and involved in parks, recreation and the management of protected areas. From this country, the U.S. Agency for International Development brings people from other countries to U.S. parks to study our solutions to problems they may face in their own nation. AID also sends U.S. experts to other nations to help them with their problems. The National Park Service's Division of International Park Affairs also provides technical assistance to park commissions and departments in other nations and has been active in Japan, Africa, several European nations, South America and a number of developing nations in Asia.

The Peace Corps sends a limited number of people to work with parks and protected areas in developing nations each year. The World Leisure and Recreation Association, based in this country encourages international personnel exchanges of park and recreation people.

In the British Commonwealth nations, the Churchill Fellowships have been awarded to individuals who wish to travel and study parks, recreation and cultural activities in this country. In the U.S., the Eisenhower Fellowships have supported a number of foreign visitors who wanted to study U.S. parks and park management. The Food and Agriculture Organization of the United Nations has over the years granted fellowships for personnel interested in parks and protected areas all over the world. FAO also provides expert assistance to inexperienced park agencies in countries all over the world. Similarly, UNESCO offers fellowships and will send advisory missions to help countries facing a specific and difficult problem in park management and planning.

The National Park Service exchange program began in 1968. The first exchange was with the National Parks and Wildlife Service of New South Wales, Australia. A senior ranger from each nation spent six months studying park management problems in their host country. Soon after, a similar arrangement was made with the National Parks of Canada, now the most active of all the exchange programs. Participants from the U.S. to Canada have included an assistant superintendent, an archeologist who studied Canadian research and preservation techniques and several rangers who received formal training in mountain search and rescue and avalanche control. Park planners, historians and interpreters have also participated in the program.

Canadian participants in the program have included an underwater archeologist, a park planner, park administrators, naturalists, an historic preservation architect, trainers and others involved in park administration.

Other programs, on a smaller scale, operate with both England and Japan and

possibilities for similar efforts with West Germany, Spain and Mexico are now being explored.

Training exchanges and fellowships between nations promote friendship, mutual understanding and appreciation based on common concerns in the conservation of national parks. In so doing, they also contribute international goodwill and allow us to be active participants in the world park community and sustain an open door policy on new ideas regarding the management of our own parks.

Marine Parks: Planning for Recreation, Interpretation and Environmental Education

by Alan H. Robinson

This article has been excerpted from a paper delivered by the author at the IUCN sponsored International Conference on Marine Parks in Tokyo, May 11-12.

In planning for the recreational, interpretive and educational use of marine and coastal area parks, a broad range of variables must be considered.

Master plans will be conceived with a series of alternatives which broadly define interpretive themes, recreational activities and facilities and a system of land classification for various principle activities.

Once these plans have been drafted, public involvement is sought to critically evaluate the alternatives presented. Particular attention to the environmental impact of the plan's proposed development is of course crucial.

Refinement of the plan and designation of facilities and techniques form the next

step in the process, followed by the staged development of those facilities and appropriate activities. Ideally, basic inventories of resources, environmental monitoring, research, and the establishment of carrying capacities will begin concurrent to the earliest phases of master planning. Periodic re-assessments of the master plan, both in concept and detail should be anticipated.

Recreation, interpretive and educational values and goals of a marine park area will in general be recognized in the master plan. Since basic knowledge of marine ecosystems still lags behind terrestrial ecosystems, and interrelationships are literally obscured from view, the concurrent resource inventory step is even more critical in marine area master plan-

ning. Basic decisions as to compatible recreation use—motorboating vs. sail or hand-powered craft, sport fishing vs. total prohibition, concentration of beach activities in certain areas—simply must not be made on undocumented assumptions of resource character or resilience.

Several broad issues are facing park planners and managers in dealing with the needs and activities of the recreational visitor in modern heavily used marine parks: transportation and access; safety considerations; conflicts between various user groups; and environmental impact of recreational beach use; boating; fishing; collecting; diving; and associated facilities, facilities.

Transportation, access and visitor contact

The disparity between user patterns of local resident versus national visitor is intensified for marine and island parks; local users frequently provide their own boat transportation and equipment, know the geography and safety considerations, and



need not find overnight accommodation. The national visitor typically arrives by public transportation, or is separated from his personal vehicle on the mainland, has no private small boat or special equipment, is unfamiliar with his surroundings and requires overnight accommodations. This forced dependence of the national visitor upon public or park transportation (a situation much sought after in heavily used United States land parks) provides the park planner with the opportunity to design efficient, low-impact, controllable transportation and accommodation systems. Utilizing the opportunity for visitor contact provided by a public transportation system, it is often possible to provide area orientation, safety information and an interpretive message before the recreation visitor disperses to the beaches or to other transportation systems for diving and underwater viewing activities.

Providing a mass transportation system does, however, imply a serious obligation not to depersonalize visitor contact, or to overwhelm the scale of the natural resource with large, fast vessels or ferry boats. A case in point is at Buck Island Reef National Monument (a small islet and fringing reef which must be approached by boat from a larger island 10 km distant): There, traditional visitor access (even before the area was designated as a park) was by small six-passenger charter sailboats operated by native fishermen/boatmen. An integral, perhaps crucial, part of the total visitor experience relates to the personal contact with the boatman, his skill, his intuitive interpretive messages, and the slow quiet pace of approaching the island.

Obviously, a more efficient, high volume transportation system operated under concession or by the park authority could be substituted at Buck Island; but at what cost to the visitor experience and (not insignificantly) at what cost to the native boatman who traditionally offered his services?

In contrast to national visitors, local users with private boats typically enter the park from many different and uncontrolled access points. This has the advantage of spreading visitor impact over broad areas, but makes visitor contact by

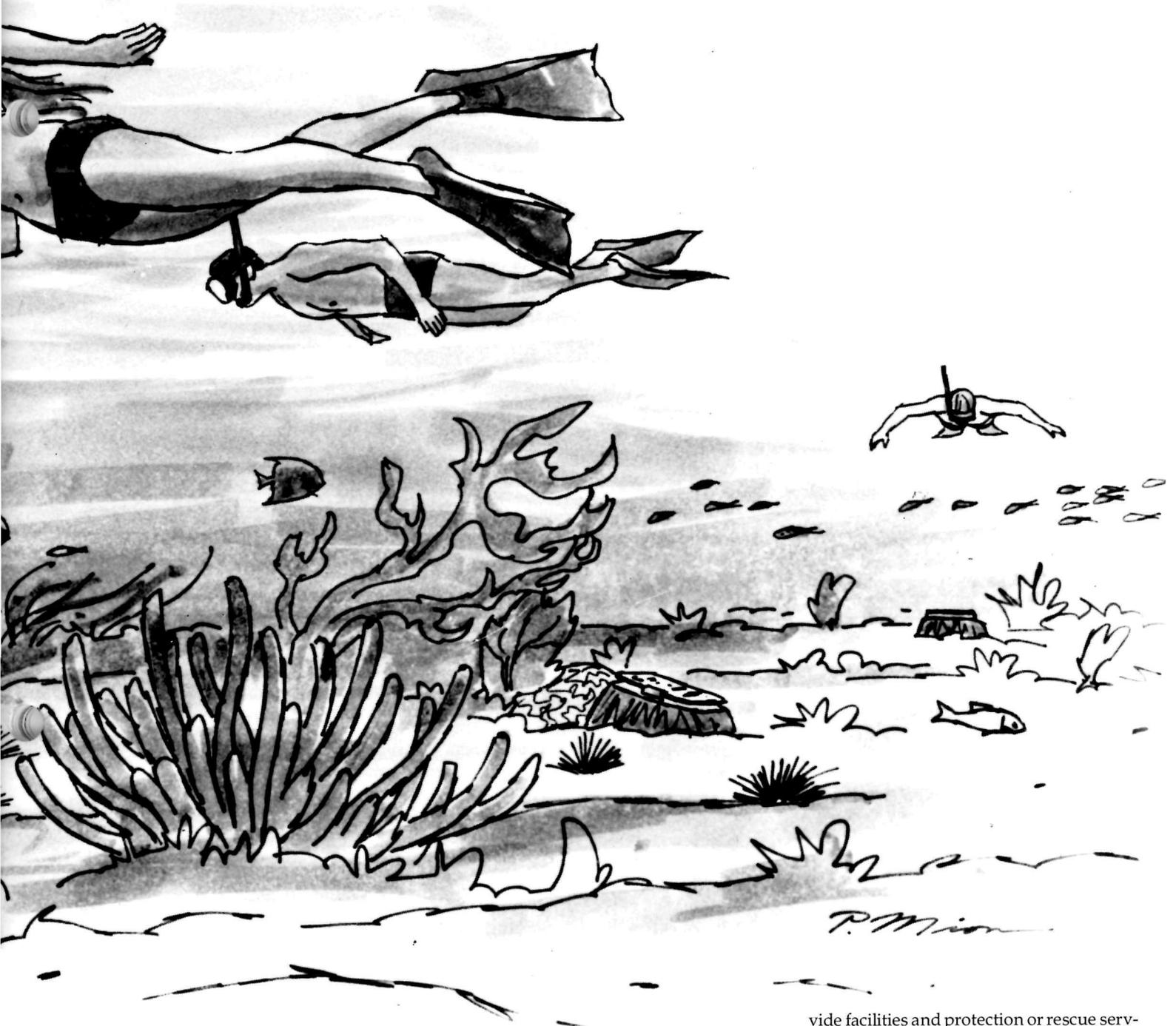
Illustrations: Branch of Wayside Exhibits, Harpers Ferry, Center, NPS.

ranger and interpretive staff much more difficult. Recognizing this problem at the beginning of planning may suggest the appropriate location of a necessary facility (fuel and water service, for example) to encourage or even require private boaters to "check in" for weather, safety and park regulation information and interpretive contact. It may also be feasible to extend visitor contact—static displays, posted regulations and weather reports—to outside park boundaries at adjacent launching ramps and marinas, and encourage local associations of recreational boaters to incorporate park information in their own communications.

The design and use of mass transportation may have great positive benefits en-

vironmentally. However, there remain serious questions which relate to the degree to which efforts should be made to artificially elevate and sustain the visitor carrying capacity in a given park. Many factors enter, including the size of the visiting public and the feasibility of substituting meaningful activities and interpretation in the mass transport situation. The quality of traditional visitor experiences should, however, receive equal, perhaps even accentuated, consideration in determining the eventual access and development plan.





Safety considerations

Where recreational visitors physically enter on or into the water, a variety of significant boating or swimming safety problems are created. The extent to which a park authority will assume responsibilities for visitor safety will vary according to national policies.

The fundamental guideline followed by the U.S. National Park Service is to ensure that the visitor is adequately and promptly informed of the nature of specific hazards in the park, so that the visitor may make his own choice as to which activities to

choose and how best to anticipate problems. For marine parks this obviously includes information on local weather, water and tide conditions, hidden obstructions, potentially poisonous fish species, and potential shark problems. Means of communicating such information include radio broadcasts, posted signs, direct ranger contacts and involvement of recreational boating and diving associations.

An important question is the extent to which park staff will be obligated to pro-

vide facilities and protection or rescue services to visitors whose distress is a result of negligence, inadequate equipment or conscious choice to confront especially hazardous conditions. A case in point: should a "safe boat harbor" requiring dredging and other habitat alteration be constructed on an otherwise undeveloped island to protect boaters drawn by the existence of the park, but who ignore approaching storm warnings or utilize undersized boats?

The control of scuba diving safety is also an important consideration. Most experienced scuba divers would agree that "instant scuba training," where a novice received an hour or two of instruction before

making even a shallow, closely-supervised dive, is hazardous and ill-advised. Where such training or organized scuba tours are commercially operating within a marine park, the park generally exercises the right to require written special use permits of the operator, in which safety controls and requirements may be spelled out. Fortunately, in the United States, the sport scuba diving industry itself promotes extensive safety controls through diver training programs, and the requirement that a diver be certified to have scuba tanks commercially recharged. Where this sport is actively organized into clubs, such clubs can be (if sensitively approached and kept informed by park management) a strong positive force for diver safety and environmental consideration.

Conflicts between user groups

Although the extent of specific conflict is often determined by local seasonal or spatial distribution of the critical resources, several classes of potential friction exist, for example, between:

- swimmers or snorkelers and motorboats/skiers
- swimmers and surfboard users
- snorkelers and scuba divers
- beach bathers and beach vehicle users
- sport and commercial fishermen
- organized groups and individuals

The specific nature of all the conflicts need not be described here—some are obvious physical dangers (boat/swimmer), some involve real or imagined competition for a resource (fishing), and some relate to aesthetic appreciation of natural surroundings in solitude versus organized touring. What is most pertinent to emphasize is consideration of these potential conflicts in the earliest planning stages so that:

1) truly incompatible uses (possibly airboat use, waterskiing, motorboat races, spearfishing, destructive consumptive uses) are rejected at the outset based on environmental impact on policy, or on unresolvable conflict grounds;

2) uses compatible with the natural resources, but still involving conflict, will be controlled in time and space to minimize frictions. This will in general require identification of specific times and zones or locations within the park where one or the other activity will take precedence.

In the United States, efforts are made to avoid conflicting uses have been avoided by:

- designating and marking swim areas to prohibit motorboat use (most heavy use beaches)
- prohibiting all fishing & scuba diving near underwater nature trails (Virgin Islands)
- prohibiting sport fishing off certain prime commercially-fished beaches (some seashores)
- controlling traditional boat regattas and festivals through participation by park staff (Gulf Islands National Seashore)
- closing beaches to fishing when nesting seabirds are present (all seashores)
- restricting or prohibiting vehicle use on beaches (most seashores).

Environmental impact of recreational uses

1. Motorboats

It is well known that motorboats, particularly those with outboard engines burning a gas/oil mix, contribute substantial amounts of hydrocarbon residues to marine waters. In restricted areas, such as marinas, harbors, estuaries and swamps, such residues have obvious effects upon attached intertidal organisms. It is more difficult to document the effect of low-level hydrocarbon pollution on motile organisms, on primary productivity, and along an open shoreline.

More direct impact includes accelerated erosion from boat wakes along narrow tidal creeks, disturbance of wildlife, propeller damage to sea turtles and manatee, and disruption of shallow sea grass beds. In the latter case, the damage of only a few boat traverses may be evident for years, since the tracks tend to create tidal channels which are self-scouring.

Boater sewage (human waste) and solid refuse are increasingly serious problems in heavy use areas. The first impact may

appear as bacterial contamination (a human health hazard directly or through the food chain of edible molluscs), but secondary effects include eutrophication (nutrient enrichment) in poorly circulating systems, with consequent changes in the productivity and quality of the waters. It is, therefore, important that early resource inventories identify poorly circulated areas so that adequate control or avoidance may be planned.

In inshore waters of the United States, various laws are coming into effect which would require most recreational boats to install proper sewage holding tanks or other approved on-board treatment devices ("chlorination/maceration"). Public facilities, including Federal parks, are beginning to provide the necessary off-pumping stations for recreational boaters, and such plans should definitely be included in the development of any new parks in poorly circulated inshore waters. The problem is more complex, however, since park management itself must then assure that eventual treatment and release of the treated sewage effluent does not result in degradation of water quality in some other element of the coastal ecosystem.

Sewage pollution can become severe in protected park anchorages where boats (sail or power) are being used as residences and are permanently moored. In such cases park managers may be justified in establishing maximum time limits for individual boats, and in prohibiting the installation of permanent anchor moorings.

Educating the boating public to proper disposition of solid refuse ("litter") is a continuing need, and is one critical justification for increasing the frequency of ranger contact with incoming boaters. Repeated park users, who run charter boat services for small groups, seem less likely to cause offense, since they have a commercial interest in avoiding litter problems. Also they are familiar with areas that park management has designated for collection of refuse.

2. Shell collecting and sale of souvenir marine products

The substantial ecological role played by molluscs in the intertidal zone, in benthic

sediments and in coral reef systems, is becoming more and more evident. The impact of their removal may well be noted in unexpected (and critical) trophic levels, such as an outbreak of a predatory or pest species normally held in check by mollusc predation.

Collection of live molluscs in order to obtain the shells as specimens is typically prohibited in United States marine parks, although collecting dead shells is allowed. In certain circumstances this ambiguity creates a law enforcement problem, since park authorities must show proof that molluscs have not in fact been taken alive. There are also some particular exceptions, especially where certain molluscs have traditionally been taken for food by local residents. Although there may be strong theoretical reasons for total protection of molluscs, the realities of a given park context may, in fact, require initial compromises in favor of traditional native harvest of individual species. In agreeing to such compromises, the park authority should clearly face its obligation to assess the impact of traditional use, and set up machinery for gradually phasing out the activity if impact assessment indicates unacceptable levels.

However, the impact of visitor or traditional native harvest on the shell fish fauna in a specific local park is often small compared to the disastrously intense exploitation of other shelled species in unprotected waters to supply the commercial souvenir trade. Park concessioners, and private dealers serving the "assumed" souvenir needs of the park visitor are often prime agents in promoting and stimulating the marine products souvenir trade. A particularly serious aspect of this problem is that the usual first-step suppliers of souvenir products are native boatmen and fishermen (perhaps near the park, or an ocean away whose own long-term survival is intimately linked to the maintenance of a viable balanced lagoon or reef environment).

Collection of marine products for souvenir sale or jewelery, especially by widespread techniques which involve breaking apart great chunks of living coral reef or indiscriminate dredging of unseen

benthic communities, is sheer folly. Explicit or even implicit promotion of this trade by marine parks seems totally inconsistent with the conservation rationale which itself resulted in park establishment.

Recreational fishing

It is difficult to separate the question of recreational fishing—by hook and line or spear—from the companion pressures of traditional domestic or outright commercial fisheries.

It might be useful to comment briefly on the evolution of recreational fishing in the United States National Park System, and to outline some typical political situations encountered in new area establishment.

For virtually all of the history of United States national parks there has been a strange dichotomy between stringent protection of highly visible terrestrial organisms (the so-called "heroic mammals" and impressive trees), and the allowance and even promotion of recreational fishing in lakes, streams and marine waters. In certain of the great land parks, there traditionally have been programs to artificially stock fish for recreational taking, and other intensive management to increase the catchable yield of sport fishes. In part, this policy (which is now being modified) may have been an implicit concession to the ambiguous mandate which requires both preservation *and* use of park resources. The choice of fish as a compromise resource may also reflect a human characteristic of showing minimal concern for organisms which are not readily visible, yet which somehow manage to produce large numbers of young which receive little care or attention from the parents. This view clearly favors efforts of some segments of the sport fishing industry and public, which have traditionally supported the concept of public fishing in national parks.

Three developments during the last several decades—increasing scientific inquiry into aquatic ecology, the development of direct viewing aids (snorkel and scuba) and public interpretive programs and films—have brought much greater public understanding and appreciation of the natural role of fishes. This has hardly brought about a sudden decrease in nationwide recreational fishing, but it *has* significantly eased the task of various park managers who are seeking to gradually

curtail recreational fishing in parks.

A graphic example of this was the closure of "Fishing Bridge" in Yellowstone National Park. This bridge spans a river just as it enters Yellowstone Lake, over an area where there is intense, visible annual spawning of certain trout species. For many years (outside spawning seasons) this bridge was heavily used—"shoulder-to-shoulder fishermen"—with the characteristics of crowded mass spectator sport. For resource management and safety as well as aesthetic reasons, park managers had long considered closing the bridge to fishing, but were concerned over anticipated public reaction. When closure was in fact made, it was accompanied by an upgraded interpretive program (including underwater television coverage of spawning). Significantly, adverse public reaction was remarkably mild, and actually turned positive as interpretive messages were absorbed in a relaxed and uncrowded atmosphere more consistent with the grandeur and beauty of Yellowstone National Park.

The same favorable reactions are being experienced elsewhere in several western parks where increasingly severe limitations are being imposed on recreational fishing: low number limits, natural baits or dry flies only, barbless hooks and catch-and-release only areas. And, in National Park Service areas, the stocking of sport fish species is no longer practiced. Where active fishery management is underway it is generally directed toward reintroduction of native species and research on the native biota.

I suspect that the Fishing Bridge example could be duplicated in a number of United States and foreign marine parks where traditional recreational fishing is permitted and is having adverse environmental impacts. The transition period clearly calls for advance public education and pertinent interpretive programming based on sound biological research.

Of course, for newly developing parks, the choice to prohibit recreational fishing from the outset may be more consistent with general preservation goals. The importance of regional recreation planning (which would perhaps identify adjacent areas where fishing would still be allowed) and resource survey (to identify critical

fish spawning or juvenile protective areas) is mandatory in defending these initial prohibitions.

The impact of spearfishing and aquarium fish collection (particularly in coral reef areas) on the population dynamics and behavior patterns of target species is so negative that their continuance as recreational activities in marine parks is usually unacceptable. As managers of new areas, however, parks still have the responsibility to honestly assess and interpret these negative impacts to park users who feel their traditional rights have been violated.

There are distinctions, I believe properly, between recreational, commercial and a traditional domestic fishery. The latter, which often supplies critical nutritional as well as traditional social/cultural needs to a local populace is an issue in the Virgin Islands, and undoubtedly is, or will be, in many proposed island park areas in the Caribbean and Pacific regions. The continuance of a truly domestic fishery in a marine park is in many circumstances an acceptable and legitimate activity. This continuance does, however, presuppose realistic mechanisms to limit the fishery to traditional levels (both in effort and equipment) and the designation of certain critical or representative subsections of the park as strictly protected from all consumptive uses. I am optimistic that these are workable guidelines provided good public relations are maintained, and adequate biological monitoring is instituted.

INTERPRETIVE PLANNING— CONCEPTS

A basic first step in interpretive planning is a definition of goals to be met by the interpretive programs. These goals are, of course, very much dependent upon the type of anticipated visitor and the particular natural and cultural resources of the area. Some specific questions which arise in almost any interpretive planning, and problems common to marine parks follow.

1. *What is the character and orientation of the anticipated visitor?*

Marine parks typically encounter a dichotomy between visitors who are locally resident (with close traditional cultural ties and a history of consumptive use of the area's natural resources), and a regional or international visitor whose local knowledge may be poor, but whose formal education maybe extensive. There is a critical need—indeed an obligation—to foster genuine and honorable communication between such groups, and the park's interpretive program is one logical area in which to start.

2. *What are the principle interpretive goals and messages of a program directed toward local resident users?*

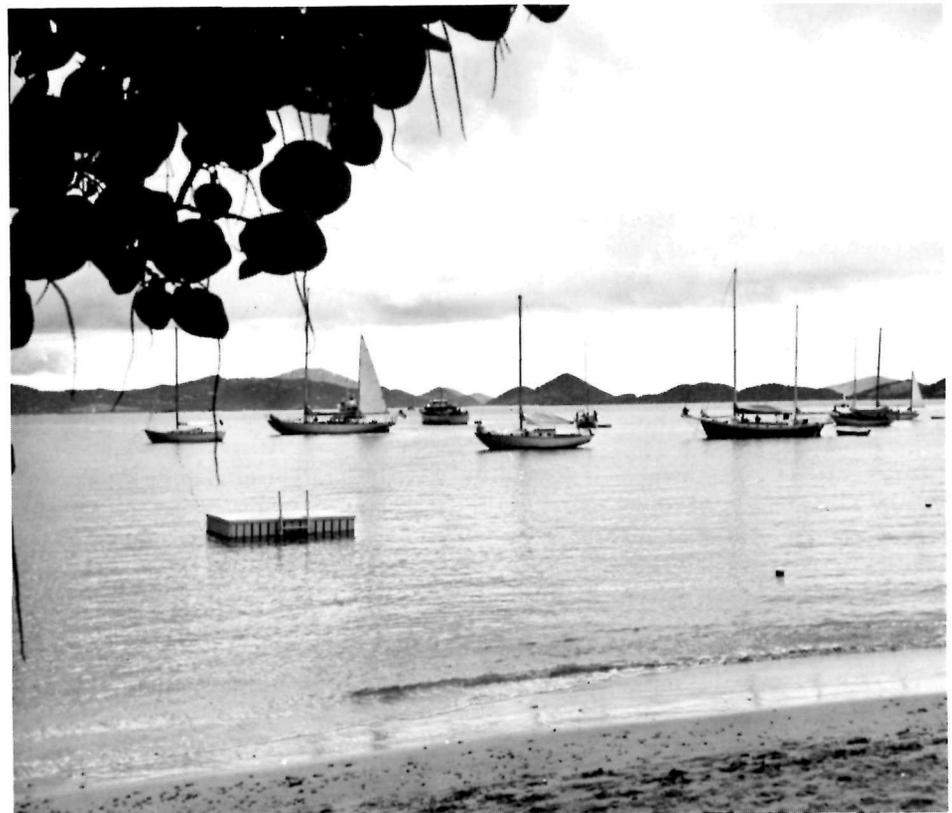
a. Major political as well as resource problems in marine parks evolve from the need for regulation and control of traditional consumptive use patterns. Long-term good relations with a native fishing or trapping population will depend in large part on the ability of park management to "get across" its view of why controls may be needed. "Interpret-

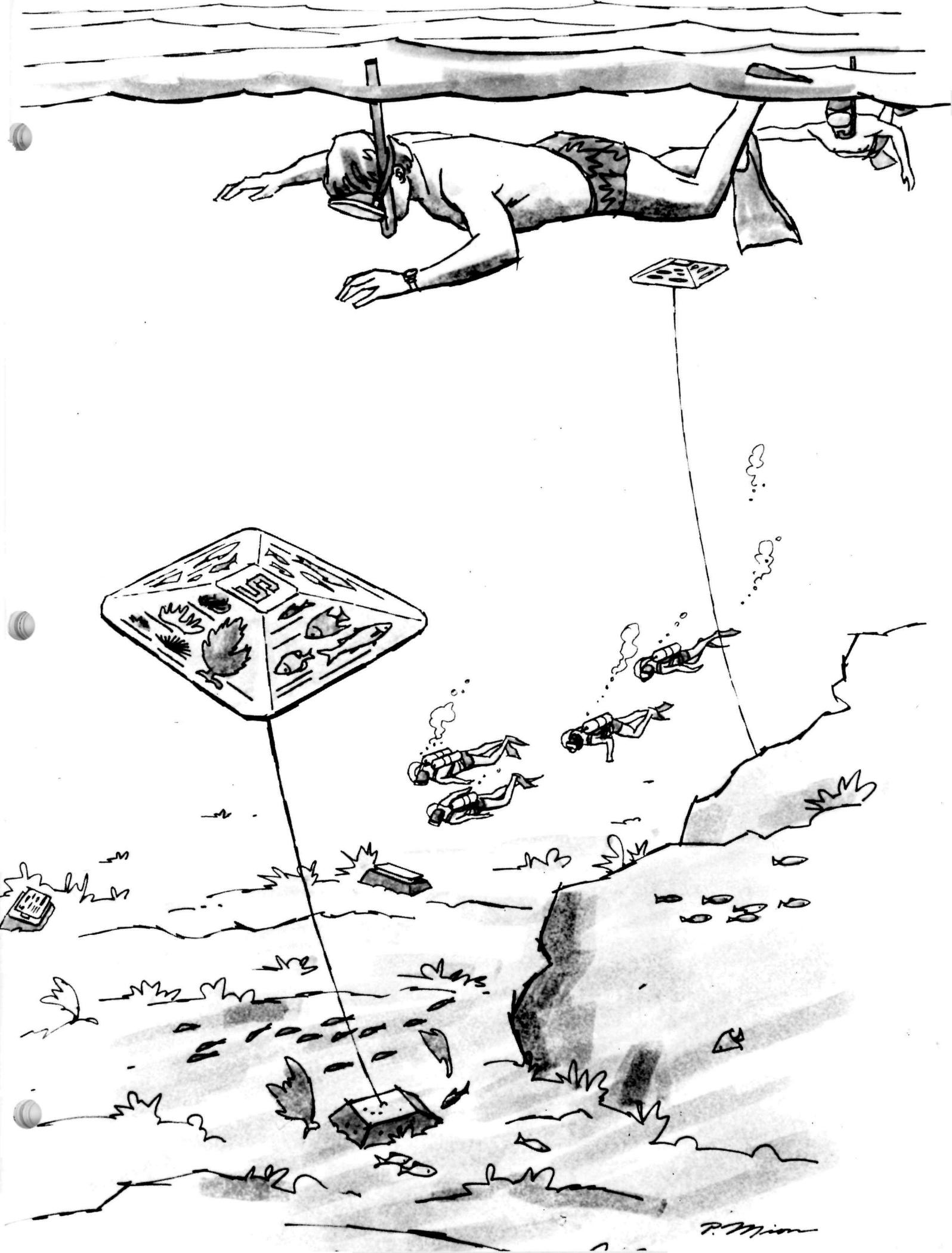
ing" basic conservation and management principles to local residents with examples drawn clearly from local conditions, is one of the most critical elements of an interpretive program. There is simply no reasonable way to enforce compliance of regulations without establishing a basic understanding of principles.

b. How can park interpretive values complement local educational programs and goal? (see below, environmental education.)

c. What other important cultural and economic ties do local residents have to the resources of the area, and which of these ties are threatened by park development?

Although this is a principle question at even earlier stages of development, it is also appropriate to ask in an interpretive context. A valid, if sensitive, subject for interpretation are traditional rituals, ceremonies, lifestyles and fishing practices. By carefully incorporating such activities into an interpretive program, the park may well be an agent in preserving





and perpetuating local culture which would otherwise disappear. Such programs must be approached carefully and with support of local political or religious authorities. They should become *not* an entertainment for the casual visitor but an active bridge between cultures, and a means of passing such culture on to younger generations of local residents.

3. *Considering a regional or nonresident visitor, what are the principle interpretive messages available in the park?*

For example, are they in the intertidal zone, the reef, swamp or estuary, or in the more general processes relating coastal development or habitat with marine ecosystems. Which of these general themes should be given priority?

4. *Will the condition of the natural resource, or weather, water temperature and coastal topography permit direct visitor involvement (snorkeling, scuba, small boating)? If not, to what extent is it appropriate to develop indirect techniques (underwater chambers, remote television, etc.)?*

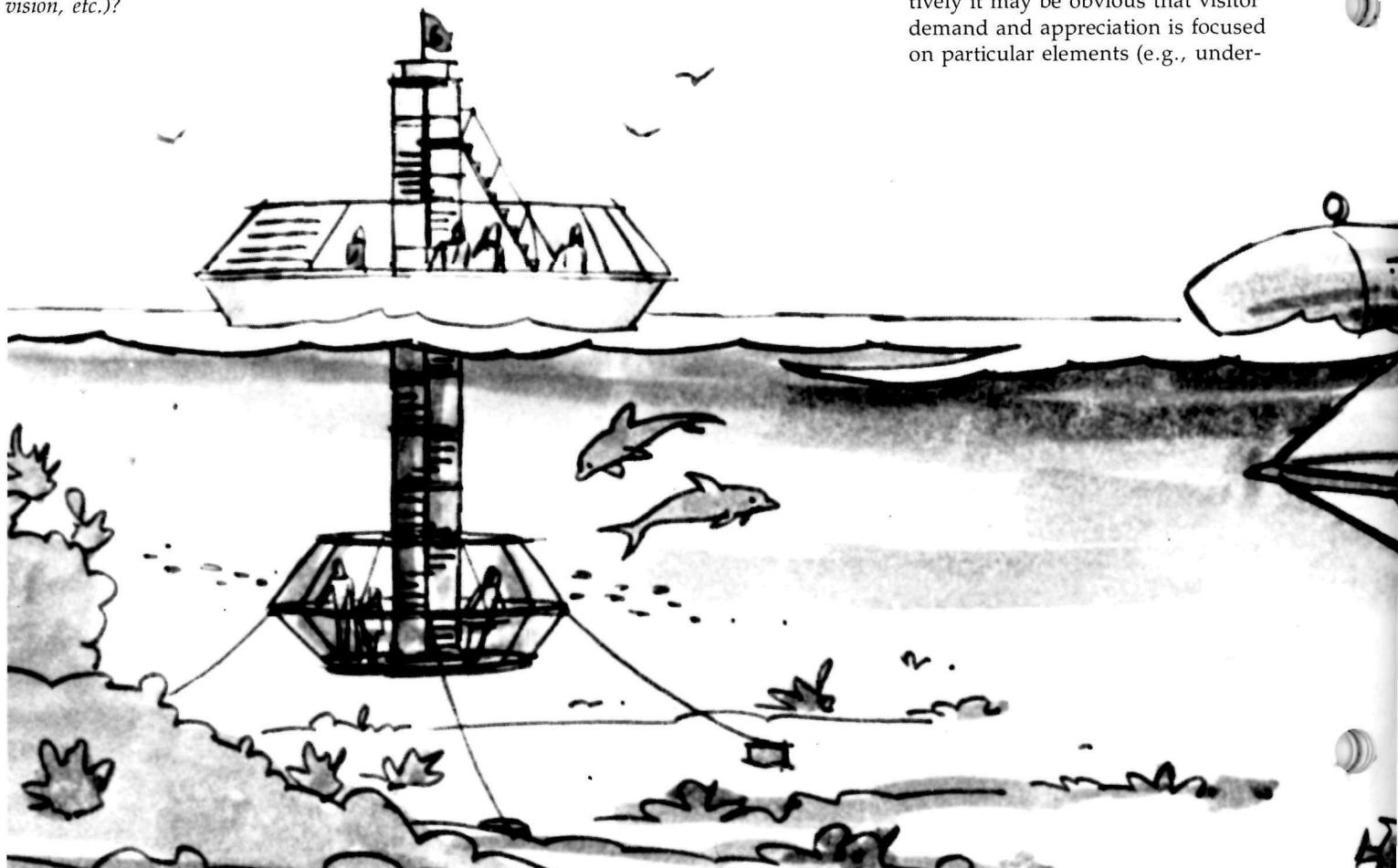
5. *What are the practical limitations on visitor numbers, access and transportation, and how do these relate to interpretive goals and techniques?*

The various combinations of these factors are too many to discuss in detail, but their consideration at an early stage is extremely important. A boat transportation system (or the degree of freedom to travel by private boat) has a fundamental influence on the pattern of park use. If large-scale ferry boats are employed, there must be adequate planning to insure that the ferry destination can support anticipated traffic recreationally or interpretively. The potential impact of large relatively deep draft vessels with heavy wakes on narrow channels or shallow benthic habitat must be considered.

The central issue of transportation and access is, to what extent can or should the carrying capacity of the area be elevated without seriously degrading the resources or the visitor experience. If the interpretive program is "overloaded," it may just be as clear a sign that the park capacity is overloaded as the deterioration of some physical resource.

6. *What is the logical sequence in developing an interpretive program?*

It is quite unrealistic, both financially and technically for many developing marine parks to begin with sophisticated techniques of interpretation. It seems more appropriate to identify the principle messages (which, in fact, may simply be in "being in the water" or "walking on the shore," or "riding in a sailboat") and begin with the simplest, least technical program. After a period of initial experimentation, it may be determined that a simple well-rounded program is all that is required; alternatively it may be obvious that visitor demand and appreciation is focused on particular elements (e.g., under-



water reef life), and it may be justified to devise higher volume transportation and viewing techniques. However, the capital investment of such techniques (e.g., underwater chamber) is so high, that initial insistence on them could well lead to serious neglect of other pressing programs such as resource management and environmental education.

To restate an earlier point, I believe that for initial development of most potential or existing marine parks there are currently available a sufficient variety of interpretive approaches and techniques. The principle task of the modern interpretive planner in a marine park would be to ask the sort of questions listed above, then proceed to adapt appropriate techniques which will suit the needs of his particular area. Here are some ideas for interpretive techniques suitable to marine parks:

1. *A balanced interpretive program*, which includes an orientation contact upon first entering the park, an opportunity to obtain a range of interpretive or naturalistic publications,

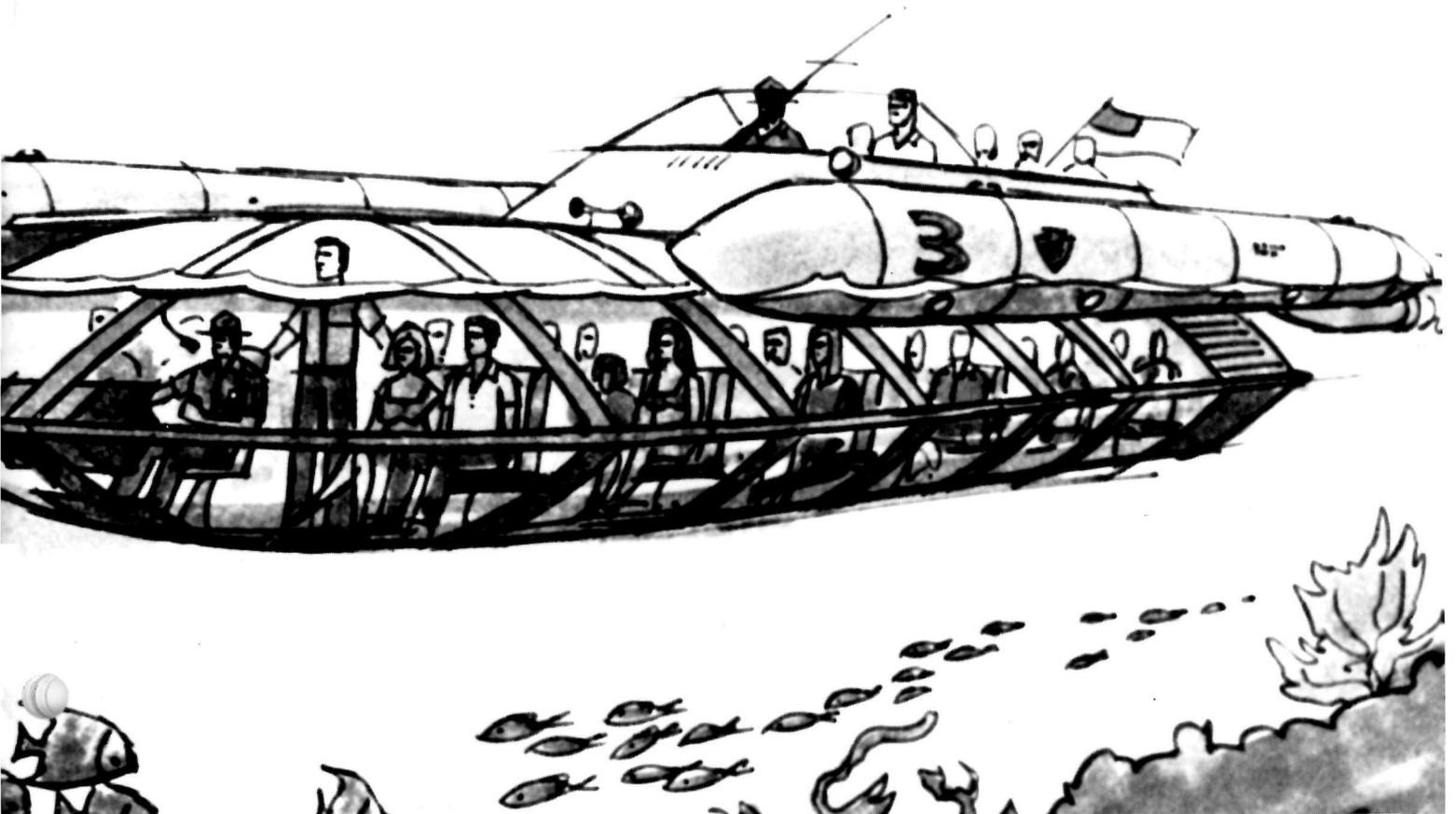
and an assortment of personal-guided or self-guided activities, will probably be more effective than emphasizing a single interpretive event. An underwater nature trail, a submerged viewing chamber, or some other innovative device, if promoted too heavily, may become an artificial attraction to the detriment of the natural interpretive story.

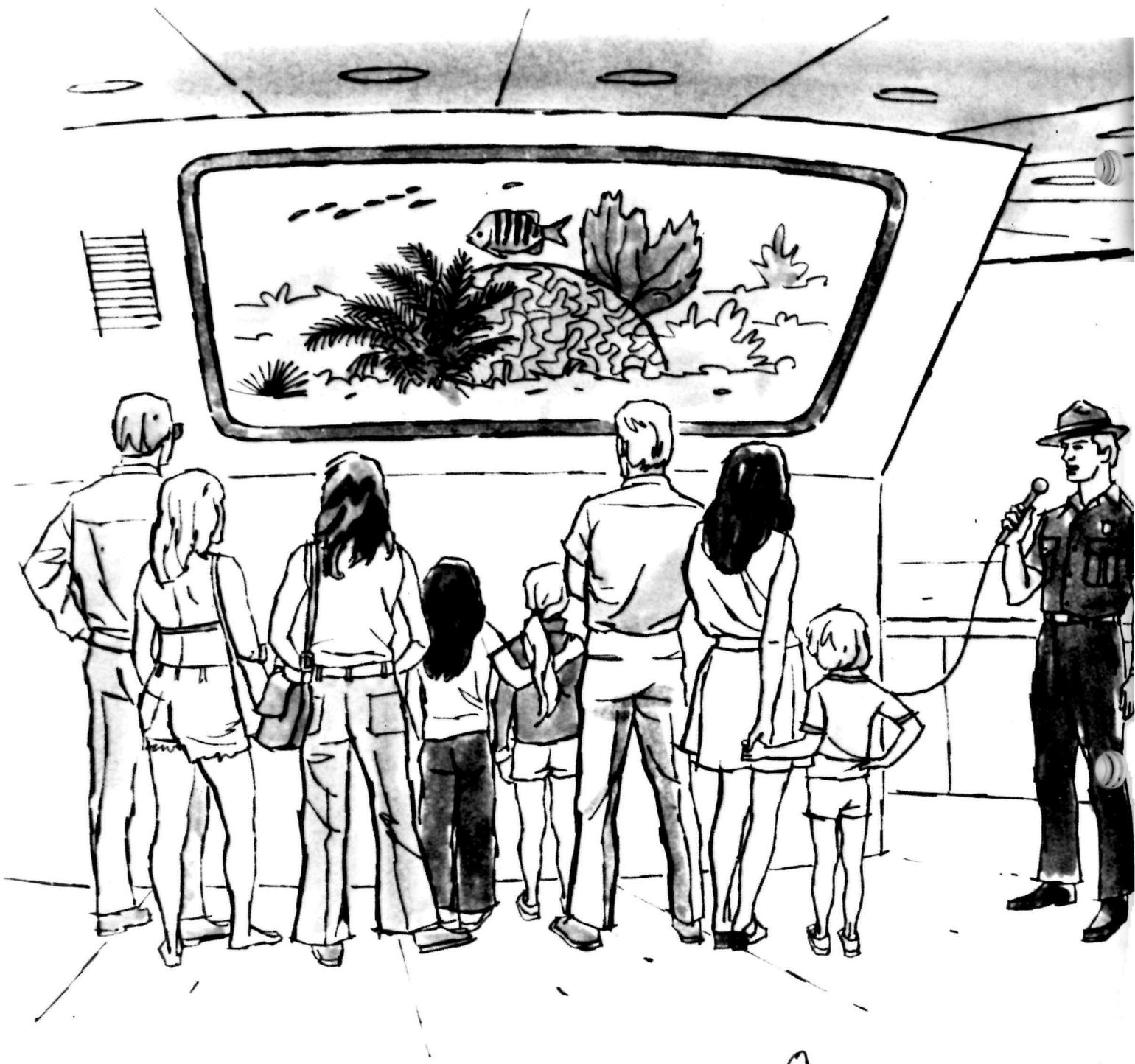
2. *Guided or self-guided nature walks* along the shore are still excellent methods of introducing concepts of land-sea interrelation, and can set the scene for a much more effective interpretive experience underwater. The actual design and operation must be carefully developed to take account of the transportation requirements for visitors to arrive at a starting point, to include the pertinent interpretive message, to provide various degrees of information, and to allow for

flexibility in responding to particular visitors needs. Especially important is the question of visitor impact in repeated visits to a given habitat, and what mechanical devices (a boardwalk, a raised or paved path, a bridge) might be required to protect natural features.

3. *Self-guided shoreline nature trails* offer some important benefits where visitor numbers are large and interpretive staff few. This can have particular value in marine parks where visitors in private boats may disperse widely throughout the area, making it virtually impossible to spread the interpretive staff to all important locations. There is, however, little doubt that the personal interaction between a live interpreter and a responsive audience is still one of the most powerful tools in an interpretive program.

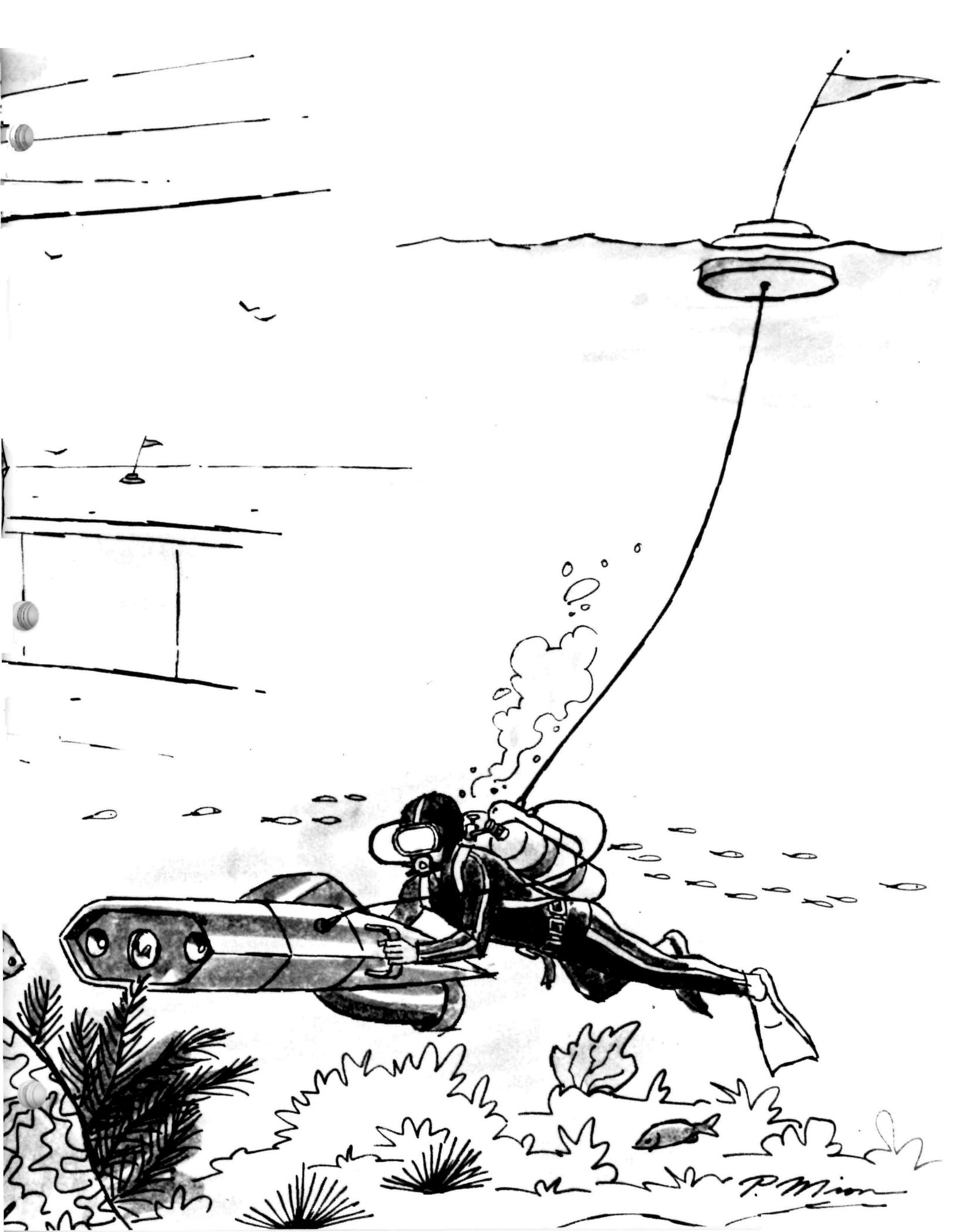
4. *Involvement of the visitor* in some particular natural or cultural history event is often the most effective means of interpreting such events. A





fish-fry with local fishermen, a visit to a local marine products market, patching fishing nets or weaving fish traps, tagging a nesting sea turtle or observing spawning fish are experiences which visitors clearly favor and recall long after departing the park. 5. *Guided snorkel trips* offer some of the advantages and flexibility of guided walks on land, and substantial safety features. Disadvantages include the fact that the swimming abilities and equipment problems of any novice group are diverse, and communication with an interpreter remains fragmentary under these circumstances. The development of a portable underwater communication





system, in which no special equipment is required by the listener, would greatly alleviate this problem and enhance the safety benefits.

6. *Self-guiding underwater nature trails.* Since the establishment of a self-guiding snorkel trail in 1958 in Virgin Islands National Park, this method has received much attention in other areas.

In the specific circumstance where the majority of park visitors wishing to snorkel are novices, and may well spend only a few hours in the park, a well-sited and well-designed self-guided underwater nature trail has distinct advantages: It may be located where water conditions are relatively protected, where there is easy surveillance by a lifeguard, and where there is ample space and time for a visitor to carefully experiment with his unfamiliar mask, fins and snorkel before venturing on the trail. By depending for information and guidance on submerged signs, the first experience may well be more relaxed and enjoyable than a guided trip. For a novice, the first impressions snorkeling are tremendously important in future appreciation and in stimulating independent exploration; a "bad" experience derives principally from poor-fitting equipment and a lack of proper orientation to expected problems. Both these problems can be minimized by appropriate interpretive planning.

It is important to ensure a high quality experience by carefully selecting the site for its access to healthy and representative habitat. Matching this criterion with equally important safety considerations, requires serious survey and planning, and some interpretive compromises may be required.

For a longer-term visitor, the self-guided trail still serves as a useful vehicle to safely introduce a novice to snorkeling. From this experience, the visitor is then encouraged to pursue snorkeling in unmarked areas and to join guided tours.

The actual interpretive messages to be communicated through underwater signs are, in my opinion, quite restricted. The single, most impressive interpretive impact (to a novice) maybe mere recognition of being totally immersed in an unfamiliar and typically spectacular environment. This total involvement of his senses, plus even a mild discomfort with equipment, will limit receptivity to all but the simplest written messages. Detailed interpretive messages should be optional, and probably placed conveniently on dry land or an appropriate floating platform to be seen before or after the trail experience.

Use of scuba equipment along a trail which is shallow enough for novice snorkelers has proven inappropriate. Constricted channels and wave action promotes excessive inadvertent breakage of coral formations by heavy air tanks and gloved or wet-suited hands and bodies. Signed deep trails for scuba divers may be suitable in certain instances but generally it is a reasonable assumption that a scuba diver possesses experience and knowledge beyond the limitations of underwater signing.

7. *Designated diving areas for independent exploration.* For the experienced snorkeler, and the scuba diver, it may be more efficient and convenient to designate certain general areas, where adequate anchor damage protection is available. Most simply this would consist of a visible buoy marking the area, and a number of anchor buoys for small private boats; the number of anchor buoys would determine the acceptable capacity of the area. Interpretive information would depend upon rented or purchased plasticized identification books or fish identification cards and a specific plasticized guide to the particular site. More sophisticated systems would include simple directional underwater markers to ensure the diver stayed within the area covered by the guidebook. Safety rest floats can be provided.

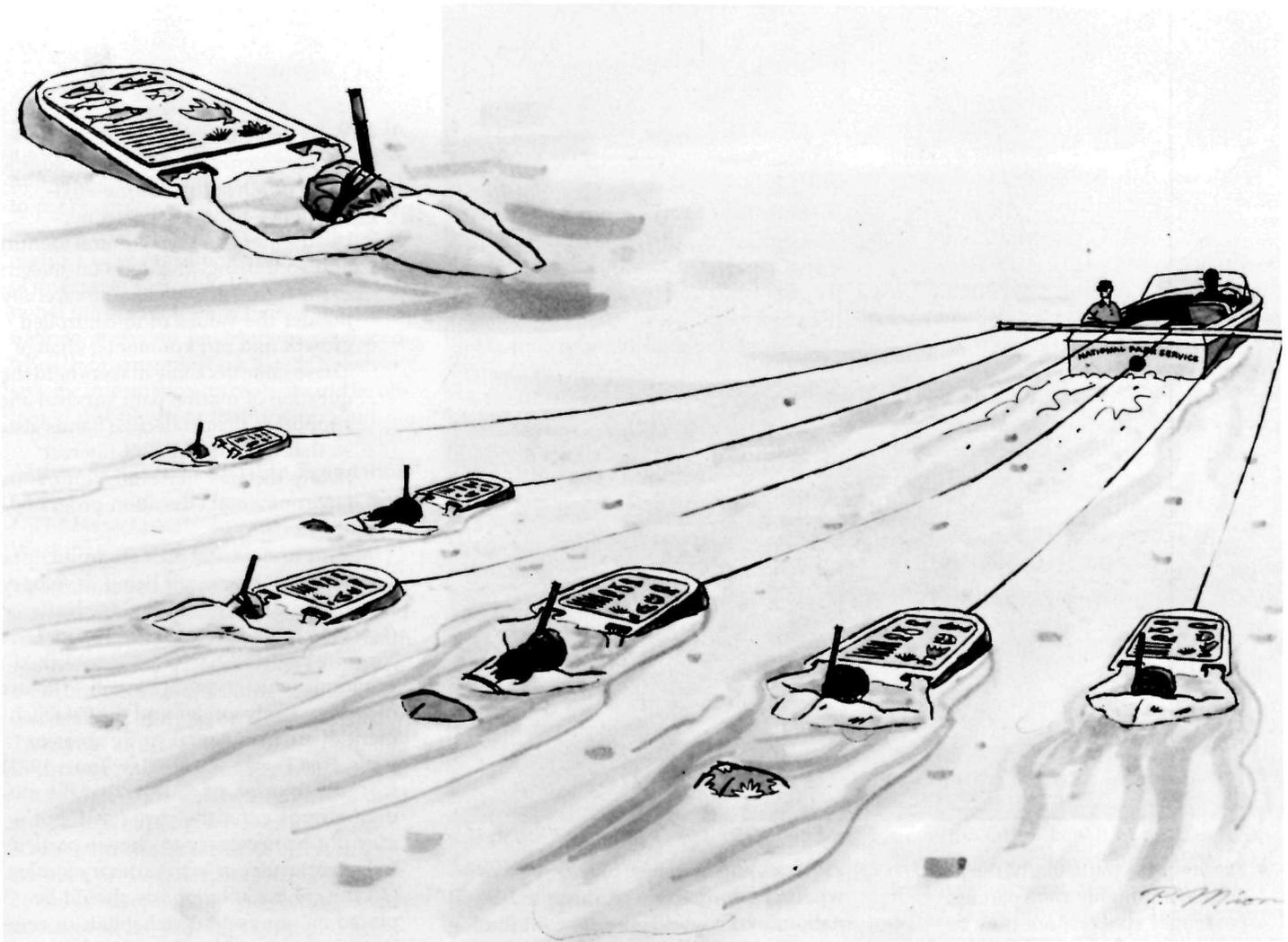
A variation on the "designated area" concept, particularly where the area is far offshore and out of view of

park staff, would be to anchor a substantial floating shaded pontoon raft in the center of the area—boats would be required to tie up at a limited number of sites on the raft during their diving excursion. The raft would be large enough to contain interpretive panels (a trail map, safety information, identifications) and might incorporate a suitably secured two-way radio link to park headquarters.

8. *Guided or self-guided motorboat tours.* This is a technique where a ranger-interpreter leads a contingent of private power boats along a particularly interesting or sensitive route; self-guiding literature and maps can accomplish a similar purpose or lead the visitor to special features (or controlling his access to particularly fragile areas). This program is typically used in protected inland waterways, where boats may closely approach mangrove islands, meander in tidal creeks or skirt an interesting marsh.

Such established boat routes could be adapted for shallow lagoon use, especially where calm waters allow good bottom visibility even from a boat; unsuspected or dangerously shallow reefs could be designated, and the eventual destination might be a designated snorkel area with a floating interpretive raft.

9. *Glass-bottomed boats* have been in use in various marine areas before formal marine parks are even established. They offer dry viewing, a flexible itinerary, typically accommodate large numbers of visitors per unit time, and create a minimum of direct visitor impact on delicate reef formations. A design which placed the visitor even slightly below water level, with opportunities for horizontal view and anticipation of objects, would greatly increase the feeling of immersion and separateness from the above-water scene.



10. *Underwater viewing chambers.*

Large underwater chambers or tubes, in which a relatively fast flow of visitors may view underwater areas from below the surface, have received considerable attention in Japan. These systems have distinct advantages where visitor numbers are very high, or when water temperature or weather will not permit direct swimming or snorkeling. Serious deficiencies can develop where such chambers are fixed to the bottom, and sudden changes in the local viewing area temporarily degrade the interpretive scene. Construction impact itself must be carefully controlled, or local disturbance will nullify the viewing advantage. Local problems in the area may tempt park managers to

constantly transplant living organisms or establish fish-feeding programs—both such “solutions” hardly promote natural interpretation, and similar or better programs could be provided in aquaria.

Designs incorporating movable or floating chambers appear feasible and offer flexibility to respond to cyclic or seasonal changes in favored viewing areas.

11. *Techniques for the future.* With the rapidly advancing technology of underwater hardware and devices, there are few technical limits to indirect viewing or even direct dry entry into the water. A pertinent question is the extent such devices should be offered to visitors, since the technology itself may become the attraction instead of the natural feature. Secondly, there must be an assessment of the cost-benefit ratios involved in sophisticated techniques, and where such expenditures should rank in overall park priorities.

Here are some examples:

- A variety of *underwater sounds* are typically associated with reef life and animal behavior. Simple hydrophones may bring these sounds to static displays or within glass bottom boats or towers.
- *Underwater television* is advancing rapidly and has great potential interpretive application. Diver-held cameras might be directly linked (by voice and video) to shoreside interpreter-led groups. Visitors could then provide two-way feedback to the divers and thus share some of the excitement of original exploration.



- *Submersibles*, particularly those employing highly transparent passenger spheres, are now becoming economically feasible. Various self-propelled or fixed-track submersibles are technically possible, and could incorporate an array of safety features needed for routine use.

ENVIRONMENTAL EDUCATION

For modern industrial societies, developing environmental awareness in marine parks has the obvious value of providing basic ecological concepts about the sea, and of examining man's relationship and impact. There is a traditional reluctance, even among 'fully' educated men, to accept the finite nature of the world's ocean, an unwillingness to admit that the scale of man's own activities has now surpassed the intensity which can be readily absorbed by the sea and its coastal

estuaries and marshes. Since, by an overwhelming proportion, it is the industrial nations of the world who are contributing to oceanwide pollution, to global overfishing or other exploitation, the marine parks of these nations bear a heavy international obligation to inform, to educate, and to influence their citizens as to the importance of marine conservation.

For the developing nations of the world with extensive coastal people and resources, and for the people of Oceania, environmental education in marine parks takes on immediate and sensitive values:

- 1) As an extension of existing educational programs, many of which may have been developed with little relevance to local resources and culture, environmental education in the park can provide immediate relevance to daily events and life;
- 2) By concentrating on *involvement* in interpretive events, particularly cultural or historic, the younger generation may be introduced to elements of the cultural scene which may otherwise have disappeared from the wider society; such culture may well be perpetuated only through the stimulation provided by an environmental education program;

3) By sensitizing an impressionable younger generation to the ecological value of a healthy marine environment—fisheries, coastline, clean water—to their cultural identity and well-being, the decision-makers of the future may well more carefully ponder the values of uncontrolled growth and environmental change. These same decision-makers hold the question of marine park survival and support in their collective hands also, so that enlightened self-interest clearly dictates substantial efforts in environmental education programs.

Marine and coastal area environmental education programs are being developed in many parks at this time. Cape Hatteras (North Carolina), Everglades (Florida) and Virgin Islands all have well-established programs which typically involve the use of written study guides and the establishment of environmental study areas or trails. (see *Trends*, April, May, June, 1975) It is prerequisite, of course, that the student groups enter the park itself, but it may not be necessary to choose particularly spectacular or extraordinary locales. On the contrary, emphasis should be placed on representative habitats or commonplace cultural contexts, for it is through involvement in these common environmental components that it is easiest to foster environmental consciousness of value to the external society.

As a practical matter, in creating a viable and self-sustaining program, it is crucial to involve the teacher as well as the student. It may be that the park role will be limited to providing appropriate sites and in providing advice and preparation to the teachers. It is, of course, obvious that a school's environmental education program should not be limited to the rather special circumstances of the park, but rather include a full range of developed or altered natural areas and cultural scenes.

Mr. Robinson is the Southeast Regional Aquatic Biologist, at the National Park Service Space Center, Bay St. Louis, Mississippi.

Who Can You Turn To?

There are many organizations active on an international basis in the area of conservation and environmental activities related to parks, protected areas and their resources. The following list indicates a number of organizations which might be of interest to you, should you desire additional information on activities in other nations. Relevant publications produced by each organization are listed; however, specific information on costs should be obtained directly from that organization.

African Wildlife Leadership Foundation (AWLF)

1717 Massachusetts Avenue, N.W.,
Washington, D.C. 20036

The foundation is concerned with providing educational opportunities for park and reserve personnel charged with protection of African wildlife resources. It has played a major role in establishing, equipping and staffing training centers at Mweka, Tanzania, and at Garua, Cameroun, and in assisting African rangers who wish to study in the United States. It has provided substantial support for a variety of research and conservation projects in a number of countries. Its *Wildlife News* contains exceptionally interesting articles about projects, current developments, and ecological research in Africa.

Agency for International Development (A.I.D.)

U.S. Department of State, Washington,
D.C. 20523

Over the years, A.I.D. has financed advisory teams from the National Park Service, Fish and Wildlife Service, and other agencies to assist in establishing and planning national park and refuge systems overseas; provided instructors for regional training centers; brought professional personnel to the U.S. to study conservation and environmental activities; issued development loans; and encouraged bilateral assistance between the U.S. and other countries.

Winston C. Churchill Memorial Trust 10 Queen Street, London W1, England

Awards traveling fellowships to selected candidates from British Commonwealth nations for studies in other countries. Many grants have been given to park, recreation, and wildlife authorities to travel extensively in the United States for investigation of Federal, state and local programs in their fields.

Defenders of Wildlife (DOW)

2000 N Street, N.W., Washington, D.C.
20036

A membership organization dedicated to preserving wildlife and promoting humane treatment of wild animals, emphasizing appreciation and protection for all species in their ecological role within the natural environment. *Defenders of Wildlife News* contains articles about wildlife, parks and reserves in other countries as well as the United States.

Eisenhower Exchange Fellowship Foundation

256 South Sixteenth Street, Philadelphia,
Pennsylvania 19102

Provides grants to candidates from selected countries for extended studies of American social, economic and educational patterns, including parks, wildlife and other natural and cultural resource programs. Annual reports and brochures are available on request.

Food and Agricultural Organization of the United Nations (FAO)

Viale delle Terme di Caracalla, 00100
Rome, Italy.

A specialized agency of the United Nations, FAO makes UN funds available for technical aid and a variety of types of assistance in wildlife and national park conservation to developing countries. It provides grants for large and small projects; calls on experienced experts from developed nations to help initiate, reorganize or strengthen Conservation and National Park Departments, to develop apprentice training programs, and perform other services; and arranges for fellowships for study outside the requesting country. Many of the experts are enlisted from American agencies and organizations, and FAO Fellows frequently undertake studies in the United States.

International Council of Monuments and Sites (ICOMOS)

Hotel St. Aignan, 75 rue du Temple, 75003
Paris, France.

An international non-governmental organization to provide a link between public authorities, institutions and individuals interested in the preservation and study of cultural monuments and sites and the cultural heritage of every nation. It organizes and conducts conferences and symposia and publishes technical reports, including its biannual *Monumentum*.

International Union for Conservation of Nature and Natural Resources (IUCN)

1110 Morges, Switzerland.

IUCN is a nongovernmental body with membership which includes national governments, governmental departments and agencies, and national and international organizations concerned with conservation of natural resources and their perpetuation.

IUCN provides scientific and technical counsel, intervenes at the highest levels of government on behalf of parks and reserves and wildlife and its habitat, and arranges advisory missions by world experts. It sponsors and organizes international conferences and regional meetings. The IUCN Survival Service Commission is a leading force in efforts to perpetuate rare and endangered wildlife throughout the world. Its *Red Data Book*, in several looseleaf volumes, is the recognized authority on the current status of such species.

Among its many publications are the proceedings of its own General Assemblies and Technical Meetings and other references, technical reports on a wide range of subjects, and a monthly *IUCN Bulletin*. Of special interest to park manager is the *United Nations List of National Parks and Equivalent Reserves*, initiated by IUCN's International Commission on National Parks (ICNP) in 1958. The 1971 second edition is the most complete descriptive compendium on parks and reserves evaluated on international criteria.



National Parks and Conservation Association (NPCA)

1701 Eighteenth Street, N.W. Washington, D.C. 20009

A membership organization dedicated to the protection and integrity of the national parks and monuments of America and to conservation and restoration of the world's natural resources and environment. Its *National Parks and Conservation Magazine* contains authoritative articles about problems and conditions in other countries.

National Park and Recreation Association (NRPA)

1601 North Kent Street, Arlington, Virginia 22209

Established as the result of a merger of several educational and research organizations concerned with parks and recreation, NRPA is concerned with improvement of park and recreation leadership, programs and facilities and with public understanding of leisure programs and a healthy environment. It publishes *Parks and Recreation Magazine*, other professional journals, brochures and books. In cooperation with the National Park Service NRPA is publisher of the *Park Practice Program*.

National Wildlife Federation (NWF)

1412 Sixteenth Street, N.W., Washington, D.C. 20036

A membership organization dedicated to create and encourage wise use and management of all natural resources to provide an improved place to live. It emphasizes the importance of wildlife conservation measures, but its interests cover a broad range of subjects. The Federation issues many publications, including three popular magazines, one of which is *International Wildlife*.

Sierra Club

1050 Mills Tower, San Francisco, California 94104

Dedicated to conservation on a world basis, the Sierra Club exerts its influence on behalf of parks, wilderness, and other natural environments under a broad program of activities through its 45 chapters. Its well-known publications reflect its concern with environmental problems on an international basis, and in addition to its *Sierra Club Bulletin* it also issues an *International Report*.

Smithsonian Institution—Peace Corps Environmental Program

Office of Ecology, Smithsonian Institution, Washington, D.C. 20560

Peace Corps Volunteers with appropriate skills may be assigned to work in various capacities in national parks and reserves in developing countries for two-year periods. Many of them return to positions with park agencies and organizations in the United States. Applicants interested in this program should contact:

The Wilderness Society

1901 Pennsylvania Avenue, N.W., Washington, D.C. 20006

This membership Society is concerned about preservation of wilderness throughout the world and its value to human betterment. The Society encourages public action to safeguard parks, wilderness areas, wildlife refuges and other reserved lands from inappropriate uses and encourages wilderness research. *The Living Wilderness* is the leading magazine in this field.

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Place de Fontenoy, 75700 Paris, France.

A specialized agency of the United Nations, UNESCO supports many activities relating to the promotion, study and maintenance of national parks and their natural and cultural features and of wildlife and its habitat. It advises governments, awards contracts from its own and

UN funds, develops international conventions, provides fellowships, sponsors research and resource protective institutions, and sends advisory missions where urgent situations exist. It cooperates in the organization of conferences, seminars and training courses.

UNESCO has long played a leading role internationally in efforts to preserve archeological and historical treasures of all nations. Its "Man and the Biosphere Programme," leading to creation of biosphere reserves to conserve natural areas and the genetic material they contain, was an especially important step in the park conservation movement, as is the World Heritage Convention to encourage world attention and funding for the preservation of internationally significant natural and cultural assets. UNESCO publishes many reports, books and the *UNESCO Courier*.

World Leisure and Recreation Association (WLRA)

345 East 46th Street, New York, N.Y. 10017

Formerly the International Recreation Association, WLRA is a membership organization which maintains a central service office for the world's recreation agencies. It counsels and assists government and international organizations in organizing national and regional recreation and leisure activities, including parks; encourages and conducts multinational personnel exchanges for foreign and U.S. recreation leaders; and arranges major international congresses and symposia. It publishes reports on leisure and recreation subjects and the *WLRA Bulletin* (5 issues a year).

World Wildlife Fund, Inc. (WWF)

International Headquarters: 1110 Morges, Switzerland

United States Appeal: 910 17th Street, N.W., Washington, D.C. 20006

The World Wildlife Fund raises money for conservation programs and specific projects relating to preservation of threatened wetlands, estuarine zones, desert biomes, forests, oceanic islands and other natural areas as parks and reserves, and of endangered wildlife and its habitats. It also supports conservation education and encourages improved land- and water-use practices on an international basis. WWF operates through National Appeals in 25 countries and works in close cooperation with the International Union for Conservation of Nature and Natural Resources, which proposes projects and reviews them and gets the personnel to carry them out. Its activities are focused mainly overseas, but it does support projects in the United States as well. An annual *Yearbook* is available from Morges headquarters and an *Annual Report* from the U.S. Appeal.

The International Centre for the Study of the Preservation and the Restoration of Cultural Property (Rome Centre)

13, Via di San Michele, 00153 Rome, Italy

An international intergovernmental institution created in 1958 by UNESCO to collect, study and circulate documentation concerned with the technical problems of the preservation and restoration of cultural property; to coordinate research; and to provide training courses and on-site advice in this domain. The Centre sponsors historic preservation meetings and seminars in the United States and on other countries. United States membership in the Centre is coordinated by the International Centre Committee of the Advisory Council on Historic Preservation, Washington, D.C.

Learning By Sharing

Each year for the past decade, the United States has been host to an international group of skilled park personnel who for five weeks, immerse themselves in a technical and professional seminar on the administration of national parks and equivalent reserves.

During the five weeks the park professionals spend together they have an opportunity to meet, study, exchange views and experiences, and to travel to a number of parks in the U.S., Canada and Mexico.

Close to 300 participants from 79 different countries have been part of this experience, which was originally coordinated by the National Park Service and faculty members at the University of Michigan's School of Natural Resources. In the past few years, however, the National Parks of Canada and the Mexican National Commission of Works in Natural Parks of the Ministry of Public Works have also joined in the sponsorship of the International Seminar—enabling participants to visit parks in the three North American countries during the course of the seminar.

Participants visit Jasper National Park in the Canadian Rockies, the Grand Teton-Yellowstone National Park area of Montana and Wyoming, the Grand Canyon region of Arizona, the San Francisco-Yosemite National Park area of California and the Yucatan Peninsula & central region of Mexico.

At these sites, participants inspect wilderness areas, urban recreation sites, meet with officials from Federal, state and local land-managing agencies, municipal officials, conservation leaders from private organizations and universities. The interchange at each area, the opportunity to visit the different countries, the variety of sites, and most importantly, the opportunity for peers to share their knowledge and experience, makes the seminar a valuable and unique experience for all participants.

Robert C. Milne, now chief of the National Park Service's Division of International Park Affairs, directed the seminar

for the past two years. The curriculum covers a broad range of topics in an effort to appeal to and meet the changing needs of both those participants from developing countries and those from industrialized countries.

Despite the range in sophistication, Milne reports that there are a number of topics that emerge which interest virtually every participant. Among the top on the list is environmental education and interpretation. Participants are often particularly interested in making parks a social instrument which moves beyond park boundaries. "Most park managers are genuinely interested in dealing with the public beyond park boundaries," says Milne. That interest extends to working with local communities and community groups, a new adventure for many park managers.

A common problem, faced by many park and recreation managers both here and abroad which generates a great deal of discussion each year at the seminars is how to protect park resources while coping with the increasing numbers of visitors, including the developing of reservation systems. That question leads to an exploration of ecosystems for management techniques—of ways to make a park relevant, ways to utilize biosphere reserves (see story, p. 27 on Man and the Biosphere).

An important outgrowth of that concern is the interest in developing maintenance standards and schedules for parks and protected areas, a concept which has been adopted by a number of countries around the globe.

Participants from developing nations have expressed concern over the treatment of indigenous people and a desire to perpetuate native cultures. Milne also reports an increasing international interest in urban recreation areas, and the management of small natural areas as countries see the need to intensively use available open space.

The professional level of most participants at the seminar is quite high—many are directors of national park systems, commissioners of park and recreation departments, etc. As a result, the multiplier effect of the seminar is quite high. In the past, participants have been sponsored by international assistance organizations such as the Food and Agriculture Organization (FAO) of the United Nations, the

Organization of American States, (OAS) the Agency for International Development (AID) but most are funded by their own governments.

Policies and programs in many countries can be said to have been affected by the exposure to new ideas their leadership exchanged during the seminar. For example, there is a growing movement internationally to bring parks into a more informational and educational role in the public's eyes. Specifically, a number of park systems in African and Latin American nations have expanded their national roles to work closely with the national education programs dealing with broad-scale environmental concerns and actively promoting a national pride in natural and cultural heritage.

The International Seminar has been so successful that plans are now underway to develop with foreign governments seminars on specific themes, using the international seminar model. Topics under consideration include: Urban Parklands and Regional Planning, Marine Park Operations and Management, in Europe and in the South Pacific and Wildlife Research and Management in sub-Saharan Africa. Similar seminars have been held in South America and one is now proposed for New Zealand and Australia.

The concept of the international seminar could well be applied to state and local levels as well. The opportunity for peers to join together, to share experiences and insights, to be exposed to new ideas and techniques has the potential for great rewards at virtually every level if well-planned and executed.

Donald Brown, the current International Seminar Director, would be willing to discuss such opportunities with interested officials and may be contacted at: School of Natural Resources, The University of Michigan, Ann Arbor, Michigan 48104.

The international seminar reinforces our understanding of the global village in which we all live. It demonstrates the great areas of common interest shared by park and recreation areas all over the world.

Man and the Biosphere

One of the most interesting international park programs is UNESCO's Man and the Biosphere program—based on the concept that representative areas of the world's ecosystem should be protected in perpetuity for scientific study and for their integral value. In 1973, an international panel of experts began the task of establishing a global network of biosphere reserves for science and conservation.

In brief the experts stated: "Nature reserves are increasingly becoming the main sanctuaries for wild biota. The reduction of species diversity is depriving not only ourselves, but all future generations of living resources essential for the economic, environmental, cultural and scientific existence of man. This attrition, proceeding with increasing rapidity, may become irreversible within a mere generation or two. Whatever our own attitudes, our clear responsibility towards the future is, at the very least, to 'keep options open' and to prevent, to the best of our ability, the depletion or destruction of the genetic diversity of life."

There was some discussion of the possibility of storing existing organisms, but as yet our technology has not been able to determine what changes might occur genetically after long periods of storage. Instead, the panel decided to try to conserve living examples of all important and representative biome subdivisions. Working with UNESCO in establishing this world-wide network of national parks and reserves is IUCN (International Union for Conservation of Nature and Natural Resources) and the World Wildlife Fund. To date, approximately 50 countries have agreed to participate in the program and eight different countries have already proclaimed areas as biosphere reserves.

In brief, biosphere reserves are defined as having three basic purposes or objectives:

- 1) Conservation or preservation—"to conserve for present and future use the diversity and integrity of biotic communities of plants and animals within natural ecosystems and to safeguard the genetic diversity of species on which their continuing evolution depends";

- 2) Research and monitoring—"to provide areas for ecological and environmental research including, particularly, baseline studies . . .", and
- 3) Education—"to provide facilities for education and training."

At present, a system of classification of natural regions is being revised by a task force of experts directed by the IUCN Secretariat and should be available shortly.

On the face of it, biosphere reserves may sound like a large national park—but it is not just another label and is distinguished from most traditional conservation areas in the following ways:

First: As a part of the Man and the Biosphere (MAB) Program, a biosphere reserve is a basis for other projects concerned with research on the effects of human activities on a variety of ecosystems. The governmental nature of MAB and the shared involvement of countries in the planning, organization and operation of regional and international projects make the program particularly relevant to the problems of development in most countries.

Second: The program, with the active collaboration of UNESCO, IUCN, FAO and UNEP, is a systematic effort on a global basis to inventory, identify, manage and protect the important and representative natural ecosystems in each country, and to create a coherent and representative system of baseline areas for use in research and monitoring. It should be viewed not only as part of the development of natural resources of a country, but as part of the planned development of the resources of the biosphere.

Third: The reserve concept is flexible enough that it can suit the widely differing needs of countries. This is why it includes modified or degraded areas which retain the potential for conservation of genetic diversity but which would not normally be suitable for national parks. The biosphere reserve, for example, could include an entire island which has long been occupied and used by man in a stable and productive way, and which will continue to be used in the same manner as a function of its status as a biosphere reserve. It could also include certain areas which have become degraded, e.g., by overgrazing, but which can be restored. Such

areas have value as research sites for studies on recolonization, land stabilization and restoration of genetic diversity.

Other characteristics of biosphere reserves

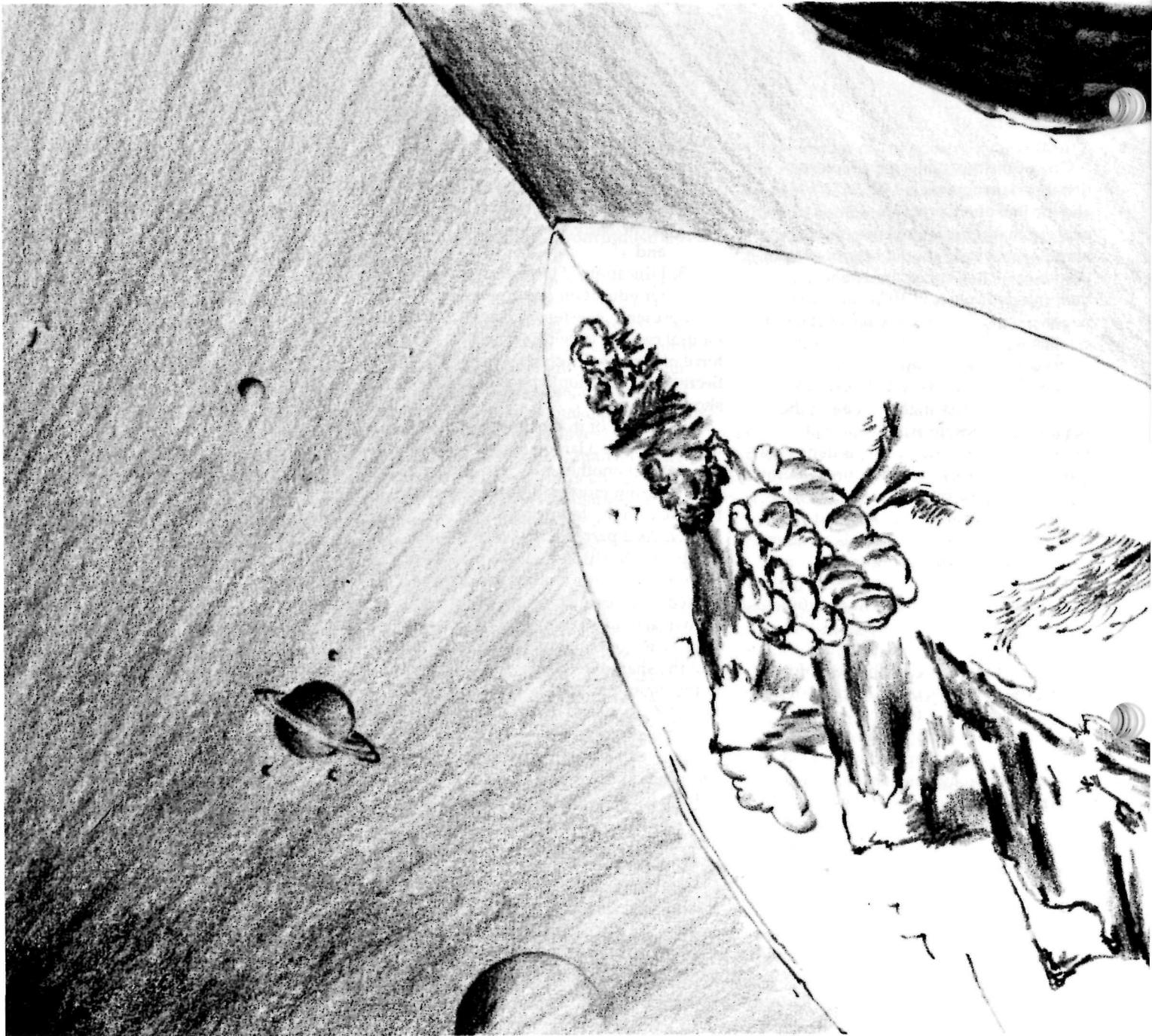
Where undisturbed natural areas are involved, scientific research may be only marginally compatible with the goals of conservation. In reserves intended to protect natural communities, therefore, it is advisable to establish a *core area* of relatively large size which would remain undisturbed, although available for observational research, and a surrounding *buffer zone* within the same biotic communities in which more intensive research and experimental management can be conducted. Buffer zones will be available for a variety of uses providing that these are compatible with protection of the central area. Such uses can include tourism or even certain forms of controlled exploitation which will not endanger the species involved. They can be of particular value as centers for education and training.

In marine areas, it is often less important to provide a *buffer zone* as such as it is to provide for a *buffering function*. This would necessarily involve control of pollution or siltation in waters that affect the core areas as well as careful control over any forms of exploitative use of such waters.

How MAB works

An International Coordinating Council of scientific representatives from 25 nations, selected every two years by the UNESCO General Conference, along with representatives from appropriate United Nations and nongovernmental organizations guides and supervises the program.

In each country participating in the program, a national committee defines and organizes research activities on particular national problems which relate to specific problems identified on an international level. Special working groups and expert panels are set up by the Council to coordinate national contributions and to define international core programs ensuring that compatible methodology is used for the various projects.



Countries then work together on a series of problems of common concern to provide comparable results capable of generalization and synthesis.

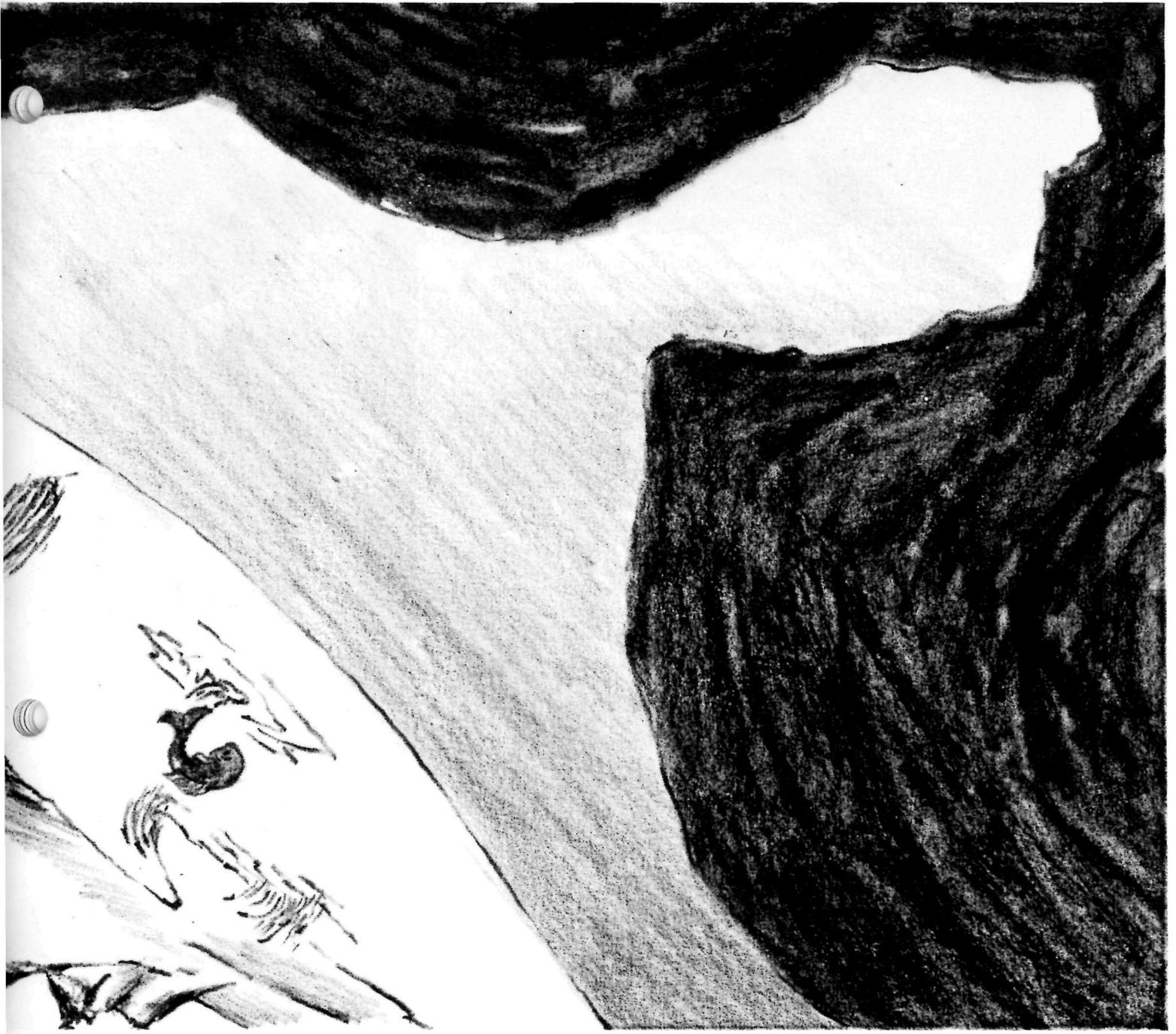
Current MAB projects

There are thirteen different projects making up MAB which include research into tropical and sub-tropical forests, temperate and Mediterranean forests, grazing lands, arid and semi-arid lands, non-

oceanic aquatic ecosystems and related interface zones, mountain and tundra ecosystems, islands and urban systems. Within each topic, there are a number of specific themes now being explored all over the world. At the same time, a number of reserves have already been designated which will give some indication of the type of areas which easily meet the criteria set out for designation as well as the thirteen different projects. In Austria, for example, part of the Hohe Tauern mountains and areas bordering on the Neusiedler See have been designated as a reserve. In the United Kingdom, the Moor House Reserve, In France, part of the

Camargue, In the Philippines, part of the island of Mindoro. We in the United States have designated some 20 different areas and Brazil has set aside an area in Amazonia about one fourth the size of France in which several large reserves will be established. The Soviet Union is expected to announce the location of reserves in the Caucasus, the Volga delta and the Northern Tundra.

To assist scientists all over the world, UNESCO publishes a series of reports covering all MAB International Council



meetings and the findings of individual panels of experts working on various MAB projects. National Committees and the MAB Secretariat distribute these publications.

A new series of *MAB Technical Notes* is being published to disseminate research findings on specific geographical areas or ecosystems. And the *MAB Bulletin* reports on specific meetings or other newsworthy events.

Additional information on the Man and the Biosphere Program can be obtained by writing to UNESCO, 7 Place de Fontenoy 75700 Paris, France.

The Nature Conservancy: A Look at Land Preservation

Years ago Will Rogers said that "Land is the one thing nobody is making any more of."

Today there is a growing movement to preserve the land and with it important ecological systems. For a number of years now, activity has focused on saving lands of significant ecological and environmental value containing keys to the life and support systems of our environment.

An organization whose concern is preservation of significant land areas is The Nature Conservancy, a national non-profit organization with 25,000 members.

To conserve land, the Conservancy works in five ways.

"By accepting gifts of ecologically significant land for preservation.

"By purchasing lands using funds available nationally from the Conservancy's own revolving fund and then repaid through fund raising.

"By managing some 600 Conservancy-owned preserves using trained volunteers and staff.

"By working with local, state and federal governments to help identify and preserve land.

"By acquiring land in advance of government agencies' ability to do so—often with considerable savings to the taxpayer."

The operation, for all the complications of identification, scientific evaluations, fund-raising, and real estate negotiations, is essentially a simple and straightforward one. The effort is specifically devoted to conserving endangered lands and wildlife of ecological and environmental importance with direct action, rather than by lobbying or large-scale educational campaigns.

The Conservancy maintains a revolving fund of about \$4 million. The fund, which is replenished by local fund-raising efforts, provides monies for emergency purchase of land. Fund-raising campaigns are a regular feature of the organization. Commercial lines of credit are available for

purchases involving government agencies. In addition, there is a million dollar guarantee and income fund which the organization can draw on to back land projects.

The organization, founded in 1951, has preserved three-quarters of a million acres—an area almost the size of Rhode Island. It looks ahead to preserving natural areas, open land, restoring land, improving techniques of land preservation, advancing the cause of natural area preservation, and working for these goals with other similarly motivated organizations.

What does the organization do with all this land? All lands saved by the Conservancy are available for use by schools and scientific groups upon request, with only the ecological fragility of the land as a limiting factor. Many of the areas are open for hiking and exploration. A number of preserves have trails and nature interpretive centers.

TRENDS takes this opportunity to describe in some detail four special programs of The Nature Conservancy which may well help you in your area. The organization, with former land and park planner Patrick F. Noonan, as its president, offers technical assistance to states and groups throughout the country through its main headquarters in Arlington, Va. and through its 19 staffed regional, field and chapter offices. Descriptions of the relevant programs are presented here as a public service by the Conservancy:

The State Heritage Programs

The State Heritage Programs have been set up to create an integrated and systematic basis for identifying ecologically significant natural elements and areas and to protect them from adverse impact. In a typical project, the Conservancy contracts with a state to help develop a process for ecological inventory, sophisticated data management, analysis, and legal protection. Although the typical contract lasts only a year or two, the system itself is designed to operate indefinitely, adding modifying data, and revising priorities.

The information compiled can be helpful to land use planning, contributing an important body of ecological data not otherwise available. The program is not,



however, designed primarily to support planning regulation, but rather is a positive action system employing a combination of contemporary and traditional approaches to protect threatened lands. The states of South Carolina, Mississippi, West Virginia, and Tennessee have already availed themselves of different aspects of this program.

Through close cooperation with state governments, the Heritage Program can bring tremendous public capabilities to bear on long ignored problems. Ecological information-gathering and record-keeping cannot be adequately dealt with in a short period of time. Public agencies have the resources required for long-term maintenance of a data system and for the long-term application of appropriate legal protection.

The contracts with states normally require that the Conservancy assign a staff ecologist or planner to work with the state agencies for the term of the project. Duties involve cooperation with the state agencies to design the system and to organize participants throughout the state. To gather and evaluate information for the inventory, the Conservancy relies heavily on the scientific experts within each state,





photo: Sue Bourriquet

Katherine Ordway Preserve, Minnesota

Willa Cather Preserve, Nebraska



photo: Lucia Woods

many of them college or university faculty members. The scientists form technical advisory committees. They help by using their specialized skills and knowledge to unearth leads, classify information, and adjust the statewide model to the peculiarities of each region. The effectiveness of the approach is being shown in the Conservancy's first Heritage program in South Carolina. Here scientists with a great variety of talents from

universities and federal and state agencies are enthusiastically tackling the preservation problems of the Palmetto State.

The Conservancy isn't limited to a scientific role. States may be provided with a catalogue of legislative and regulatory alternatives for implementing the inventory. These, too, are developed in cooperation with local experts, generally lawyers. A study of state natural area legislation and other techniques for natural area protection is underway, and, when combined with practical experience, will provide the basis for preservation and protection recommendations.

Once a state begins the hard work of protecting the areas identified through this heritage program, the Conservancy field staff will be ready to assist the state using traditional acquisition approaches.

The Governmental Program

The Governmental Program is concerned with assisting and encouraging more active participation in the inventory, acquisition, protection and management of natural areas at the state and federal



Photo: Glen Smart

level. The objective is being pursued in four ways:

- 1) By monitoring federal and state legislative or administrative actions which pertain to Conservancy land conservation goals and developing an appropriate response to new or proposed laws, regulations or actions taken by government.
- 2) By undertaking the preservation/protection planning segment of the State Heritage Programs.
- 3) By preparing special reports on model state natural area legislation, conservation easements, land use, and similar subjects.
- 4) By undertaking major research projects.

In the last category, the Conservancy recently completed a 300-page, four-part report entitled, *The Preservation of Natural Diversity: A Survey and Recommendations*, under contract with the Department of the Interior.

Part one of the report, "A Coordinated Effort to Promote and Protect Natural Diversity: A National Imperative" develops the scientific and general rationale for preserving biological diversity and concludes that this is an accomplishable task, compatible with other national goals and needs.

The second part of the work, "*Findings and Recommendations*," contains a number of major suggestions related to preservation of natural areas, including the establishment of:

- A national policy to promote and protect natural diversity
- A nationwide system of ecological reserves
- A national ecological reserve board
- An ecosystem classification system
- A national registry of ecological reserves



- A data bank
- Strong legal protection for reserves
- Counterpart state programs
- Financial and technical support to states
- Participation by certified conservation organizations
- Coordination and participation by all federal agencies
- Provision of monies through Land and Water Conservation Fund

The third segment, "The Identification, Maintenance and Use of Natural Areas: A Survey of Public and Private Activities," contains an overview of state and private programs based on responses to more than 300 surveys. Also included within the section is a description of stewardship, funding and general activities of some twenty federal agencies, directly or indirectly involved in the inventory of natural lands, acquisition, or management. Also described are programs in England, Germany, France and the Soviet Union. Major international agreements such as the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, the Convention for the Protection of the World Cultural and Natural Heritage and the Man and Biosphere Program are also discussed. Part four of the body of the report concludes by reviewing a working conference involving more than sixty experts that was held as part of the overall study.

As a result of the initial major study, the Conservancy has been invited by the National Park Service to undertake a related report on protected natural areas in the United States, as part of the information exchange called for under the U.S.-U.S.S.R. Environmental Protection Agreement.

Land '76

Land has always been America's most important resource. It attracted settlers to our shores and sustained them. But, because the land has frequently been misused, many of our remaining ecologically significant natural areas are in jeopardy of being lost to future generations.

Recognized by the American Revolution Bicentennial Administration, Land '76, a part of the Conservancy's existing program, has been set up to highlight the importance of land preservation in connection with the nation's two hundredth birthday.

Through Land '76, the Conservancy will search for important areas of regional or national interest which should be kept in their natural state.

Land '76 seeks contributions of money or land from individuals, foundations, organizations and corporations.

Examples of the Conservancy partnership with the Bicentennial are growing. In Nebraska, the Willa Cather Memorial Prairie has already been designated a state and Conservancy Bicentennial project. Other projects in the east, midwest and west are currently under consideration for Bicentennial status.

International Program

While the critical need to preserve land and its complex web of associated life forms has been receiving attention for some time in this country, the environment the world over continues to be manipulated at an escalating rate with only elementary knowledge of how ecosystems operate.

Rolf Edberg observed in *On the Shred of a Cloud*, "Unwittingly, with little or no understanding of the meaning of our actions, we have been plunderers of our own nest." His comment is said to have inspired the United Nations Conference on the Human Environment.

To avoid ecological breakdown, man's expansion must be directed away from vital segments of natural systems and the diversity of genetic resources they shelter. Growth need not mean pillage. There is still opportunity to prevent the loss of lands containing unparalleled natural diversity. But the time is short. And the ecosystems are often very fragile. The Conservancy's International Program looks at the following possibilities to conserve our global heritage.

- 1) To select a series of carefully chosen acquisitions for preservation of critical natural areas. Initially, the focus will be on precedent-setting transactions in

the Caribbean, Central America and Canada. Techniques, developed by The Nature Conservancy during two decades of land conservation, will be made available to other organizations and governments.

- 2) To establish working relationships with other international and national groups; to strengthen local conservation; to undertake joint projects and programs; and to identify other innovative public or private efforts, such as the World Wildlife Fund's tropical rain forest preservation program.
- 3) To complete a major joint-venture acquisitions within a selected nation, possibly utilizing the techniques developed by the U.S. State Heritage Programs. The goal of this pilot program, beyond the great significance of the actual acquisitions, will be to create a model that can be used on a country-by-country basis.

The International Program began with the acquisition of the Middleham Estate, a large and ecologically important tract of tropical rain forest on the Caribbean island of Dominica, about 350 miles southeast of Puerto Rico. The 950-acre gift of Virginia resident John D. Archbold was valued at more than \$1 million. The pristine forest is dominated by 100-foot trees whose branches, jutting out 50 feet above the dark forest floor, are festooned with lianas, thick cable-like vines, and covered with epiphytes (air plants living off the moist atmosphere).

The Dominica project demonstrates how the International Program can work cooperatively with owners and governments to protect vital overseas natural areas.

Change for the Future

by William Penn Mott, Jr.

This article has been excerpted from a paper delivered by the author at the Ninth Annual Park and Recreation Symposium, held at Monmouth County Park System, New Jersey, Rutgers University, New Brunswick, New Jersey, January 21.

Changes in technology in attitudes, in modes of transportation, in population, age levels, in levels and types of education, economic changes, changes in work ethic and in size and composition of families will affect the kind of recreation people will seek and where they will seek it. Change is inevitable, we no longer can continue to operate our park and recreation departments using the same standards, techniques and procedures that we used in the past. It is unfortunate that most park and recreation departments around the country do not really accept the fact that they do not understand that the changes that swirl all about us will affect the planning, management and programming of park and recreation departments. If they are to be relevant to today's recreation needs, they must adjust to the changing conditions.

Sebastian DeGrazia, in his book, *Time, Work and Leisure*, makes this statement: "So long as they were at work, therefore, their power was preserved, but where they had attained leisure they fell, for of the art of leisure they knew nothing and had never engaged in any employment higher than work." We have a very challenging responsibility facing us in the next decade and that is teaching people the art of leisure. If we don't achieve that objective, we may, as park and recreation administrators, be programming ourselves out of existence.

Unless we recognize change and the new opportunities and responsibilities in park and recreation administration, I believe that in the next decade we will find another agency or organization taking over the job of providing for people's recreation.

You have to recognize change, and you have to produce a program that has depth to it so that people will have a full life—not one with destructive purposes but with constructive purposes.

Part of the problem we are facing today with young people, part of the criminal problem we are facing in this country, is because park and recreation departments have not recognized their responsibility to help people develop full, creative lives. This will require developing new types of recreation programming—not just fun and games—creating a purpose for people's lives through the constructive use of their leisure time. This is our responsibility.

Changing patterns of living are certainly going to affect what we do in the way of recreation. The four-day, forty-hour week is upon us and the alternative to that, the three day week is on the horizon. Both of these new work patterns provide extra free time for recreation. The twelve-month school year is being tried throughout the country. It's only a matter of time before we have the twelve-month school year in general use. How will this change recreation planning and programs?

Sabbatical leave for large blocks of the working population is on the horizon. Many firms are now adopting the sabbatical leave concept, and labor unions are making it a part of their fringe benefit package. All of these factors are going to make more and more time available, and that means a change in people's lifestyle. More workers are receiving paid vacations. It is now about 2.2 weeks per year, and it's going up all the time. What does that mean?

We are now facing the fact that our resources are finite and exhaustible. The energy crisis, the shortage of oil and gasoline; how is this going to affect our recreation? What are you going to do next summer to meet this change? Have you even thought about it? And what are your plans to meet this new challenge?

I recall when I first went to the Oakland Parks System; for example, Christmas came around and most of the suppliers of goods and services would drop by with baskets of fruit, bottles of booze, hams and things of that sort. We wrote a letter to the suppliers and said, in effect, we don't want that kind of recognition, we want

service. That's what we are paying for. And we want the best possible price insofar as material costs are concerned. It was amazing. We got some letters indicating that they were shocked that we took this approach. But I can tell you that it worked. We got better service and material costs went down. Honesty is important, and it is a virtue that people today recognize as an important attribute in government as well as in one's personal life. We ought to recognize this and we ought to adopt this philosophy as a part of the code of ethics for all park and recreation departments.

It also seems to me that we have a tremendous challenge, as park and recreation people and as civil servants, to set goals for others in government service. One of these goals should be to have a sense of urgency to get things done. Sometimes civil servants don't have a sense of urgency to get a job finished as soon as possible. We never have enough time to do our work. We've got to get our jobs done and done quickly. Delay in completing work and delays in making decisions are costly.

Also, we need to train people to make what I call calculated risk decisions. By this I mean, when all of the facts are in, make the decision. Sometimes you are going to make the wrong decision. But at least make a decision. I've been concerned that many civil servants will not make decisions unless they are sure that they know that the decision is going to please the boss. That's not making a calculated risk decision. That's delaying the decision-making processes. Making calculated risk decisions helps to develop the creative thinking process which is important if we are to develop parks that are relevant to today's needs.

Planning today has become more sophisticated. We need to recognize this fact. I can recall that not so many years ago a landscape architect did the planning for a park. The National Park Service used landscape architects; the states used landscape architects, the city and local county departments used landscape architects to plan parks. But today planning by a single discipline is no longer satisfactory.



Today we must do environmental planning. What does that mean? It means that we have to look at all of the resources within an area to be planned, and make an inventory of those resources. We have to use the technical skills and knowledge of not just landscape architects but architects, engineers and planners, plus the skills and knowledge of archeologists, historians, environmentalists, foresters, botanists, etc. each contributing to the planning process so that the total environment and the relationship of its parts are fully recognized and taken into consideration in the plan.

In addition, the planning process must include use of the skills and knowledge of psychologists, sociologists and cultural anthropologists. The social scientist can be of great help in planning parks for people. Today, if we're going to do a total planning job so that parks will be relevant to today's needs, we must utilize the ability and knowledge of planners as well as the knowledge of people from the natural and social science disciplines.

Management Questions

That brings me to the management of parks. Today, management has to be a total management concept. We understand how to maintain structures and buildings. We have the technicians and knowledge to manage natural and cultural resources. We are beginning to under-

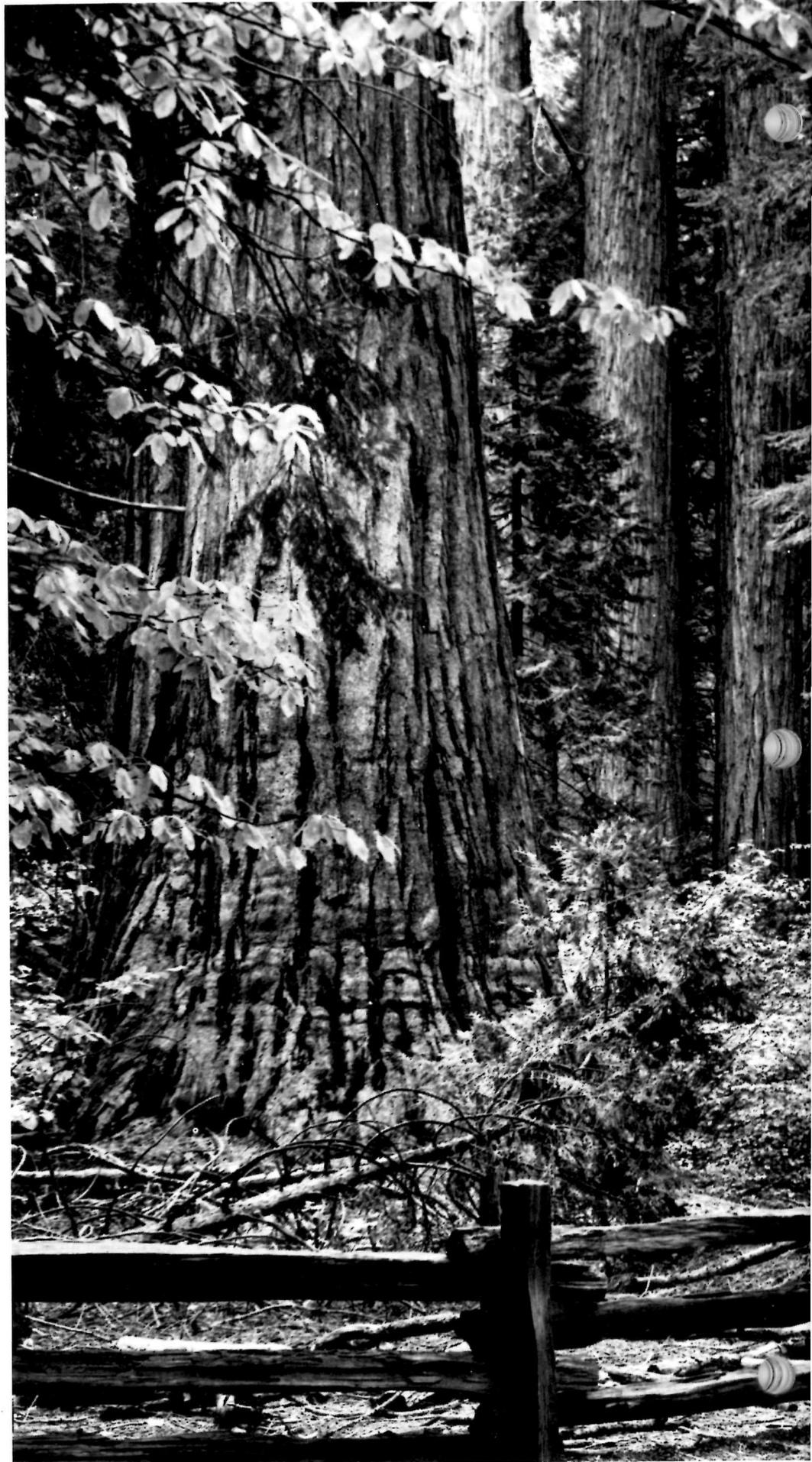
stand that that is only half the job of management. Today we have to combine the management and maintenance of the physical and natural plant with the management of the people who are using the facility and the resource in a total management process.

Single-purpose management of the ranger program in the California State Park System was a problem. We had practically no one in the department trained in the social sciences. The rangers were biologists, foresters and wildlife managers, all coming from natural science disciplines. They were doing an outstanding job in the management of the natural values within the State Park System. We

needed to bring in the social scientists in order to develop a total management concept, so we opened up our ranger examination to permit college graduates from the social sciences to take the ranger test. We now have the breadth that we need to do the total job of managing the resources as well as the people who are utilizing those resources.

Do you have psychologists and sociologists to help you to understand people problems? You are dealing with people! How do they relate to the planning process? I've been concerned about the design and development of some of our college grounds in California. Most of the students want to ride bicycles, but I know of no single college campus that was designed to provide for student transportation by bicycle throughout the grounds. What is more upsetting is that none of the college campuses that have subsequently developed bike paths have related the campus plan to that of the community so that students can safely bike to school from their place of residence. It seems to me that, when we begin to think in terms of people and how they use our parks and public areas, we'll get a plan that will satisfy both the need to protect the resources and still provide for the use of the area by the people.

Change is difficult to achieve even though it meets the needs of people and makes for simpler management. Let me give you an example: In all of our state park campgrounds we have placed a garbage can at every campsite. Most other parks have followed this scheme. We raised the question: Why do we have to have a garbage can at every campsite? Why can't we put a garbage gondola at the toilet building? Everybody goes there and they can take their garbage and place it in the gondola. Now, that sounds like a simple, practical solution. But when the idea was brought up, there were all kinds of reasons why it wouldn't work in spite of the fact that such a scheme would save steel—a finite resource—and eliminate the drudgery of washing garbage cans. There were many reasons why people felt the idea wouldn't work. But we tried it, and I



Calaveras Big Trees State Park



can tell you that we not only found that the campsite was cleaner but that campers didn't complain. They even enjoyed the experience because when they went to the central garbage station with their garbage there were other campers doing the same thing and it brought people together to exchange "good mornings." People from the cities bring to the campground the same isolation they have created for themselves in their city living habits. But in this situation, they were all doing a common, mundane thing—putting garbage in the gondola. So Mrs. Smith talks to Mrs. Jones and they become acquainted because of that common experience. The feeling of isolation vanished and a new living dimension for the city dweller was experienced during the vacation.

Let me give you another example. In every single park that I know of—city, county, state and national parks—there are toilet buildings, one for men and one for women. Did you ever ride on a 747? Toilets are either occupied or they're not occupied. So I said to our staff one day: "Why in the State Park System can't we build a single toilet building with exterior doors and with locks indicating that the stall is either occupied or not occupied?" Well, I can tell you that it took almost one year to get that idea accepted and into working drawings. I heard all kinds of reasons why the idea wouldn't work. It would be embarrassing for men; it would be embarrassing for women. It would cost more money. The public wouldn't accept the idea. It would create all kinds of real and imagined problems. The newspapers picked it up and made all kinds of jokes about the idea. Health departments frowned on the idea. They are built and working. People accepted them. The normal lines, especially at women's toilets, haven't appeared. Maintenance costs are 30 percent less. The problems didn't develop and the idea worked. But making the change was difficult. And I can tell you it's a lot easier to just go on in the same old routine way than it is to make a change. But unless we're willing to take the responsibility for change, I can also tell you that you're going to be replaced by some other discipline. So take a chance; try some new, creative ideas to make your department sparkle and become an exciting department that is relevant to today's needs instead of just being satisfied with mediocracy.

Interpretive Signs, Silverwood Lake State Recreation Area

Citizen Participation

Citizen participation is another area we need to develop. Within every city and county are people who are capable of giving you help in doing the job that you want to do. And I know there are lots of people in our business who say, "Oh, I don't want to be bothered with citizens messing around on my professional job. I'll take care of those problems. We know what the people want." I'm not sure that that's true. We didn't have any citizen participation committees when I came to the State Park System. We now have over fifty groups of citizens working with us throughout the state advising us, helping us, directing some of our planning and programming throughout the State Park System. Their help has been invaluable.

When I first suggested the idea, some of our people again felt it would create problems, we'd have difficulty with committee members. We shouldn't do it—and so forth and so on. The positive results of a few of our citizen participating committees soon convinced our field people that the idea was good. District superintendents are now asking for citizen advisory committees to help them. It's a way of making the parks relevant to the needs of the people. I recall one time looking at a park system in southern California where, in a predominantly Spanish-speaking community, they had built a baseball diamond that wasn't being used. I suggested that they convert it to a soccer field. They did, and I now understand that they have not only converted the entire area to soccer but they're now putting in night lighting because of the great interest and the need for greater utilization of the field. The soccer field was relevant to the needs of the people; a citizen participating committee would have advised the department accordingly.

I would like to suggest that you consider the use of citizen committees to help you. This idea can be expanded to provide you with additional funds. There are certain citizens who can raise money. They can't do anything else, but they can raise money. If you bring them together in a citizen participating committee for the



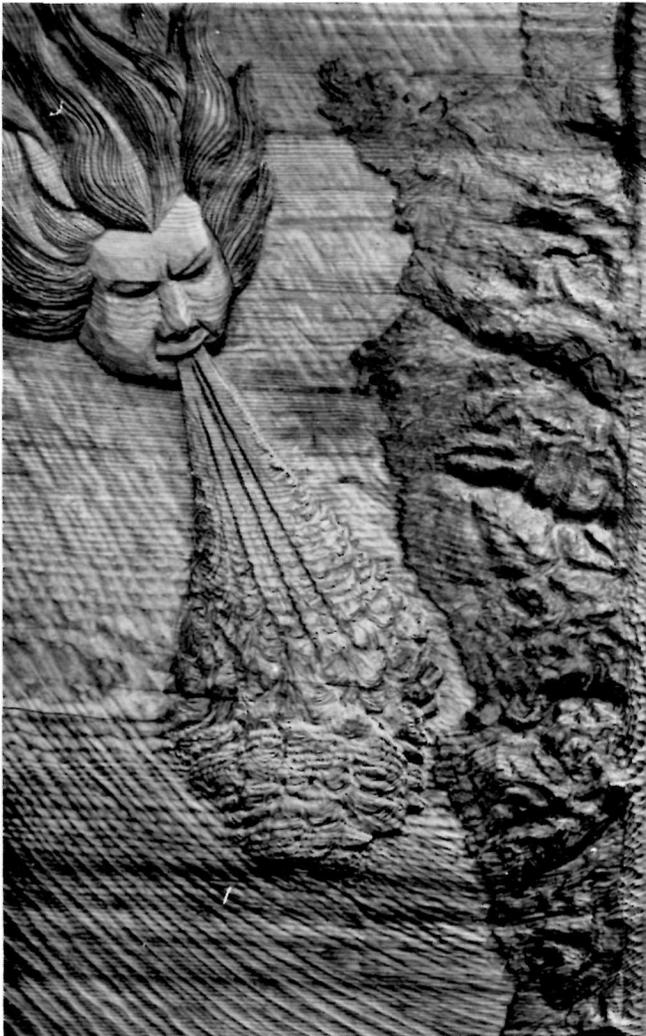
purpose of raising money for your department, you will get money to help you do the job. We've set up such a committee in the State Park System; it's called the California State Parks Foundation. The Foundation in the last three years has raised over ten million dollars to help us do some of the things that we wanted to do but couldn't get money for through the normal budgeting process. In addition, in the past three years about \$40 million in gifts of land, money and artifacts has indirectly come to the Department through the activities of the Foundation.

I become discouraged when I hear park and recreation people say we can't do the work, we don't have a budget, we don't have the money, I'm telling you that in your community there are people, if you have a creative program, who will give you the money to do the creative things that you want to do. Just ask them! Get them involved in your program!

We have some very important people on our citizen participation committees, and the legislators recognize these people. They know that they're working for us,

and I think it's because of that that the legislature this year gave us a \$200,000,000 budget. No other department got that kind of attention from the State Legislature. Citizen participation is desirable and important.

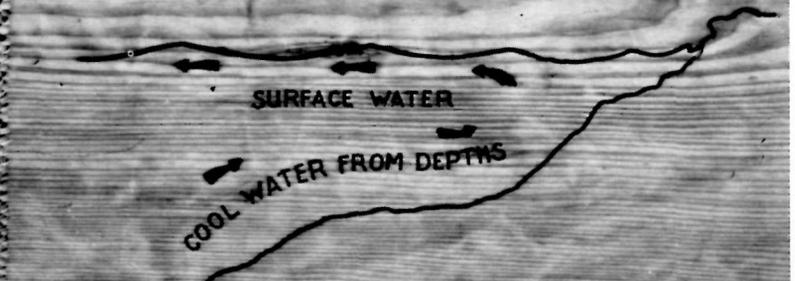
When I was in the City of Oakland, one of the things that disturbed me was that people thought of Oakland as a bedroom community of San Francisco. One of the first things I did was to find out who really provided the leadership in Oakland. I learned it was the Kaiser organization. The Kaiser Company had never been directly involved in any civic program. I sold Henry Kaiser, Jr. on the idea of serving as chairman of a work recreation program. A program to provide work combined with recreation for high school kids in the summertime. From that time on, the city council gave greater consideration to the department when it came it funding park programs because they saw Henry Kaiser, Jr. working for our department and that meant that he supported the park depart-



THE PREVAILING WINDS FROM THE NORTHWEST DURING THE SPRING AND SUMMER MONTHS PUSH THE SURFACE WATER AWAY FROM THE SHORE. THIS WATER IS REPLACED BY UPWELLING, COOLER WATER RISING FROM CURRENTS AT LOWER DEPTHS.

SINCE SOME UPWELLING OCCURS ALL YEAR, A SUPPLY OF COOL, FOOD-RICH WATER IS USUALLY AVAILABLE HERE AT POINT LOBOS FOR A WIDE VARIETY OF SEA LIFE.

IN THIS REGION WATER TEMPERATURES COOL ENOUGH FOR SPECIES REPRODUCTION AND YET WARM ENOUGH FOR GOOD BODY GROWTH MAKE POSSIBLE AN EXTRAORDINARY ENVIRONMENT FOR MARINE LIFE.



ment and its activities. So I'm saying to you, as smart professionals, use the people of your community. They have lots of ideas that will help you and it will give your department stature. I suggest that if you want to move forward and not be replaced by some other discipline, get citizens working for you.

Some of you may be involved in camping. I raised a question in our department: Is camping an environmental or social experience? For the most part, our planners said it's an environmental experience and we are designing our campgrounds accordingly. If you talk to people you will soon find that camping for some may not be an environmental experience. Many people go camping because it's a social experience. They meet with friends at a campground for a social experience in a pleasant outdoor setting.

Designing a campground for a social experience is quite different than designing it for an environmental experience. We probably need both types. There are some people who are under terrific pressure, working with people all the time, who prefer an environmental experience. They want isolation; they don't want to be with

people. But there are others who want a social experience. They want to be together with other people. So if we design accordingly, we come up with two different solutions.

Interpretation

I'd like to suggest to those of you in city and county park systems that you have a real responsibility to develop an interpretive program. You should not assume that this educational process is only the responsibility of state and national park systems and some county parks. City and county park systems have a terrific opportunity to develop a fine creative interpretive program in their park and recreation department. And you'll find that people will respond to it. They want to understand their relationship to the natural and cultural values in their community. They want to be able to relate to the out-of-doors in a more effective manner. They want to understand the cultural heritage of this great country of ours and make it relevant to their lives today. And I suggest

that you look at this particular opportunity because this is an area that a smart park and recreation director looking ahead for creative new things to do will accept. Combining education with recreation is good business.

We now have a live-in type of interpretive program that I think is terribly exciting. I'll just relate it to you quickly.

At the San Francisco Maritime State Historic Park, we have old ships on display. Kids used to come down in groups with adults, but they couldn't relate to the old ships. They have never been on a square rigger in their lives. They went on the guided tour; it was an entertaining and interesting experience. What are we doing now? We're taking groups of young people aboard at 8 bells in the afternoon; they get a sea chest and sign up like a sailor did in the old days. They mend the sails, they splice rope, they lower the dory, they go fishing, they cook their food on the wood stove in the galley just as sailors did in former times. They scrub down the deck of the ship, they stand watch, they do all of the things that a sailor did when he shipped aboard a square rigger in 1876.

When they leave the ship the next morning they've had a relevant experience and they have some understanding of sailing in the early days of this country. (Ed. note: see *Trends*, April, May, June '75 for story on the environmental living program).

This is the kind of exciting, dramatic interpretive programming that can be developed.

Another area that I think we must think about—and this applies primarily to persons who have natural areas to manage—is the question of management versus preservation. Are we going to manage the resources in order to conserve them, or are we going to manage the resources by preserving them?

Let me give you an example: At Calaveras Big Trees State Park, the south grove of giant sequoias is probably the most pristine grove of big trees in California—in the world. We have protected that grove from fire for the last 100 years. No fire has gone through that grove for the last 100 years. Historical records indicate that fire went through that grove at regular intervals. What's happened in 100 years? The white fir, alder, cedar and buckbrush has built up such an understory of growth in the grove that no reproduction of the sequoia is taking place. If we continue that preservation policy, obviously five hundred years from now we'll have no big tree forest at that location. There are those who say let it be that way; others say we have a responsibility, as trustees, to manage the forest, using fire as a management tool. At this time the fuel has built up to such an extent that if a fire came into the forest it would probably destroy it because the heat would kill all the big trees. Should we use fire as a management tool so that natural reproduction of the *sequoia gigantea* will take place insuring that future generations a thousand years from now will have the same benefit that we have today to view a pristine forest of these superb trees? That's the difference between management for conservation and management by preservation.

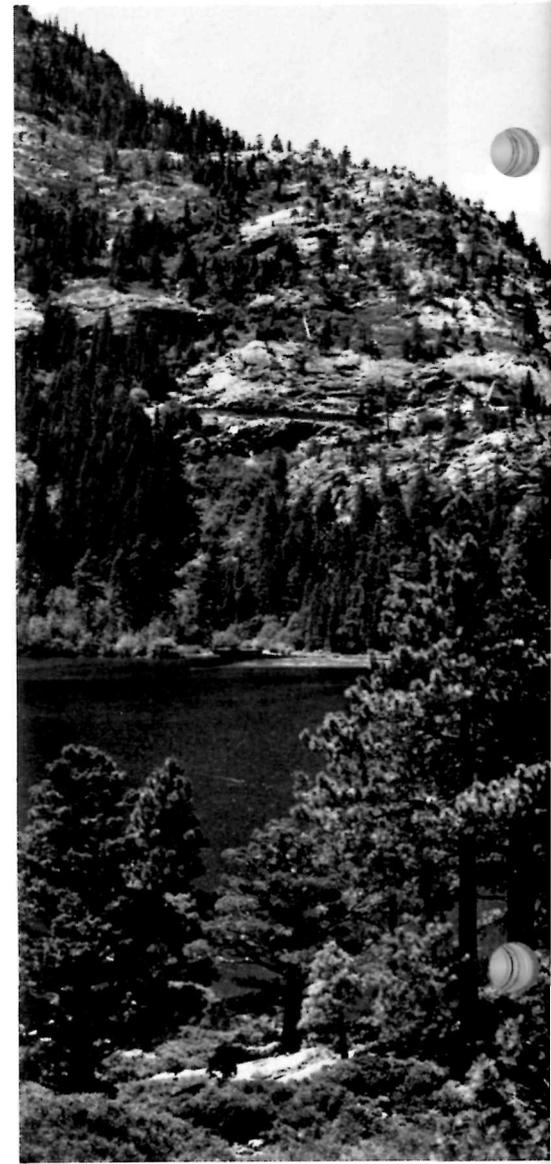
There are many, many examples of this kind that will require new, creative management decisions. This is a controversial subject, but we must concern ourselves

with these types of decisions if we are going to provide future generations with the natural resources that we now take for granted.

One of the things I have been concerned about for some time is that when I fly across the country or fly around California at night I always know where the cemeteries and the parks are because they are dark. I'd like to suggest to you that, with the techniques that we have today, we can turn parks into useful areas at night as well as in the daytime. It seems to me we've got to begin to make greater use of our facilities, and that means night lighting. And I think that with people on various shifts, working various times that, creatively, with proper lighting you can make your parks work at night just as effectively as they do during the daytime. I know some of you have your baseball diamonds, football fields and tennis courts lighted. But what about lighting the whole park so that it becomes an exciting, dramatic, interesting place to use in the nighttime just as well as in the daytime? This can be done.

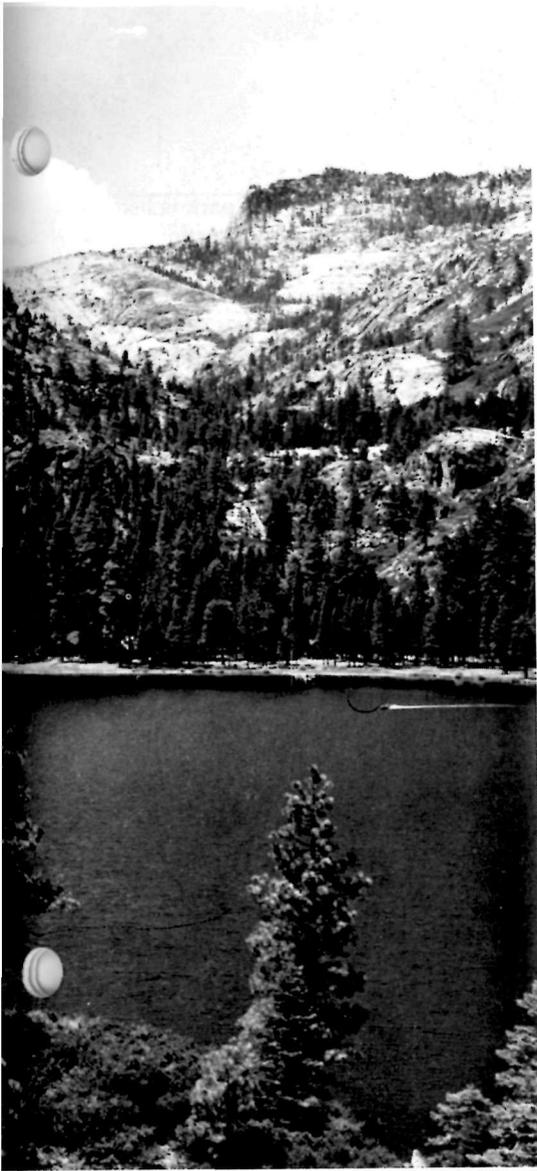
We need to think in terms of off-road vehicles. This is becoming a very serious problem. It's a problem for those of us who have large resource areas, and it's also a problem for you in the city because you, like us, have stuck your head in the sand over the years and said, "I hope the bloody things will go away and we won't have to do anything about it." I'm saying to you that this is a form of recreation, and you'd better begin to think creatively of how you are going to channel that form of recreation into a constructive program instead of a destructive one. It's coming and you'd better be prepared for it. It's already here, as a matter of fact, and I think we need to do something more than just sit back and say, "Well, I hope they go away." With the gas shortage maybe the motorcycle will become a friend instead of an enemy.

Walking for pleasure, hiking, backpacking and bicycling will increase in popularity in the next ten years. Young people going to Europe are finding hosteling a very rewarding recreational experience. The opportunities to develop this type of activity exist in this country. Greater emphasis should be given to hosteling. Self-guided trails, booklets and brochures explaining what people see will not only make the experience more exciting, it will



help people understand their relationship to each other and to the natural and cultural values—the web of life.

General aviation in the United States is growing at a tremendous rate. From 1955 to 1968 the number of hours flown has increased 130%. This year, over 22 million hours will be logged by general aviation aircraft throughout the nation. More than one-half of these 22 million hours will be flown for recreation purposes. To relate these people to our state park program, we have developed "sky trails" telling pilots and their passengers what they see when they fly a prescribed route—either over a park or a route that connects several



parcs. This has become a very popular recreational activity, and I am sure we have made these people more aware of the environment and their relationship to it. Also, this large group of people now support the department.

The city is a schoolhouse of information if we wish to use it. Parks and their programs should not be isolated islands of beauty and recreation within the cityscape but, rather, should be focal points from which emanates an exciting interpretive program revealing to people what, where and how they, individually, relate to the city, making the urban environment comprehensible and observable to them. What can one learn by standing on the corner of a busy city street intersection? Who is occupying the space? What kind of decisions have to be made? Turn right! Turn left! Cross! Wait! Stop! etc. What is under the

sidewalk? What kind of information do the signs on the corner provide? Who is standing next to you?

What can one learn at the lumber yard; at a junk yard; in a courtroom; at an airport? I could go on and on.

Not all recreational programming need take place in the park. The whole city is yours to use and explore. Let your creativity utilize this great storehouse of information so that the city becomes an extensive facility for learning about the urban environment. The people will take an interest in it and do something about its quality because it is their city.

Lastly, it is important that the department be organized to meet future demands. Many departments have not looked at their organizational structure for many years. In fact, I've visited some park departments that don't even have an organization chart and the personnel doesn't even know how their department is organized. How can such a department instill confidence in the minds of the taxpayer—its boss?

A very important element in any park department's organization is its maintenance division. Parks and their facilities must be maintained in tip-top shape at all times. There can be no compromise. It has been my observation that frequently it is not an inadequate budget but, rather, poor organization, improper procedures, lack of supervision and low morale that are the factors that contribute to shoddy maintenance, vandalism and lack of public support for the department. What can be done to improve the maintenance of grounds, buildings and facilities? Here are some suggestions:

- (1) Develop a department maintenance policy setting forth in general terms the standards the department intends to follow in the maintenance of its parks, buildings and facilities;
- (2) Establish maintenance program objectives for the department which sets forth the goals and objectives of the maintenance division, the desirability of uniformity in standards of maintenance, maintenance scheduling, etc;
- (3) Develop a maintenance manual that sets forth in writing the

policies, standards and procedures to be followed by maintenance personnel;

- (4) Accurate recordkeeping and inventories must be maintained in order to insure proper maintenance and cost accounting records;
- (5) Maintenance schedules should be kept so that preventive maintenance on a daily, weekly, monthly and yearly basis is regularly performed. Routine maintenance should be handled on daily work schedules for each individual in the maintenance division;
- (6) Maintain inventories and regular inspection of all facilities;
- (7) Good personnel practices must be followed to maintain a high degree of *esprit de corps* in the division by:
 - (A) Keeping lines of communication open from the top down as well as from the bottom up.
 - (B) Having a continuous in-service training program for all personnel.
 - (C) Recognizing good work. A sincere compliment from the boss is a golden reward to most workers.
 - (D) Providing advancement opportunity on an equal basis for all. Everyone wants to advance if given a chance, and it is one of the keys to high morale.
 - (E) Honesty—fair, honest and impartial standards must be adhered to in dealing with personnel if the department expects workmen to reciprocate.

In conclusion, we in recreation have the most challenging and rewarding opportunities of any profession if we will recognize change and make our departments relevant to the needs of the people we serve.

Mr. Mott is former Director, California Department of Parks and Recreation.

A Financial Management Study for Pennsylvania Parks

by Charles H. Strauss

Budget planning is probably one of the biggest headaches of any administrator. As a service to our readers, we share with you a report on a recent financial management study undertaken by Pennsylvania's Bureau of State Parks.

One of the basic economic questions confronting Pennsylvania's Bureau of State Parks is how to allocate its finite supply of public monies among the ever expanding recreational demands of society.

Most recreation managers recognize the potential impact of the set of initial decisions concerning capital programs on the subsequent problems tied to operating expenses. This relationship tends to be a historic point for argument between park designers and park managers. Unfortunately, the exact nature of these expenses is difficult to predict, and even under operational conditions, traditional accounting procedures seldom differentiate the costs associated with various types of recreation activities.

In an effort to maintain pace with society's demands, capital monies have been appropriated and utilized to expand various types of recreation facilities. The choice as to which activities to expand and their systems of design has been based upon estimates of future recreation demands and the proportion of responsibilities accepted by this public agency. In addition, the Bureau considers the capital and operating costs of these alternates, the political priorities exerted upon their agency and the policies set by their management staff.

Given a particular physical system, encompassing both new and old facilities, the next phase of decision making concerns the operation of these various activities. Budgets must be developed, justified, reviewed and rejustified and re-reviewed—with the final appropriation normally being some fraction of the initial request.

In an effort to better define the economic characteristics of their recreation supply system, the Bureau established a cooperative research effort with Penn State's School of Forest Resources. The project, initiated on July 1, 1973, will monitor financial and related operational features of the Bureau's statewide system for a three-year period.

On a short run basis, the project functions as a management information system, providing monthly summaries of individual park operations for various types of recreation activities. The data system permits comparison of individual state park operations within the Bureau's four management regions. On a statewide basis, the study provides an analysis of operations among seventeen types of recreation activities and the means for identifying variations in operation between different time periods.

The second objective is tied to Penn State's research interests. This same information base is being used to identify the major operational characteristics affecting the Bureau's financial allocations and to discern potential means for improving the efficiency of their system. Although this objective is considered separate from the Bureau's immediate data needs, it is anticipated that its successful conclusion would also complement the Bureau's planning and management functions.

What Kinds of Information Was Collected?

For the purposes of the study, the Bureau's system is considered a recreation production effort. The basic management unit, the state park, is subdivided into the production of seventeen potential types of recreation activities. As indicated in Table 1, various physical measurements define the recreation facilities as units of input. The resulting service, or output, is measured in activity days of service (one person's usage of a specific type of activity during some portion of a given day).

Each of the 110 state parks included in the study submits monthly summaries of data to Penn State for computer processing. Included in this summary are three basic pieces of information. For each

activity available within a park is listed the current inventory of operational facilities, the monthly log of attendance and the amount of monies spent in its operation, maintenance and/or development. The former two items of information are obtained from existing data retrieval systems operated by the Bureau.

Park expenditures are subdivided into salary, wage, contract and small equipment categories. On a daily basis, each employee's time is allocated among the various activities in accordance with the nature of his or her work. At the end of each month, the employee's time is summed within each activity and multiplied by his or her respective hourly plus benefits rate. For employees not in direct contact with specific recreation activities or audiences, such as in the case of an office staff, the park superintendent bases the allocation of time on the overall park's distribution of effort among activities during that particular month. Although this latter approach must rely on the superintendent's intuitive judgement of park operations, it also avoids the pitfall of creating a fixed cost category. Previous experience had shown that the provision of a fixed cost category functioned as a convenient catchall for too many park expenditures, thereby hampering an accurate allocation of total park monies.

The distribution of contract expenses (supplies, vehicle expenses and outside labor services) and for small equipment purchases is also based on how and where such items will be utilized. Rather than pro-rating annual contract awards over each month, the system accepts the total allocation during the first month of the fiscal year, with any adjustments to this figure made during the concluding month. Since small equipment purchases seldom exceed two percent of the Bureau's annual budget, the cost analysis system does not pro-rate depreciation costs over an item's life span. All such costs are allocated among activities within the year of their purchase.

TABLE 1
Identification of Recreation Activities

Pennsylvania Bureau of State Parks

<i>Recreation Activity</i>	<i>Unit of Facility Measure</i>	<i>Description</i>
1. Tent and trailer camping	Number of camping sites	Tent and trailer camping in organized campgrounds.
2. Group tent camping	Daily per person capacity	Tent camping by organized groups—scouting, church organizations.
3. Group camping	Daily person capacity	Indoor pavilion-type camping by organized groups—also including physically handicapped youth groups.
4. Cabin camping	Number of cabins	Weekly rental of "primitive" cabins by family groups.
5. Swimming (beach-type)	1,000 square feet of supervised water surface	Lake shore swimming under lifeguard supervision.
6. Swimming (pool-type)	1,000 square feet of pool surface	Swimming pools—lifeguard supervision.
7. Picnicking	Number of picnic tables, excluding campsites	Family and group-sized picnicking, some shelters in certain parks.
8. Boating	Surface acreage of boatable water	Non-power and power boating in lake areas.
9. Fishing	Miles of fishable lake shore and streams	Warm water lake fishing, some cold water lake and stream trout fishing—regulated seasons.
10. Environmental education	The existence of a program	Scenic vistas, self-guided and naturalist guided trail hikes, evening lecture programs.
11. Hiking	Miles of established trails	Individual and group hikes on established trails.
12. Hunting	100 acres of land open to hunting	Small game and deer hunting—regulated seasons.
13. Pleasure driving	Miles of paved and unpaved roads open to the public	Scenic drives by private vehicles.

The Reporting Device

Each of the state park monthly summaries are keypunched and computer processed to produce the Bureau's management report. The individual state park outputs are organized in terms of the Bureau's management regions, with data summaries and statistical analyses made at both regional and statewide levels. Reports are issued on a monthly, quarterly, semi-annual, and annual basis. Individual park and composite regional reports are distributed to respective park and regional superintendents. In this manner, the management personnel upon whom the data gathering process is dependent have a first-hand opportunity to analyze this information.

The basis report lists the totals for inventory, attendance and operating costs by recreation activity and calculates three average measures of performance for each activity and the distribution of expenditures within and between activities. The three performance measures are: the number of activity days per unit of facility (output per unit input), the operating cost per unit of facility (cost per unit of input) and the operating cost per activity day (cost per unit of output).

Each park report also identifies the percentage of operating and maintenance expenditures within an activity originating from the four budget categories (salary, wage, contract and small equipment). An alternate distribution lists the percentage of that period's total operating monies devoted to each activity. A final item in the report is the amount of money used among activities for the development of new facilities or major overhaul of existing facilities. Although the use of operating monies for development projects has been minor, the Bureau was interested in identifying those parks and facilities forced into these improvement-type programs.

The same format is also used in the regional and statewide summaries. In addition, a statistical analysis is made of the performance measures compiled within the various management regions and within the entire state system. For each of the three activity performance measures, the amount of dispersion about

TABLE 1
(continued)

<i>Recreation Activity</i>	<i>Unit of Facility Measure</i>	<i>Description</i>
14. Ice sports	Surface areas of ice	Ice skating, ice boating, ice fishing.
15. Snowmobiling	Miles of trail	Use of snowmobiles on organized trails.
16. Sledding	Acreage of slopes established for sledding	Winter sledding and tobogganing, separate from snowmobiling and skiing areas.
17. Skiing	Number of lifts	Established slopes for downhill skiing.

a given average is defined in terms of its standard error of the mean. Essentially this statistic measures the dimension of positive and negative limits about the sample mean within which the true mean of the population is located. Since the standard error of the mean is derived from the difference between individual state park values and their mean, this statistic also serves as an indicator of the magnitude of "scatter" of sample values. A relative measure of this dispersion is also obtained by dividing the standard error by its mean, termed standard error as a percent.

First Year Study Results (FY 1973-74)

In terms of budget support the major activities within the Bureau's system are: the four types of camping—using 30.2% of the annual activities budget, picnicking—requiring another 22.2%, the two forms of swimming—with 17.9%, and the combination of boating and fishing—using 15.2% of the budget (refer to Table 2). The remaining activities each require less than 5% of the budget.

Pleasure driving has been excluded from the activity analysis since its primary

function is that of logistics rather than a direct form of recreation. Although the Bureau catalogs the activity days of recreation associated with pleasure driving, their management staff acknowledges this count as primarily a measure of public transit and not, in of itself, a direct form of recreation. However, the maintenance of these road networks did require 12.3% of the total operating budget during fiscal 1973-74.

A different ordering of recreation activities is evident when based on their proportion of total annual attendance. Picnicking now leads all other activities, with 38.3% of the total; followed by swimming, 20.1%; boating and fishing, 18.5%; and the four camping activities with 8.0% of the recreation load.

The potential disparity of devoting 30.2% of the activities budget to 8.0% of the recreational audience found in camping activities requires some additional data. All four types of camping involve a direct user fee. During 1973-74 these receipts covered 40.1% of the Bureau's associated operating costs. As such, the net expenditure for camping amounted to 20.5% of total net activity costs.

By grouping all summer-oriented, day-use activities, the audience represented 90.4% of total park use and required 63.5% of the total budget. Fall and winter activities involved less than 2% of the annual use and consumed 6.2% of

budget. Approximately 21.0% of the 2.7% of budget involved in skiing was covered by user receipts. However, the relatively poor snow conditions during this particular winter season depressed the participation in these allied sports.

The operation of state park activities is a labor intensive effort. Nearly 80% of the annual operating costs are tied to salaried and wage earning employees. Added labor costs are represented under 300 contract monies in terms of hiring outside service needs. Most activities find the majority of their costs attributed to full time or salaried employees. The noted exception is in the case of swimming where the cost of summer-employed lifeguards contributes the greatest expense.

The differential noted between the percent of total attendance and percent of total budget within given activities is directly measured as the cost per activity day (refer to Table 4). Most day-use activities range between 20¢ to 70¢ per activity day, whereas the camping activities exceed this level with costs of \$1.30 per activity day for tent and trailer camping to \$2.77 per activity day for cabins. Snowmobiling user costs of \$2.16 are attributed to the minimal use of the state park trail system during the 1973-74 winter season.

For the 1973-74 sample, four activities had all three performance measures with percent standard errors below 20% (camping, cabins, group tent camping and picnicking). Considering the financial nature of this study, it is of interest to note that these activities consumed 50% of the activities budget. Intermediate dispersions of 20% to 40% were evident within group camping, beach and pool swimming and fishing. This set required an additional 27.7% of budget. All other activities had dispersions exceeding 40% and were associated with 22.2% of the budget.

Within a given activity, the dispersion of state park values is a measure of the real or reported variability of such operations. Variations in the actual attendance load or in the manner by which these estimates are secured will increase the standard error. In like manner, the dispersions about the mean cost per unit and cost per activity day will be a function of the real or reported differences in budget alloca-

TABLE 2
Distribution of Attendance and Operating Costs
by Recreation Activities, excluding Pleasure Driving

Pennsylvania Bureau of State Parks
 Fiscal 1973-74

Activity	% of Annual Activity Days	% of Annual Operating and Maintenance Costs	% Distribution of Activity Cost By:			
			Salary	Wage	300	400
Camping	6.7	21.8	53.2	26.0	20.3	.5
Cabins	.5	3.6	63.0	20.6	16.4	.0
Group Tent						
Camping	.3	2.4	59.0	11.0	29.9	.1
Group Camping	.5	2.4	69.3	7.3	23.3	.0
Picnicking	38.3	22.2	58.8	21.0	19.5	.7
Beach Swimming	16.7	13.2	25.7	61.0	12.6	.7
Pool Swimming	3.4	4.7	26.4	51.9	21.4	.3
Boating	6.7	7.8	57.6	18.9	22.7	.9
Fishing	11.8	7.4	60.0	14.7	24.7	.6
Environmental						
Education	4.9	4.6	55.3	26.5	17.9	.3
Hiking	8.6	3.6	61.9	16.5	21.2	.4
Hunting	1.0	1.7	72.5	5.6	21.6	.2
Ice Sports	.2	.9	73.3	2.0	24.2	.4
Snowmobiling	.1	.7	76.4	1.1	20.0	2.5
Sledding	1.1	.2	69.4	1.8	28.8	.0
Skiing	1.1	2.7	40.6	26.8	26.5	6.1
TOTALS	100.0	100.0	52.1	27.2	20.0	00.7

tions among various parks. The operational characteristics of a given activity may also vary from park to park. Although boating, fishing or environmental education are each considered to be homogeneous activities, variations in their resource base or in the nature of the activity's mode of operation will contribute to the standard error measures.

Utilization of Data Results

The first year's set of information has been used to critique individual park operations and for making budget projections. Individual park analyses are based on a comparison of the park's three performance measures to the region's norms.

For a given measure, a park is judged average if its value falls within the confidence interval constructed about the region's average (the interval is based on a 90%-95% probability level and is normally of the dimension: $\bar{x} \pm 2 \times S_x$).

For situations where a park's performance measure is above or below the region's expected range in values, the magnitude of the difference is noted and its relation to the park's two alternate measures identified. Various patterns among the performance measures can indicate probable causes for such values. For example, since an activity's attendance load will frequently contribute to the total cost of operations, an above average cost per unit of facility could be anticipated when a park registers above average activity days per unit. However, its third measure, cost per activity day, should be within close proximity to the region's confidence interval.

An alternate case would be a park having above average costs per unit and normal to below average attendance

levels. This usually results in its cost per activity day being well above average. Such a situation may indicate an excess allocation of monies to this activity. Should this park have similar patterns among other activities using large proportions of budget, the size of its total budget might be subject to question.

This initial review provides the basis for subsequent discussions between the Bureau's regional superintendents and their park superintendents. Since the cost study output cannot specify the exact cause of idiosyncracies in park operations, a subsequent series of meetings served to uncover the specific reasons behind data values. Frequently the causes have been associated with above average maintenance programs or unusual operating conditions tied to an activity's natural resource base, facility design or program format. These sessions have also confirmed suspected budget allocation problems, with adjustments to activities and aggregate park budgets initiated during subsequent operating periods.

An Overview of the System—Problems and Corrective Action

Data gathering and processing is an expensive proposition. Costs may be enumerated in terms of manpower, computer time or the aggravation of having to fill out forms. The major justification for such an undertaking is in the value of the data or associated conclusions when utilized in a decision-making process. Although this project provides an extensive data bank on financial operations, the Bureau's major interest is in using this information for management decisions. Implementation, therefore, becomes a key word.

Several problems serve to reduce the effectiveness of this implementation stage. There is, no doubt, a potential reluctance on behalf of certain park managers to accept and use new data systems and analytical procedures. This situation may be further complicated if these management personnel are only provided with raw data or superficial analyses of their park operations. Further-

TABLE 3
Operational Analysis of Recreation Activities

Pennsylvania Bureau of State Parks
Fiscal 1973-74

<i>Activity</i>	<i>Activity Days per Facility</i>	<i>% Standard Error</i>	<i>Cost per Facility</i>	<i>% Standard Error</i>	<i>Cost per Activity Day</i>	<i>% Standard Error</i>
Camping	185.7	9.9	\$ 241.40	9.4	\$1.30	12.1
Cabins	624.8	8.0	1,733.26	11.8	2.77	11.7
Group Tent Camping	15.9	18.2	43.05	16.0	2.71	14.9
Group Camping	37.7	26.1	70.56	30.3	1.87	18.6
Picnicking	274.1	14.6	63.99	10.6	.23	18.6
Beach						
Swimming	77.1	36.5	24.55	32.0	.32	21.5
Pool						
Swimming	507.4	37.2	283.73	32.6	.56	15.9
Boating	40.6	58.2	18.93	66.3	.47	29.1
Fishing	3,602.7	31.2	911.58	27.4	.25	35.2
Environmental education	25,654.3	44.4	9,722.26	18.3	.38	113.7
Hiking	3,098.5	38.7	526.65	31.1	.17	46.8
Hunting	1.4	64.3	.94	39.6	.66	28.8
Pleasure Driving	30,917.2	21.0	2,278.66	16.1	.07	30.4
Ice Sports	Insufficient Data					
Snowmobiling	137.0	51.7	295.50	21.5	2.16	100.8
Sledding	Insufficient Data					
Skiing	Insufficient Data					

more, the inherent function of this Bureau as an "action agency" may tend to place operations analysis and long-range planning as second priorities.

The Bureau is countering such problems by promoting the use of the financial reports as a basis for discussion between their various management eschelons. As previously described, a primary system for critiquing state park operations has been developed; with the regional superintendents sponsoring further analysis of these resumes with the park superintend-

ents. The projected use of this cost information in budget formulations places added emphasis on this implementation stage.

The Bureau's central headquarters has monitored all data output since the inception of the study. Their specific interests are in budget formulation and control, analysis of alternative facility designs or programs within given activities and an evaluation of financial support within the various recreational activities.

Additional data output, allied summaries and research projects will be established during 1975 to complement the existing structure of this study. Two companion reports will be issued on a quar-

terly basis. The first will provide a comparison of operations during a given period with the same period in a previous year. A comparison of current expenditures to annual budget will also be included in these state park reports. The second report will automate the evaluation of state park operations based upon performance measures.

An added research objective to the study involves the quantitative measure of quality in specified activities. Among the problems associated with using average performance measures is their inadequacy of depicting either the implied level of quality or the proximity of these measures to the Bureau's performance objectives. As proposed, investigations will be made within individual state parks to gauge the performance of recreation activity systems. The evaluation will consider such functions as logistics, communications, safety, sanitation and the maintenance of physical and natural resources. A composite score will be derived for the park activity and subsequently tested with respect to its costs of operations and maintenance. As in other portions of the study, initial attention will be directed to activities requiring the greatest financial support.

In summary, this research project is centered in an area having received little attention in the past. Prior research concerns over demand and consumer value have overshadowed management's need in better depicting the characteristics of supply. The initial results from this study have proved to be useful inputs to this agency's decision-making process. Hopefully, this data and its methodology will be adaptable to other recreation systems.

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