

**planning
for man and nature
in national parks**

Reconciling perpetuation and use

**by
Richard R. Forster**



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Foreword

This booklet provides reference material and guidelines for those involved in the planning and administration of national parklands. It deals with the special problems of how to cope with tourism and related facility development. It contains an analysis of the common pitfalls of planning and development and sets forth principles and guidelines for preparing management programmes.

In many countries national parks must be justified on the basis of tourism. The resulting pressures from development and increased visitation threaten the very qualities for which the parks were set aside. Management decisions are often made in the absence of definitive or workable international criteria and without comprehension of alternative courses of action, or of their long range effects on national park values. Problems of tourism and intensive development are rarely recognized until ameliorative measures become far too costly. The preparation of long-range management policies and plans upon which normal administration and development decisions can be based, as advocated in this book, is one step towards improving this situation. The objective is to summarize current thinking that will be useful to students, scientists and professional administrators without considerable experience in landscape planning. No single reference now available adequately covers this ground.

The project was first initiated in 1968 with the assistance of Mr. R. J. Benthem, then Chairman of IUCN's Landscape Planning Commission, and Professor C. W. Harris, Chairman of the Department of Landscape Architecture of the Graduate School of Design, Harvard University, USA. It was carried out with the assistance of The Conservation Foundation, USA, and is one of a series of projects on management policies and plans that should be developed within the context of an approach to the single park jurisdiction. It is hoped that other reports may follow concerned with continued development and refinement of the present statement and with specific planning problems of national parks in developing countries.

to

Mary Louise Forster

and to

Melinda Ann Forster

Planning for Man and Nature in National Parks
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National Park Service, these are largely attributable to administrations of the past and the critical review should not be construed as an attack on the competence of the present planning staff. A great deal of excellent landscape planning has been done by the Park Service and where possible this is acknowledged and respected because it is of great value to others. This landscape planning has been accomplished by technical and professional men, many of whom have spent a lifetime in the National Park Service, in Washington and in the field, working empirically, building up a tradition of good planning practice from their own observations, experience, sensitivity and good sense. It is due to their efforts that the US National Parks are planned and managed to high professional standards, and have even survived at all. Such men do not often get their thoughts on to paper or published, but they should be listened to. The planning procedures that are recommended in Chapter 6 have been based largely on the coordinated experience of members of the working, design staff of the Park Service, who have had direct landscape planning responsibilities. Although the present study is more oriented to 'national' or natural area parks, as opposed to game reserves or other kinds of reserves, the principles will apply in many conservation situations where 'public use and enjoyment' must be carefully reconciled with effective conservation.

The project was conducted in four phases. In the beginning, a literature review and problem analysis was undertaken at IUCN Headquarters in Morges, for four months, 1968-1969. During the next phase, 1969-1970, a draft report was prepared while the author was engaged in normal teaching duties at the University of Guelph. The draft was then circulated to reviewers as a working paper for comment in the spring of 1971. Incorporation of suggestions from reviewers and final revision were carried out at Morges in June-August 1971.

Harvard University provided incentive and funds which made the initial trip to Morges possible by awarding a Charles Elliot Travelling Fellowship to the author. The School of Landscape Architecture, University of Guelph, provided clerical services for typing, reproduction and circulation of the working paper. The Conservation Foundation provided an initial grant of \$3,000 for accommodation and living expenses for phase 1 and miscellaneous expenses for phase 3.

Many people provided valuable cooperation and advice while the project was being carried out. Professor Jean-Paul Harroy of the Free University of Brussels, Chairman of IUCN's International Commission on National Parks until September, 1972, provided many useful materials concerning IUCN policy. Russell B. Train, former President of the Conservation Foundation, Miss Ann Satterthwaite, former Senior Foundation Associate, and Timothy Adams, Director of Public Affairs, provided inspiration and assistance in expediting the work. Alfred Hoffmann, Executive Officer of IUCN's Environmental Planning Commission, took charge of the task of corresponding with reviewers and very tactfully handled the job of prodding the author to meet deadlines. Special thanks are owed to Frank Nicholls, Deputy Director-General of IUCN, who very willingly shared his time in order to help sort out ideas and policies during the final editing phase, and Dr. Raymond F. Daamann, Senior Ecologist in the Secretariat of IUCN who updated Chapter 3 and other sections in the light of recent decisions of the IUCN's International Commission on National Parks and discussions at the Second World Conference on National Parks in September 1972. Special consideration is also due to

The concept and point of departure for this study were outlined in a review of national park policies in the United States by Sir Frank Fraser Darling and Noel Eichhorn of the Conservation Foundation ('Man and Nature in the National Parks: Reflections on Policy', 1967) and anticipated in the following quotation from a paper by J. Ise (1964):

... the national parks are primarily, and should remain, natural areas for the enjoyment of men and other animals, and should be managed with this purpose in mind. Man, the visitor, must be looked upon as an introduced species in the ecosystems of the parks, capable of interfering with natural processes. Visitors must be accommodated and developments planned in such a way that overall management of the parks will result in preservation of the unique natural features and habitat... The purpose of the study was to further clarify the nature of the planning problems and various approaches for reconciling conflicting park management interests within the limits of international criteria of recognition and social and economic reality. The study should not be viewed as a suggested cake-recipe solution for manipulations, but as a series of planning and design guidelines which may be useful in the development of management plans. The plans themselves will develop from an understanding of the limitations imposed by the ecological potentials of the particular environments in question and prevailing social and economic conditions.

A large part of the contents are concerned with guidelines for internal deployment of visitors within parks to reduce impacts on valued resources. They should be viewed as interim remedies, since the ultimate solution to the problem requires external manipulations to absorb unwanted impacts before facility development and improper use impair preservation values. That in turn would require an integrated policy for land and resource use which in many countries is difficult to implement politically. For the present, remedies which will at least slow down the rate of impairment will enable park administrators to buy valuable time while public attitudes coalesce and while institutions are advanced for dealing with problems of national parks, and of conservation in general, in a more comprehensive, integrated fashion.

Most of the ideas discussed here are directed to national parks as defined by IUCN in the *United Nations List of National Parks and Equivalent Reserves* (J.-P. Harroy, ed. 1971). Much emphasis has been given to North American conditions as valuable lessons can be gained from experience there, since tourism and related development pressures are now being felt wherever there are national parks. The national park concept involves conflicting ideals for resource perpetuation and tourism development which have never been more than vaguely defined. It originated in the United States and has since been embodied with its inherent problems in the laws for protection and recognition of national parks in many of approximately 100 countries which have such reserves. With mounting pressures for tourism and the need to justify parks on a social and economic basis, it is likely that the pattern of management problems occurring in the United States will be repeated elsewhere. This does not imply that conditions in other countries will not be different, nor that each country cannot, within the broad definition, evolve a system of parks which will meet its own socio-economic requirements. But a fuller understanding of the precedents and of their long range consequence on preservation values is essential if the same policy mistakes are to be avoided.

vided material that was used in developing Chapter 6 of the report, and to Bob Bergman, Jan Bright, Bob Johnson, Ed Peetz and James Steward who developed the US Park Service's 1966 Park Planning Handbook draft from which the section on planning programmes derived much inspiration. Professor Westeroof of the School of Landscape Architecture at the University of Guelph gave most valuable assistance by preparing the illustrative sketches.

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1 Introduction

Increasing numbers and densities of visitors and increasing pressures for more accommodations for tourism are threatening some of the most meaningful natural and historic resources of the world's national parks and equivalent reserves. National parklands are major national and international attractions simply because they are valued ground, so that the very qualities that people come to enjoy are likely to be destroyed under the impacts. The threat developing within the parks is as old as the parks themselves, but it has only recently been realized as needing attention in addition to the more widely recognized external pressures for exploitation of economic minerals and game and timber resources.

In economically advanced countries, rapid and massive increases of affluent visitors to already overcrowded parks are not only causing damage from the impact of numbers of feet, but are bringing more of their automobiles and accompanying paraphernalia into the parks and are constantly demanding more and better facilities for their comfort and entertainment. Ecosystems and the natural character of park environments are being drastically altered as the parks are being transformed more and more into commercial and urbanized attractions. The problem is that numbers of visitors are increasing more rapidly than the development of appropriate new parklands to absorb them. The conveniences and kinds of recreational opportunities the public have come to expect from their national parks often conflict with the overriding goal of perpetuation upon which the national park concept was based.

In less advanced countries or regions, park management emphasis on profitable tourism is setting the stage for the same series of problems that occurred in the older national park systems. Based on the history of the North American examples, the consequences are predictable—impairment to valuable park resources through ill-conceived or poorly planned management compromises between environmental preservation values and commercial interests. If present trends continue in both developed and less developed countries, unique and highly valued ecological situations or scenic qualities will simply disappear as the way is paved for the mass recreating public and the desire to reap profit.

National parks and equivalent reserves serve a unique role in preserving representative samples or outstanding examples of relatively undisturbed

natural features and habitats for both present and future generations of mankind. Depending on the nature of the resource—whether they consist of plant and animal species and their habitats, geomorphological sites or landscapes of great beauty—they are valued for a range of specialized purposes. If the trends continue it will soon be too late to do anything about perpetuating some of these most valuable assets. The problem before park planners and administrators is to encourage public understanding and support by carefully exploiting the economic, educational and recreational potentials of parklands. Management policies must recognize the long range scientific and cultural values of resource perpetuation and reconcile these values with the more immediate demands for public benefit and enjoyment and with the concern of politicians and administrators for economic justification for park appropriations.

In Chapter 1, the dilemma over perpetuation and use is reviewed as it caused impairment to park values in the oldest national park system which is in the United States. Many problems now being experienced there could have been avoided earlier with better understanding of park resources and perpetuation use purposes, and better planning. Chapter 2 traces the management dilemma to its root source, the vague ideals of the national park concept itself. Popular ideas of visitor use are compared with these ideals and it is concluded that if national parks are to be handed on to posterity 'unimpaired', more precise definitions of perpetuation-use purposes must be entertained. This means that some parks, or parts of them will have to be used less intensively. And there are serious, practical implementation constraints to be overcome.

Chapter 3 deals with the problems of establishing international criteria of recognition for national parks and equivalent related reserves. Despite a number of well-intentioned efforts that have been made to improve them, existing criteria remain relatively ineffective for ensuring proper control over tourism and related developments. They are far too narrowly biased toward scientific purposes and offer little guidance for reconciling the conflicting demands. They have caused much frustration for park planners and administrators who face enormous political and economic pressures to permit gradual commercial and recreational exploitation of park resources and subsequent erosion of park values for the sake of people and profit. Administrators cannot choose to ignore use trends as the very existence of national parks depends on public support. To cope effectively with the trends it will be necessary not only to define more precisely how national parks are to be selected and managed and what is to be done about their inherited mistakes, but one must also think in terms of a comprehensive set of alternative institutional patterns for many other equally necessary types of protected areas, such as nature reserves, historical monuments, outdoor recreational areas and protected landscapes, each of which should in principle have its own defined criteria and its own laws of recognition and protection in each country.

Such complex issues cannot be immediately resolved to universal satisfaction for incorporation in some appropriate International convention, as much debate will be required before this is accomplished. Nor will international criteria alone suffice, as special management plans are required to interpret universal criteria for each area with respect to local conditions. Effective management for reconciling perpetuation and use must be based on the philosophy that long-range planning is necessary and can only proceed from a clear understanding of each area's physical and intangible resources and all of the objective factors which bear upon them.

It is within this context that an interim solution is proposed to close the most obvious gaps in international criteria, that long-range management policies and plans be documented for administration and development of individual parks. They would identify the kinds of features and ecosystems that are valued, the state in which they are to be perpetuated, how they are to be used and made more meaningful to visitors and what contingency measures will be taken to avoid unwanted pressures.

Manipulations within the areas controlled by national park administrators will effect certain improvements but these amount to temporary solutions, simply delaying the flood tide of visitors and development. The long-range solution to the related tourism problems of improper use, overuse and overdevelopment lies largely outside the boundaries of national parks. Truly effective management for achieving long range perpetuation will be possible only if unwanted pressures can be absorbed elsewhere, when national parks are planned in relation to other recreation and open spaces and to other land and resource uses. This can only be achieved by a coordinated approach to planning for man and environment, and by development of an integrated system of open spaces, parks and recreation areas. All conservation and recreational needs would have to be internally reconciled according to the potentials and limitations of the available natural and cultural environments. Various elements of the system would also have to be balanced with competing demands for other land using activities and with social, economic and political influences that form the entire man-environmental system when viewed as a whole. This concept for planning of integrated open space-recreational systems is detailed in Chapter 4.

As people multiply and per capita income and consumption continue to rise along with more sophisticated technology, it would appear that the immediate prospect is for worse conditions with respect to national park problems and to the maintenance of a healthy overall relationship between man and his environment. The long range survival of mankind depends upon our ability to achieve balance in the biosphere by learning to live in harmony within the total man-environmental system. The conventional wisdoms of our inherited attitudes and traditions and of our fragmented governments and their bureaucratic methods continue to promote unlimited population growth and rampant application of technology without due consideration of damaging side-effects or long range benefit-cost ratios. This course is leading us to the brink of large scale ecosystem breakdown and possible world disaster.

New control measures are needed to overcome the inertia of these traditions. Conservation and the long-term effects of resource use should be considered within the framework of an integrated national policy on the quality of the environment, on population, economic expansion and land and resource use. Unfortunately in many countries, our attitudes and institutions are not yet prepared to deal adequately with conservation problems within this larger context of balance and biosphere. In the absence of comprehensive and integrated resource policies, national parks and equivalent reserves continue to play a most significant role of conserving in the national and world interest. The setting aside and maintenance of specific natural and historic areas as sanctuaries must be pushed with full vigor. But prospects for their continued survival as ecological islands amid surrounding environments of biophysical ruin and over-whelming pressures for exploitation could hardly be optimistic at this point.

Although we must continue to work toward a more integrated approach, much can still be done within the parks themselves to assure continuity and effective-

ness in conserving the particular qualities for which they exist. There is need for more adequate long-range planning for each park unit based on sufficient research to establish flexible but workable management programs, which set forth a framework of coordinated policies and plans for development and normal administration and use consistent with defined perpetuation objectives.

In Chapter 5 planning principles are suggested for reducing impacts within the single park jurisdiction. Through diversion and concentration of unwanted activities outside smaller parks or within larger ones, tourism pressures can be reconciled with perpetuation and use objectives at least for the short run.

In Chapter 6 a general procedure is outlined for preparing management policies and plans for perpetuation, use and interpretation.

Finally, as the need for planning will normally exceed the resources of many governments, it is concluded that a coordinating mechanism be formally established to identify where help is needed, where it will come from—within the country in question wherever possible or from outside where necessary—and to mobilize the available resources and manpower for international park planning assistance programmes.

National park administrations must deal with people, natural and cultural resources and environmental support systems. National parks exist within an intricate complex of factors of a social, political, intellectual, sentimental, economic and ecological nature. Daily administrative decisions obviously depend on compromises between these variables. Management problems develop within certain sets of these conditions and within the limitations imposed by two major constraints—the ecological potentials of the available environments and the kind and quality of experience to be maintained for visitors. The range of variables administrators have to contend with are similar in both developing and technologically advanced countries, but the ability to deal with them in terms of trained manpower resources is frequently not. The need for long range planning and for effective control measures is also much the same in both situations, but more elaborate procedures are required within increasing intensity of use and modification of the natural landscape. Events must be anticipated and planned well in advance, for corrective measures are more difficult and costly than avoidance of problems in the first place.

Planning to reconcile the present and future needs of visitors with effective conservation for all generations is a very demanding task. It requires the cooperation and support of scientific experts who contribute their collective knowledge toward an understanding of the nature of people, park resources and the workings of environmental support systems. It requires the insight of applied ecologists who can gather and interpret this information from the natural scientists and view it as a whole in terms of ecosystems and the effects various developments may have upon them. Finally, to guide the decision-making process toward an operational plan for management, professional programming and design skills of park planners are needed. Such persons are likely to be professionally trained in landscape architecture and park management but they may emerge from one of a number of applied fields given broader experience in interdisciplinary problem-solving and design. Planners communicate with all who have an interest in management of park resources, assist in weighing all of the evidence, devise management strategies to reconcile conflicting interests and guide the planning team in developing policies and plans for resource perpetuation and use.

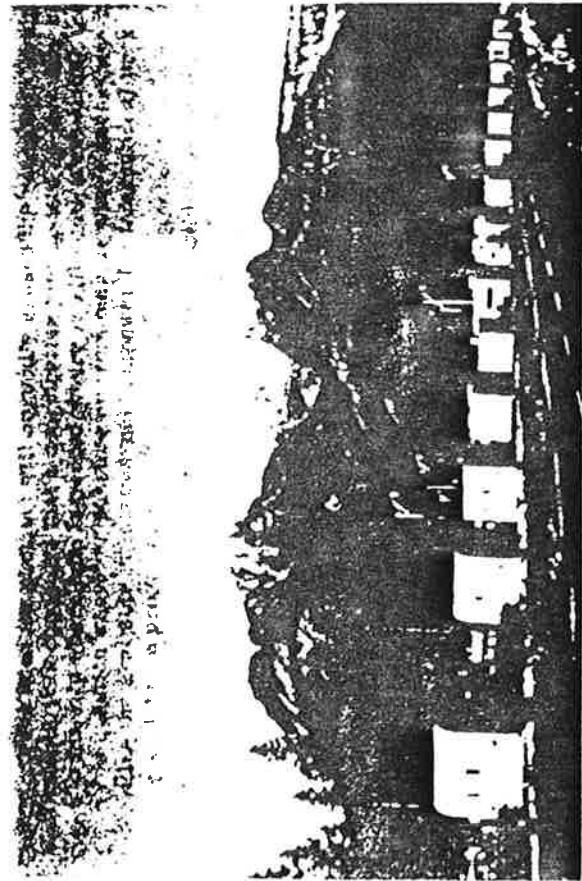


Photo 1. Tunnel Mountain Camp Ground, Banff National Park, Alberta.

*Courtesy: National
Parks Branch, Canadian
Department of Indian
Affairs and Northern
Development.*

2 The Perpetuation/Use Dilemma

American national parks have long served as examples of achievements others sought to attain. The careful siting and blending of architecture, roads and other improvements to minimize intrusions upon the sanctity of the parks and to give animals, plants and scenery their foremost places have been appreciated abroad as well as in the USA. Over the years park systems in other countries have been very largely based upon the American concept. But in the meantime, in the United States, both parks and country have changed. As a result of the technological revolution the National Park System has suffered physically from unforeseen impacts of the automobile, increased leisure, and from the success of public interest expressed as numbers of visitors. Current problems can be traced to a series of events that occurred during the early development of the system. Understanding what went wrong gives valuable insight for corrective measures where similar problems are occurring and the reason for careful planning to avoid the same mistakes in newly developing park systems.

Ambiguity concerning purpose or appropriate use, and lack of ecological understanding, have been the major reasons for the management dilemma.

Such confusion has existed since the birth of the modern idea of National Parks in 1872, when the Yellowstone area was dedicated as a 'public park and pleasuring ground for the benefit and enjoyment of the people'. The reason for the dilemma was later phrased officially in the National Park Act of the United States, adopted in 1916, which states

'... the fundamental purpose... of the parks... is to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.'

Perpetuation was thereby recognized as the function of the parks and recreation as a legitimate use, providing it was consistent with leaving resources 'unimpaired' for future generations. Although this statement seems quite adequate, it was not sufficient by itself to guide appropriate management decisions. The two goals of perpetuation and recreation were in basic conflict.

After establishment of the Park Service in 1917, as a bureau of the Department of the Interior, the basic ideals of national parks and the National Park

Act were quickly translated into universal administrative policies to which the Service would adhere. The most significant policy statement was developed in 1918, when Stephen Mather was the first director of the Service. It came in a letter from Franklin K. Lane, Secretary of the Interior.¹ Lane's policy from the protection viewpoint was that 'national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of the present time'. Every duty of the Service was to be subordinate to preserving the parks for posterity in essentially their natural state.

From the visitor standpoint the above was contradicted with a policy that called on the Service to afford the public every opportunity to enjoy the parks in the manner which best satisfies individual taste. The parks were to be made 'accessible by any means practicable'. Automobiles and motorcycles were especially singled out to be allowed in all of them. Commercial uses that were incidental to the accommodation and entertainment of visitors, including 'comfortable and even luxurious hotels', were to be provided wherever the volume of traffic warranted their establishment. Moreover, the Service was to utilize railroads, Chambers of Commerce, tourist bureaux and automobile associations to promote all of these things to the fullest extent. The policy statement thus set the conflicting standards for subsequent administrations and the national park idea was attended with the same ideals as it quickly spread about the world.

Such standards were meant to guarantee excellence, but since they were decreed as blanket policies to apply to all parks of the system, they had to be very general in nature leaving much room for local interpretation and eventual abuse. In some cases where they were specific as in the case of hunting, they were so arbitrary as to restrict scientific management practices required to maintain healthy relationships between local animal populations and their habitats. It was to be discovered much later that universal policy standards could not substitute entirely for management objectives and policies derived from the special conditions of each park.

Secretary Lane's policy statement did call for the preparation of comprehensive plans for future development of each park as funds became available. But during the early period of development there were no such long-range policy plans for guiding consistent use or management practice or development of visitor facilities. It was inevitable that problems would develop without clearly established criteria serving as a basis for regulating various uses and their impacts, and with free public access practically guaranteed by the Act itself.

Many fine parks were subsequently created with little more to guide management decisions than the two vague goals which were in tension. What was lacking was a social, economic and, above all, an ecological understanding of such national park situation with management objectives and principles derived from those circumstances. Management decisions following park establishment could have been more rationally determined had the original Act or subsequent policies required that a clear statement of management objectives developed for each park and area within it, specifying what particular resources were valued and how they were to be maintained or properly used. Such policies would have guided more appropriate use and development consistent with maintaining for posterity the ecological health and essential character of the parks.

See Appendix for the complete text of Secretary Lane's letter.

Until very recently little consideration was given to ecological matters at all. Many mistakes were made because administrators involved did not comprehend the ultimate effect of what they were doing. More comprehensive plans that specified how the parks were to be managed based upon such ecological understandings could hardly have seemed necessary during those early years of development. Fifty years ago most of the parks were in remote areas and very few people were able to use them. Future conflicts over poorly understood management purposes were difficult to anticipate. There were no precedents for today's visitor problems and forward-thinking conservationists wouldn't have dreamed the parks would develop into urbanized, commercial attractions they are now becoming.

One of the biggest problems for early administrators was not of sharply rising numbers of people using the parks, but of unforeseen situations piling up with little or no money and no legislative support to maintain law and order (see F. Fraser Darling and N. Eichhorn, 1967). Tourism was much promoted and the parks were used by governments to attract visitors to stimulate economic development in sparsely populated regions.

All of this is not to suggest that there was never any planning. There was. Secretary Lane's policy had also required that all improvements be carried out in accordance with preconceived plans but these plans were only for particular development areas within a park. They were not comprehensive plans for management of the park as a whole. Development planning really began in earnest with the great effort that was put forth during the Federal works program of the depression years in the nineteen thirties. Competent planning professionals were involved, including landscape architects, but planning was dominated by a one-sided administrative view toward engineering roads, hotels and other related facilities to accommodate immediate needs for the attraction, comfort and entertainment of visitors. Clearly, the major aim of the works program was to create needed construction jobs for large numbers of unemployed workers.

In subsequent years park administrators continued to give little thought to the prospect of conflicts over perpetuation and concentrated visitor use. For many administrators, their principle aim was to encourage more visitors in order to show higher use figures to justify larger government appropriations. These were in turn used to provide more recreational attractions and visitor services in a spiralling development cycle. Such accomplishments were likely considered a measure of success by one's administrative superiors and large administrative empires amounted to more prestigious positions. Even the conservationists failed to grasp the significance of the development trends until very recently. Their main task had been simply to create parks to set aside the most outstanding features and environments before they were privately exploited.

Tourism continued to be promoted to justify the parks. Elaborate programmes were launched with the many 'Mission '66' development projects and the more recent program whose guiding principle is that 'parks are for people'. The objective has been to make the parks and areas within them more accessible and to increase visitor facilities.

As the so-called 'playground' view was promoted with much publicity from organized travel excursions by the railroads, chambers of commerce, etc., numerous improvements, concessions and compromises were made to provide for apparent visitor wants. Although they may have been consistent with the policy established by Secretary Lane, types of commercial development

and exploitation were allowed which were inconsistent with national park ideals for preserving natural wonders in their natural condition. With all the publicity they were receiving, national parks soon became national symbols that were much sought-after for all kinds of entertainments and recreational activities. The unfortunate result of all this was to further administrative misunderstanding of the conservation function and the special recreative values of the parks. The public had become over-confident about the integrity of their policy-makers and the wisdom and knowledge of parks administrators.

Although the roots of current problems in the American National Parks lie in the National Park Act and subsequent statements of policy, they did contain all that was necessary for preserving the wilderness quality and ecological integrity of the parks until the end of World War II. It is unfortunate that only now are the effects of development and inundation by visitors being recognized at their true destructive worth.

After 1945, the rapid rise in population and economic expansion along with increased income, leisure-time, mobility and the general urbanization trend brought unprecedented increases in recreational demand for natural resource areas. The demand far exceeded the provision of appropriate and convenient areas to meet it and national parks faced the problem of providing for many of the varied recreational needs of people who lived in cities and towns. Although there was no corresponding increase in the size or number of national parks, it was generally assumed that they would continue to absorb more people and development.

The national park idea was never intended to fill every recreation need or interest, only those which provided rest, knowledge, inspiration and enjoyment through contact with nature. The new waves of visitors had more modern standards of comfort and more sophisticated ways of amusing themselves. Many people sought more artificial forms of recreation such as power-boating, power-tobogganing, motorcycling on unimproved trails, sporting events, arts festivals, conventions and other entertainments that were neither necessary nor within the spirit of the original idea of national parks. Few other opportunities were being provided, however. With no overriding concept of use besides guaranteeing access for public enjoyments that would suit everyone's taste, visitor pressures were accommodated by making adjustments to suit their needs and numbers.

All too frequently a simple economic avenue of approach to planning was taken. That is where money is allocated for improvements based on what typically uninformed city-conditioned, casual visitors to national parklands thought of as they supplied off-hand answers to formalized demand questionnaires (see A. Carhart, 1964). Because administrators had misunderstood the underlying recreational value of the parks this amounted to adjustment planning; simply making changes and providing facilities in each park unit from one uninspired demand analysis to another, with little consideration of what might eventually happen. Demand without long range design and without much inspiration or imagination thus became the guiding policy. More localized site planning occurred to push more roads and facilities into more areas of the parks. The public was given little opportunity to consider alternative courses of action or the consequences. They were not given the choice of natural areas for science and for experiencing the unique kind of re-creation available through inspiration, aesthetic enjoyment and educational discovery.

Master plans which had come to be widely used were mainly instruments for recording development. They were simply adjusted to provide more service and recreational facilities in accordance with newly anticipated use figures. These master plans lacked proper considerations for ecology and contingency measures for dealing with possible saturation of areas with visitors. Each succeeding administration therefore tended to make matters worse by adding incrementally to already complicated development patterns within the parks. And there was a tendency to exploit every natural charm far beyond the capacity of the land to absorb development or recover from wear and tear (F. Fraser Darling and N. Elchhorn, 1967).

Through this misguided planning process each park was treated in isolation, not only from its immediate surroundings, but from other public and private recreational development as well. There was not much enthusiasm for coordinating planning with regional and local agencies or the private sector concerned with recreation, although this was specifically called for in Secretary Lane's policy. In some cases other public and private agencies could have profited by providing recreational opportunities that would have reduced the pressures on national parks. Allowing concessions within the parks had the effect of granting monopolies and stifling competition which would have caused these services to be located outside the parks.

During the 1960's there was a sudden awareness that national park environments were being subjected to irreparable damage while undergoing rapid and fundamental change in both their ecology and perceptual character. Many people felt the parks should maintain natural conditions which existed when or before they were set aside.

The nature of change within national parks had two different aspects which are reflected in the overlapping value orientations of two groups. Those who valued the parks for scientific reasons—mainly for preservation of specific floral and faunal resources—became concerned as increased visitor activity disrupted the delicate balance of ecosystems upon which the features they valued depended for life support. Use of scientific management techniques became necessary to maintain biological stability and such positive interferences came to be more widely accepted. But there were limits to what one could do artificially, especially when there was so little research available.

People who valued park wilderness experiences became more concerned as primitive areas where one could probe relatively undisturbed nature were being nibbled away by development. In our rapidly urbanizing world, remote places of solace that are relatively free from the effects of man are becoming a scarce commodity. These environments will be even more valuable over time as they provide contrast and relief from congested and highly regulated urban conditions and a unique setting for regeneration of the spirit. The range of choice for such qualitative re-creational experiences narrowed as each feature and remote area was made accessible with roads and related visitor facilities. National parks were becoming urbanized like everything else and would no longer offer a retreat from urban environments that increasingly placed more restrictions on the individual and his freedom of movement and activity.

In the United States, with the exception of a few short years during the nineteen thirties, when park development plans had to be approved by biologists as well as by landscape architects and engineers, the biological approach in planning has been largely resisted. Administrations have been dominated by visitor-development oriented professionals or by non-professionals with all

... increases will parallel increased attendance; more intense usage seems inevitable.

Developing countries are especially in a position to benefit from American mistakes. In the less advanced world, the economics of tourism often argue for the use of land for national parks, since it brings in strong foreign currency to shore up the international balance of payments. Problems of exploitation and development are already being felt and will be even more significant as the economics of international tourism are destined to play an even greater role in the administration of national parks in these areas. Many governments will grasp for industry of any kind at any price, just to get high paid jobs and foreign currencies. They may tolerate the worst kinds of exploitation and management practice in their national parklands, and the advanced countries with older park systems have hardly set a proper example to aspire to.

For the sake of science and preserving natural areas for solitude, it will be necessary to exclude certain aspects of tourism and intensive recreation. But it may be impossible to get appropriations for parks that do not support the national economy or satisfy the immediate needs of less affluent nations. Public support for large restricted reserves will be difficult to obtain when there is scarce capital and little local recreational demand for national areas. Hence it may be sometimes necessary to develop elaborate plans for tourism in order to have large parks set aside.

The basic dilemma is that although parks are created for man and will have to be used if their future is to be guaranteed, commercial exploitation for tourism must be strictly controlled. This poses an almost impossible situation for ensuring resource perpetuation. The implications are obvious. If national parks cannot be somehow exploited for the national economy they simply won't exist. If tourism pressures cannot be handled sensitively the 'goose that laid the golden egg' will soon be lost to urbanization.

On the surface, problems may seem of an entirely different order to newer park administrations in developing countries where it may be felt that administration is in the safe hands of competent foresters and wildlife biologists. Here one can foresee problems of a similar nature arising from overweighing administrations with narrowly trained professionals and scientists who have little appreciation for the economic significance of tourism or the skills to positively cope with it. This too can cause problems, as the needs and potential numbers of visitors can be easily misjudged and physical design for development handled insensitively, without professionally trained landscape architects and park planners to reconcile use with long range perpetuation values.

Even scientists and ecologists do not tread invisibly like angels in carrying out their duties, but are liable themselves to create damaging pressures on national park environments. They are also much in need of supervision and restraint. Ecologists and planners must work together toward what must be a comprehensive and truly interdisciplinary long range planning effort.

With continued growth in population and increasing urbanization in both developing and technologically advanced areas, the need for natural areas and their values will become even more evident. It is therefore important to recognize these values now and take them into account by effective planning for allocation, management and use of national parklands. The costs of action

... will be much less than the consequences of in-
action. Restoration and perpetuation of national park environments will
become progressively more difficult the longer it awaits comprehensive
treatment.

3 International Criteria and The Planning Function

Before examining international criteria it is worthwhile to consider what may be regarded as the two overriding functions of national parks.

First, it may be recalled that the perpetuation/use dilemma stemmed from the ambiguity of the concept of national parks itself. It developed very rapidly over a short period of 30 years following 1872 and its vague ideals were subsequently frozen into various national park acts. As the terms did not adequately specify what benefits or what kinds of enjoyment were to be derived in perpetuity, or under what conditions, it did not take long for legislation and administrative policies to become completely unworkable and out of place.

To its originators in Yellowstone, the national park idea meant preserving natural wonders for all to enjoy. The concept of 'enjoyment' was probably understood to include such things as viewing, hiking, swimming, sport fishing, canoeing and horseback-riding. All of these activities were resource-based, involving fundamental and direct communication with nature in a setting not materially altered by man. Primitive wilderness camping was a means for extending the period of observation, allowing deeper penetration of the parks and a better understanding of nature.

Later, in 1914, with the establishment of the Swiss National Park through the efforts of Paul Sarasin, the idea of preserving for the 'benefit' of science was added to the original concept of preserving for all to enjoy (J.-P. Harroy, 1969). Scientists felt that certain relatively undisturbed natural environments should be set aside largely because it was believed that there would be enormous questions of ecological adjustment in the future between man and his environment and reference areas might well provide essential leads for improving the relationship. Many scientists subsequently came to believe that the scientific and educational reasons were the overriding ones for preserving specific tracts of land. National parks were therefore viewed as a highly specialized form of land use which could not be adapted to the widely varying expectations of all who might use or value them. It would be unlikely that they could fulfill their scientific and educational role by accommodating unlimited visitation.

Today, these ideals have come to mean something quite different to the general public. Under the category of 'benefits' come such things as trailer campsites

with laundry facilities, sewage outlets, and electrical connections and marinas, aircraft landing strips, hotels, shops, grocery stores, highways, medical facilities, cocktail lounges and restaurants. In other words the concept of benefits to be expected from a national park has come more and more to mean material conveniences and physical comforts. Under the category of 'enjoyment' today comes not only viewing, hiking, swimming, fishing and canoeing, but also movies, sporting events, and all sorts of activities that have little to do with simple observation and appreciation of nature for inspiration, regeneration of the spirit, education or science. Thus the concept of enjoyment is now widely understood to mean artificial entertainment.

In the last few years, increasing use has been made of the term 'national park' in some countries to designate areas with increasingly different status and objectives. As people subsequently came to look upon the parks as places where they could recreate in all sorts of ways and be entertained by all sorts of artificial devices, governments who encouraged this view in the first place then took the approach that parks should be even more user-oriented—especially since entertainment provided more revenues. The popular interpretation of park objectives has been to permit, in fact even to encourage, all kinds of tourism and artificial recreation and to develop national parks along summer and winter resort lines. As more roads, visitor service centers, resort villages, sporting complexes, and other facilities are constructed, the perpetuation function diminishes in importance. Although there are few cases where this interpretation has completely ignored the value of nature, that value has taken a decisive second place.

The current administrative viewpoint is that parks are above all for people and must accommodate popular recreational preferences, although other values are recognized—aesthetic, inspirational, educational, historical, scientific and extensive use-recreational. Because they must be supported by people, the ethic that nature itself should be allowed the right to exist, free from human modification, especially where man has not been a part of it, finds little administrative support in effective protection of undisturbed ecosystems. Even when it is argued from the anthropocentric viewpoint that for the sake of man's own future, samples of undisturbed ecosystems should be preserved to maintain the natural diversity of species, this concept of 'benefits' finds little administrative enthusiasm or support when it comes to halting incremental development.

What is widely misunderstood by politicians and administrators is that the concept of 'enjoyment' envisaged by the men who began the national park movement, was for uses that brought visitors into communication with nature. Therefore, one of the most significant qualities of national parks was their primitiveness. The unique aspect was preserving so that both present and future generations could experience the geomorphological features and biotic communities in their natural setting without dominating evidence of the works of man.

It is interesting to note that natural environments provide a highly inspirational and educative form of re-creative experience, with opportunities for reflection, spiritual enrichment and cognitive development through exposure to life processes and natural systems. Communication with nature is best experienced when one is removed from the crowds and confusion of more structured and stressful urban environments. Increasing development in the parks leads to increasingly congested park environments contrasting in form to the urban environment perhaps, but yielding quite similar experiences. These modified environments clearly serve recreational purposes. But their

natural and primitive qualities are not being adequately respected for the unique opportunity they provide for solace and relief and for furthering individual understanding and development. Automobiles, elaborate road networks, power-boats, power-toboggans and camping trailers with TV have all been considered necessary devices allowing access and extending recreational opportunities within the parks. But they are simply artificial and mechanical diversions that have become mere entertainment ends themselves. Because of noise, physical barriers, or concentrated efforts to use them, they tend to exclude the possibility for meaningful experience and communication with nature.

Many administrators seem to have forgotten these underlying functions of national parks. It is unfortunate that management emphasis leans so heavily toward attracting and accommodating visitors and popular forms of activity when protection of recently undisturbed ecosystems, for extensive resource-based use and for science, is commercially unprofitable for private developments. It can only be achieved with large scale public investment.

It is equally unfortunate that park administrators have seldom had the benefit of clearly defined purposes to guide consideration on these issues. Effective planning must be based on sound objectives and can proceed only within a framework of firm policies regarding national park purposes. Much of the confusion over proper management could be avoided with a workable and universally accepted determination as to the specific functions and proper uses of national parks. The whole concept could be refined or redefined in terms which are more qualified than those of 1916-17—that is, of course, if natural qualities are to be perpetuated for science and for their unique opportunities for spiritual enrichment and education, or the special kind of re-creation and enlightenment which only national parks can provide.

In order to inspire countries to establish national parks and properly manage them, a number of international conventions have been devised providing definitions and criteria. The most significant ones were the Convention Relative to The Preservation of Flora and Fauna in their Natural State done in London in 1933; the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Washington, 1940); and the African Convention for Conservation of Nature and Resources (Algiers, 1968). The definitions in these conventions arose from the special conditions within the participating countries and, while they have served immediate ends, none are broad enough in scope or sufficiently definitive for universal application. As the conventions developed largely due to the efforts of the scientific community, it is perfectly understandable that they are biased toward the scientific viewpoint. As we shall see, this goes to the opposite extreme from the administratively popular view that parks are for people and must accommodate everyone's recreational preferences.

Since its beginning, IUCN and its International Commission on National Parks (ICNP) have been working on nomenclature and definition in cooperation with various governments and international organizations. Arriving at a universal agreement has been complicated by many factors, however. They include the enormous complexity of differing ecosystems in various countries, the degree of primitiveness of park landscapes—ranging from wilderness in some North American parks to the intensively humanized parks of Japan—and the diversity of management procedures required to conserve them. Park programs and policies also differ widely according to local population densities, the state of economic development and socio-political climate. Even the degree to which

it is considered necessary to exercise public control of land and water rights varies considerably in different countries. And many of these things can vary from park to park within any one country.

UNITED NATIONS LIST OF NATIONAL PARKS AND EQUIVALENT RESERVES

At the request of the United Nations Economic and Social Council in 1959, IUCN undertook a long series of enquiries which resulted in publishing the United Nations List of National Parks and Equivalent Reserves in 1967 in French. Before drawing up this list, IUCN's National Parks Commission (ICNP) first set forth three requirements for what was considered to be a 'national park or equivalent reserve' as distinct from any other protected area. These were protective status, minimum size and effective enforcement status. They had to be satisfied before any area, national park or equivalent reserve could be included on the international list. Professor Jean-Paul Harroy, ICNP Chairman and editor of the List, found that the first criterion, i.e. protective status, was difficult to apply without being subjective or, as he later explained (J.-P. Harroy, 1969):-

'A priori, the ICNP stated that as a basic principle, the title 'national park or equivalent reserve' could only be applied to areas which had been accorded a legal status protecting them from all natural resource exploitation by man and from any other threat to the quality of the area. When exceptions may in very special circumstances be made in regard to this principle, it emphasized that they must invariably be regarded as exceptions.'

Those natural resource activities which should normally be excluded from national parks and equivalent reserves are cultivation, cattle breeding, hunting, fishing, lumbering, mining operations and dam construction. On the other hand, those threats to the quality of the area which should be avoided are residential developments, commercial or industrial enterprises and the building of roads, railroads, aerodromes, ports, power lines, telephone lines etc.

One can easily understand how difficult it is to ask that these principles be strictly applied everywhere in the world.

Local exceptions had to be admitted for a variety of reasons which can only be briefly stated here: building (offices, lodges, roads, etc.) necessary to the life of the staff, tourist facilities which, in some cases, were highly developed; some pre-existing rights also had to be recognized in a few areas. Sport fishing had to be admitted as a general policy. This activity has been accepted in many national parks and equivalent reserves in North America.'

On the other hand, the other two requirements were found to be relatively easy to apply objectively:-

'An area which is too small is not included. Neither is an area which although afforded stringent protective measures by law or decree, cannot be effectively controlled, due to a lack of patrolling staff. Arbitrary numerical limits were set forth, establishing a scale for these objective criteria. In densely populated countries (more than 50 inhabitants per square kilometre), an area, to be included, should be more than 500 ha and have at least one guard and a minimum annual provision of US\$800 to ensure management and supervision per unit of 4000 hectares or part

thereof; and in countries with less than 50 inhabitants per km², the minimum size should be 2000 ha, with one guard and US\$500 per 10,000 ha unit. Smaller areas could occasionally be listed if, after receiving a particular request from the national authority concerned, the Commission deemed it advisable to include them. The special reasons permitting their inclusion were briefly stated in the list itself.'

Professor Harroy notes that two other principles were officially recognized by ICNP in its selective criteria. They concerned scientific management or 'control' and the principle of 'zoning'. The control principle was related to the need for scientific intervention to assure maintenance of biological balances in the ecosystems that were valued. A strict policy of non-intervention was considered undesirable as it would prohibit controlled hunting or grazing necessary in many areas to maintain healthy relationships between animals and their habitat. The second principle, concerned with zoning, was included to avoid absurd exclusions of large parks which had sectors within them which were occupied or exploited but which also contained substantial areas fully satisfying the ICNP criteria. Thus, the general rule followed in considering exceptions to the three major criteria was to decide whether, in the particular park under consideration, one or more valued ecosystems existed, completely or nearly free from human occupation or disturbance.

IUCN-ICNP TENTH GENERAL ASSEMBLY RESOLUTION, 1969

Although the United Nations List was therefore based on the specific criteria described above, it was clear that a more definitive description of the terms national parks and equivalent reserves was still needed. In response to the confusion that existed over terms and considering the increasing use which had been made in recent years of the term 'national park' to designate areas which did not meet UN criteria, the 10th General Assembly of IUCN meeting in New Delhi in November 1969, adopted the following resolution (IUCN, 1970):-

'that all governments agree to reserve the term 'National Park' to areas answering the following characteristics and to ensure that their local authorities and private organizations wishing to set aside nature reserves do the same:

a National Park is a relatively large area (1) where one or several ecosystems are not materially altered by human exploitation and occupation, where plant and animal species, geomorphological sites and habitats are of special scientific, educative and recreative interest or which contain a natural landscape of great beauty and (2) where the highest competent authority of the country has taken steps to prevent or to eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphological or aesthetic features which have led to its establishment and (3) where visitors are allowed to enter, under special conditions, for inspirational, educative, cultural and recreative purposes.

Governments are accordingly REQUESTED not to designate as 'National Parks':

1. a scientific reserve which can be entered only by special permission (strict nature reserve),

without some type of recognition and control by the highest competent authority of the country,

3. a 'special reserve' as defined in the African Convention of 1968 (fauna or flora reserve, game reserve, bird sanctuary, geological or forest reserve, etc.),
4. an inhabited and exploited area where landscape planning and measures taken for the development of tourism have led to the setting up of 'recreation areas' where industrialization and urbanization are controlled and where public outdoor recreation takes priority over the conservation of ecosystems (parc naturel régional, nature park, Naturpark, etc.). Areas of this description which may have been established as 'National Parks' should be redesignated in due course.'

Although the resolution is a clearer definition than previously contained in the 1967 edition of the UN List, it also places considerable restrictions on the scope of resources which may be preserved in areas qualifying as national parks or equivalent reserves. Thus, national parks could continue to be established for scientific, educative, re-creative or aesthetic reasons, but the features and ecosystems on which they are based must remain in a primarily natural state. Parks consisting mainly of wilderness or primitive natural areas, or previously exploited or settled areas under restoration to natural conditions would both seem to satisfy the definition. On the other hand, although the definition closely conforms to conditions applying to strict nature reserves for scientific observation, the latter are excluded from designation as national parks. As the definition is so clearly biased toward the preservation of ecosystems not materially altered by man, one might have expected the latter also to qualify. However, recognition of the concept that national parks have traditionally been available for public use leads to their exclusion.

If the definition of what constitutes a national park is allowed to become more and more exclusive, it could limit the protection of certain resources that may be of significance for preservation to a particular nation and the world community. Many have felt that the concept of national parks should not only embody nature reserves, but important cultural landscapes and even historical monuments and outdoor recreational areas. In many countries historic sites which no longer have sufficiently wild areas to qualify for national parks, or where the costs of restoring settled areas to a 'natural' state may be prohibitive. Many of these countries do, however, have significant examples of earlier forms of land use of cultural and historical value that are rapidly being displaced by new technology.

Is it right to claim that only landscapes free from the effects of man are natural and therefore worthy of becoming national parks? The test would seem to be whether man is living within the context of a stable relationship. If domesticated animals have modified the natural balance as it existed before man's arrival, their impact is after all very similar to that exercised by deer or rabbits. The highland areas of Great Britain would be far less attractive if grazing were removed, but although the Peak District and other areas are locally considered to be national parks, they were not recognized in the UN List. Even if it were desirable and economically feasible to cause ecosystems to revert to pre-human conditions, in many countries it would not be possible since many species and habitats have long since disappeared, perhaps hundreds or even thousands of years ago.

From the scientific standpoint then, it may be argued that cultural areas may be properly conserved and interpreted in the form of national parks. As man is but a natural species himself, and is therefore a part of the natural environment, their inclusion coincides with scientific and educational purposes. Man must be able to see where he fits into the scheme of things to be able to properly understand nature. Nevertheless, the use of the term 'national park' to include the full range of natural, man-modified, and cultural areas could lead to confusion and such confusion could result in failure to provide adequate protection to those ecosystems 'not materially altered by human exploitation and occupation'.

Because of this the ICNP at IUCN's 11th General Assembly held in Banff, Canada, in 1972, agreed to continue to accept the New Delhi definition but with the modification that national parks could include zones having as their primary function the protection of man's cultural heritage.

It would be of great benefit to the world community if areas of cultural and historic significance were to be conserved under an appropriate land-use category recognized both nationally and internationally as being of equal status with national parks. Either the inclusion of these areas within existing national parks or the establishment of other properly considered institutional patterns such as national cultural reserves, historic monuments, protected landscapes and special outdoor recreation areas would encourage their conservation and assure more uniform control standards. Although many feel this would divert much needed attention from natural areas, a more comprehensive approach to open space areas of national significance is worth considering.

Under the New Delhi criteria, exploitation (alteration or removal) of a park's physical and intangible features including economic, mineral, game and timber resources would not be allowed. Few would quarrel with the ban on hunting, but possible exception would be those who feel that sport fishing is compatible with basic park purposes, providing it is done within the provisions of a specific management plan.

The New Delhi definition could also be interpreted as discouraging the permanent facilities required for visitor occupation and related settlements within a park. Since many existing parks of course now contain very elaborate accommodations for visitors this interpretation would lead to difficulty. It would be unthinkable to draw up a UN list excluding many of the world's best-known national parks, and this was clearly not intended in the definition adopted by the IUCN General Assembly at New Delhi. For example, in Canada which has 18 national parks listed, it is unlikely that more than one or two would meet the criteria at all if those containing visitor accommodations and associated developments were to be excluded. Moreover, there would be little economic incentive for establishing new areas to meet criteria which practically prohibit popular notions of use. In practice, therefore, the revised, English, edition of the UN List (J.-P. Harroy, 1971) repeated and confirmed the statements on the subject of the 1967 edition, on the basis that the New Delhi definition shall be interpreted as allowing facilities for tourism and administrative works, where these were necessary for the management or enjoyment of a national park:-

'On the other hand, tourism is not to be included among the economic activities calling for prohibition in national parks and equivalent reserves; quite the reverse, so far as national parks are concerned. 'Equivalent reserves', however, may in some cases be strict natural reserves and,

as such, set aside for scientific research, with a more strictly protected status than that of national parks: in these cases tourism is necessarily excluded.

Among the exceptions which may therefore be admitted to the rule of general protection are those activities which have to be allowed in the promotion of tourism, since the latter is one of the main reasons for the existence of national parks. These include the construction and maintenance of a road network, the setting aside of more or less extensive areas for hotels or other accommodation, with consequential cultivation of vegetation and ornamental plants, and all the other disturbance of the natural environment which economic development for tourist purposes inevitably causes within the area where it is sited (airfields, railways, power lines, pleasure-boat facilities, sports-grounds, golf-links, tennis-courts, etc.).

A second broad category of exceptions of a comparable type must also be mentioned, namely the public works necessary for the actual administration of the reserve. They include staff housing, offices, workshops, garages, access roads, gardens, staff recreation facilities and so on. It could be argued that existing standards are best left intact at this point. They are sufficiently broad to allow each nation to evolve a system of national parks to meet its own socio-economic requirements. However, what is missing from the discussion of the criteria in the UN List quoted above is some indication of the special conditions under which tourism should be allowed. Developments blatantly catering for tourism in the 'entertainment' sense appear to be regarded as legitimate since there is only a vague implication that use be limited to extensive, resource-based activity. The question of where it may be appropriate or not appropriate to allow such things as roads, administrative works, hotels and serviced campgrounds could in part be resolved by establishing special protection and use zones (as further discussed below in Chapter 5).

How does one determine where to draw the line on improvements providing visitor access? Initially they may not result in permanent disruption of ecosystem ecology, or cause undesirable physical disturbance to environments providing valued educative and recreative experiences. But once these and other facilities are located and as pressures of increasing visitation mount it becomes extremely difficult to halt their continued expansion. One could see valued environments becoming smaller and smaller over time until they are completely developed and overrun.

The above leads to the question of setting more elaborate restrictions on uses and facilities that may or may not be allowed. But total reliance on restrictions is a negative approach which will again certainly prove to be unpopular, frequently misunderstood as to reason, and generally ineffective. On the other hand, it is much too easy to make allowances and exceptions in compiling the UN List which can only lead to confusion over policy and reduce the overall incentive for proper management. Nevertheless, if the economic argument that parks must be used in order to justify them is not respected, there will be little incentive for their establishment in the first place.

There is no question that it is desirable to rule out certain objectionable classes of activity widely considered incompatible with major conservation purposes. And the one overriding factor here is that ecological health be assured. But the appropriateness of many activities is largely a matter of local concern. Different park areas will tend to have their own rather unique

qualities giving rise to particular management objectives. Attempts to specify activities to be excluded can become arbitrary, resulting in further inflexibility for accommodating local needs and conditions. Only if negative restraints can be combined with more positive guidelines may it be possible to maintain the flexibility to accommodate widely varying needs and conditions while assuring more effective control.

There are two complementary aspects to such a solution. One is to develop a philosophically proper management directive expressed in the form of a broadly based set of international policies and guidelines. Administrators must have the benefit of intervention if the classically formulated dilemma is to be resolved locally. The criteria will necessarily be general and somewhat flexible for interpretation, as they must be universal. They cannot anticipate all problems or conditions which may arise from purely local circumstances and, therefore, cannot be held absolute. For granting international status and compiling the UN List, great care must be exercised by IUCN in establishing a properly constituted review mechanism. But universal standards themselves are not sufficient to guide decision-making, either for international recognition or for local administration. IUCN guidelines need to be interpreted with respect to the perpetuation-use potentials of the features and ecosystems of each park area and prevailing social and economic influences. Management programs then have to be developed within these practical limitations for each park unit. They would specify long range perpetuation-use objectives, and include policies and plans for guiding appropriate use, development and normal day-to-day administration.

A number of factors which may be taken into consideration with a view to improving the criteria for establishing and managing national parks and other protected areas are summarized below. These are presented in conceptual form under convenient headings so as to provide a basis for future reference and action.

PURPOSE OF UN LIST

It should be remembered that the overriding purpose of national parks and other protected areas is not simply to preserve this or that botanical or zoological species but to prevent the extermination of all species. The real purpose of a system of national parks and protected areas is to insure the existence and the replenishment of a sufficiently varied environment to sustain all life, including human life, and thus to widen the ground for man's further conscious development.

The UN List should not be regarded merely as a list. It should also be a 'role of honour' to provide incentive for governments to reinforce existing national parks and create new ones. It should aim to encourage each country to develop a well-planned system of national parks devoted to understanding and management of natural environments. Although the special status of recognition by the United Nations is a reward for good behavior, so to speak, the aspect of the 'carrot' must be accompanied by the threat of the 'stick' if the incentive idea is to remain effective. It will be necessary to establish procedures for periodic review of the conservation status of parks and it will be necessary upon occasion to exercise the right of withdrawal.

NOMENCLATURE

In conferring recognition by inclusion in the UN List of National Parks and Equivalent Reserves, the term 'national park' is used for all areas meeting the definition and criteria discussed under the headings which follow. Nevertheless, a wide variety of situations occur in existing national parks and these performance have to be taken into account in making decisions on inclusion of an area on the list. An 'equivalent reserve' is considered to be an area meeting all of the criteria of a national park but known nationally by a different name. It should always be remembered that protected areas not meeting the criteria for a national park may be of equal or even greater conservation value; for example, strict nature reserves and some provincial parks may be in this category.

NATIONAL PARK DEFINITION

Although there are certain problems associated with the New Delhi definition it provides sufficient flexibility to include all areas that can be designated, without confusion, as national parks. Rather than revise the definition, attention should be given to the purpose and function of protected areas and the encouragement of the establishment of other types of reserves and sanctuaries.

FUNCTIONS

Recognized conservation functions for national parks should be stated and those applying to each park should be specified in its laws of protection. One can never be sure how park areas may best 'benefit' future generations but the criteria should be drawn to encourage a more precise determination of perpetuation-use objectives for administrative purposes. To the extent possible, the particular aesthetic, educative, recreative, or scientific interest of a park should be specified in the form of objectives for perpetuation and use which are incorporated in the legislative decree for the area. They should indicate clearly the nature of the resources that are valued, the condition in which they are to be maintained, and how they are to be properly used. A national park may, of course, also serve other purposes (e.g. watershed protection) and interests (e.g. health and inspiration), which fall outside any of the four major recognized objectives or which are regarded as supplementary to those listed.

LEGAL AND ADMINISTRATIVE CONTROL

A national park in its strict sense is directed by the central national authority, which means that it must be controlled and managed by the highest competent authority designated by the legislature of the country. It is realized that control measures are bound to vary in relation to the potentials of the resources in question and prevailing social and economic conditions, but they must be effective in achieving perpetuation and use objectives. In the initial stages of national park formation control may have to be instituted in stages but, before an area can be listed, active measures must have been taken and be in force to ensure that control will eventually be fully effective.

RESOURCES INCLUDED

Resources that may properly constitute a national park should include primarily those natural features which are widely held to be of national and international significance; provision may however be made for the inclusion of resources of chiefly cultural or more local importance by appropriate zoning. A wide range of resources and supporting environments may be selected from what may be regarded as the man-nature continuum of the potential area. Basic to the designation as a national park are primitive ecosystems suitable for scientific observation or wilderness recreation, but it is quite possible to associate with them, within the same park, historical monuments created entirely by man. Cultural landscapes and examples of historically, scientifically or aesthetically valuable land use would fall somewhere in the middle of these extremes.

One argument against including cultural resources in a national park is that it dilutes the original functions of national park agencies. However the need to protect the cultural heritage of mankind is no less acute than the need to protect natural environments. Furthermore, the combination of attractions within an area to be protected provides greater social and economic support for its protection. As representative samples of natural ecosystems are being quickly eroded by man, relating the term 'national park' to the concept of protecting relatively undisturbed natural ecosystems focuses attention on this important issue. So long as appropriate attention is given to this primary function, the addition of a cultural function seems no more harmful than the addition of a recreation and tourism function. Indeed many long established national parks such as Mesa Verde and Angkor Wat have successfully combined these functions.

EXPLOITATION-OCCUPATION

Exploitation of resources (i.e. alteration or removal for commercial purposes or individual profit) and occupation (i.e. presence of temporary or permanent facilities) inconsistent with special perpetuation-use purposes should not be allowed. Forms of exploitation that should, as a rule, be prohibited from all national parks are hunting, fishing, lumbering, mining and dam construction for purposes of flood control, irrigation, hydroelectric power or water quality management even if these are community oriented. Similarly the introduction of agricultural and pastoral activities and residential, commercial and industrial occupation should be prohibited, as should the building of roads, railroads, aerodromes, ports and above ground utilities (e.g. power lines, pipelines, or telecommunication facilities) for general community use, except where these activities form part of the cultural heritage to be preserved within a national park.

Tourism is a form of economic activity that is considered essential to areas designated as national parks. It must, however, be subject to proper controls. The construction of access routes, the provision of transportation, of camp grounds or more permanent lodging facilities, of ski runs, swimming or boating facilities, and similar developments, present special problems. For small national parks located in countries with adequate zoning and building controls, most facilities with the exception of trails and those necessary for park interpretation could well be located outside the park. Where adequate zoning and building regulations do not exist, however, insistence on this can lead to the growth of rural slums or unattractive and garish communities adjacent to the

controlled by the park authorities and within the park boundaries, carefully preferable. For large national parks the construction of roads, lodging facilities, certain types of recreational facilities and associated services are necessary if the park is to be made available to visitors. Nevertheless, if dispersed over too wide an area such developments are destructive to the cultural values of the park. Careful zoning, based on an ecologically based management plan, is essential if these developments are to be confined and not to interfere with the primary purpose of conservation.

Certain developments, totally unrelated to national park values, e.g. cinemas, golf and tennis grounds, casinos, etc., should not be permitted within national parks.

ADMINISTRATIVE WORKS

A similar category of exemptions of a comparable type are the structures necessary for the administration of the national park itself, e.g. visitor centers, museum, access roads, offices, compounds for staff housing, workshops, garages, etc. Although existing parks often include many of these facilities for tourism and for administration within the park itself, depending on local conditions it may be preferable for them to be located either outside the park or at the boundary of the park to minimize their impact on the biotic communities and other features being conserved within the park. Under other circumstances, zoning to confine such facilities to a predetermined developed zone is essential.

SITE DEVELOPMENT AND CONSTRUCTION

Wherever possible utilities such as power and telephone lines should be constructed below ground. All buildings, roads and parking lots should be sited and constructed in such a way that they can be made to harmonize with the environment in the least conspicuous fashion. Construction may employ indigenous materials and building styles. It is desirable that materials for road making etc. be brought from sources outside the park so as to minimize environmental destruction.

PUBLIC HUNTING

Except in those zones where hunting is considered necessary to proper management of the biotic communities an area where public hunting is permitted will not qualify as a national park. Sport fishing is in a similar category, but because of traditional practice it may be permitted in restricted areas providing that it is based on management plans and is carefully controlled by official staff.

SPECIAL CONDITIONS FOR ACCESS, USE

As a general rule, activities conflicting with primary perpetuation and use purposes should be excluded. Areas should be open to visitors under conditions controlled by reference to those purposes. Thus, visitor activities per-

mitted should be primarily concerned with observation and appreciation of the valued resources; and recreational activities need to be chosen with care and must be of such nature as not to interfere unduly with the biotic communities or other features being conserved within the park. Activities which should not be permitted fall mainly within the category of 'artificial' entertainment where the activity itself is the prime recreational purpose, and the national park setting is only incidental to that purpose. As a general rule, therefore, activities or related facilities excluded concern organized sporting events (e.g. sportsgrounds, golf links, tennis courts, ski-runs (other than cross-country) and ski-lifts or tows, pleasure-boat and yachting centers), theatrical and allied entertainments (cinemas, etc.), mechanized vehicles for unmarked trails, (such as trail bikes, over-snow vehicles, hovercraft, all-terrain vehicles, dune buggies, speed boats, etc.)

Scientific experimentation or research of certain types can be equally as damaging as improper development for tourism or overuse. Thus, research or experimentation for purposes incompatible with defined management objectives should not be permitted, and all research programs, with the possible exception of those involving simple observational techniques which have been approved, should be carried out under the direct supervision of the park authorities.

Parks cannot accommodate unlimited visitation. Visitor carrying capacities should therefore be determined on the basis of perpetuation-use objectives and enforced with effective control measures. In particular, although roads may be necessary for access, they generate enormous pressures for further development and need to be strictly regulated. Internal park roads and tracks should only be constructed within the limits imposed by careful observance of defined perpetuation and use objectives.

NON-CONFORMING USES, RIGHTS

Private rights or practices that are generally excluded in national parks as a matter of principle, but which existed in a particular park prior to its establishment, may be permitted on a temporary basis as 'non-conforming uses'. In some cases, where they are confined and not detrimental to perpetuation-use purposes, and where removal is economically prohibitive, they may be tolerated permanently. However, the majority of private rights granted before planning and establishment of a park, including residential occupation, agricultural and pastoral activity, lumbering, mining or quarrying, should only be accepted as non-conforming uses provided that they are confined to a small section of the area and, in general, are not regarded as permanent, their redemption or termination being specifically anticipated as the long term objective.

AREA

Boundaries may not be altered nor should any portion of a national park be alienated except on the initiative of the highest competent legislative authority. Boundaries should be drawn to coincide with ecosystem limits or natural barriers in order to include the habitat or range of a particularly significant species, obtain effective control of access, or otherwise facilitate management. In short, wherever possible, the area of the park should comprehend complete biotopes.

In general, the term national park should not be applied to protected areas of small size. Although some exceptions may be allowed, as when a biotic community of small size, but great value, exists in an area otherwise already fully developed for agricultural, industrial or other purposes, it is recommended that parks be of sufficient extent to protect not only natural vegetational diversity but also the more mobile animals that form part of a given biotic community. In the minimum limits set by IUCN's International Commission on National Parks for national parks to be included in the UN List, a differential was previously allowed on the basis of the population density of a country. In 1972, however, the ICNP established a minimum size of 1000 hectares to apply to all countries (with the possible exception of small islands). This means that no general exemption, covering the automatic acceptability of smaller areas, is made for those countries that have failed as yet to find a solution for their human population problems.

MINIMUM STAFF FOR EFFECTIVE MANAGEMENT

The acceptable scale of effort for control is difficult to specify in qualitative terms. Until 1972, IUCN applied the various staffing and budgetary criteria mentioned above on pp. 26-27 to all parks to be considered for the UN List. They proved somewhat arbitrary in their application and it was subsequently decided by ICNP to consider only whether a park was in fact adequately protected and managed. For some countries and for some national parks it may be possible to ensure sufficient management and protection with a relatively low budget and staff, whereas elsewhere even much more generous allotments of money and manpower may fail to do so, and each case needs to be assessed on its merits.

SCIENTIFIC MANAGEMENT

Management by the authorities of a national park with a view to maintaining the natural equilibrium which they consider desirable relative to perpetuation objectives is essential (e.g. when the number of wild animals is considered excessive, when controlled burning is required, and when artificial watering points must be provided). Decisions must be made, however, on which biotic communities, or portions of them, are to receive complete protection from human disturbance, and which are to be managed to maintain particular species or successional stages of the biotic community. Another essential is a careful zoning policy, which must be made clear to all park visitors so that the public will understand the ecological basis for the management activities or restrictions on use to be applied to each zone. Zones devoted to protection of cultural landscapes will, of course, require much more intensive management than those established to protect natural communities. This can lead to serious misunderstanding if the public is not kept fully informed of the differing situations and their management requirements.

INTRODUCED SPECIES

Exotic species of plants and animals should not be introduced except in those zones in which they form an essential part of the cultural heritage to be maintained. Indigenous species that no longer exist in the area may be reintroduced where it is desirable to recreate conditions that previously existed.

PRIMARY MANAGEMENT CATEGORIES

National park areas will include areas falling within various management categories which may be recognized by their main functional objectives and management requirements. There are various alternatives for such a functional classification. One approach adopted by IUCN in 1972, classifies areas under two major management categories, natural areas and cultural areas, with respective sub-categories. These are described below only to the extent necessary to convey the concept. Criteria in addition or in exception to all those which have previously been discussed, would have to be developed for each class (i.e. for function, control, access, equivalents, etc.). The two major categories, which with their sub-categories may be represented by zones within a national park, are of course both designated for specific conservation purposes. In addition parks will usually contain zones which are subject to disturbance, for example those in which facilities are constructed or through which roads pass.

(1) Natural Areas

As a general rule parks or park zones in this category are relatively large in size and contain biotic communities and geomorphological features which have never been materially altered by human exploitation or occupation. They are managed for special functions or conditions which may conform to one of the following sub-categories.

(a) Strict Natural Areas. These are areas

- set aside to permit the free interaction of natural ecological factors without any outside interference whatsoever, except for what is judged indispensable by the competent scientific authorities for safeguarding the very existence of the reserve;
- throughout which any form of hunting or fishing, any undertakings connected with forestry, agriculture or mining, any grazing, any excavations or prospecting, drilling, levelling of the ground or construction, any work involving the alteration of the configuration of the soil or the character of the vegetation, any water pollution, the introduction of any zoological or botanical species whether exotic or indigenous, and, generally, any act likely to harm or disturb the fauna or flora, are strictly forbidden;
- and in which it is forbidden to reside, enter, traverse or camp, or fly over at low altitudes, without a special written permit from the competent authorities, and in which scientific investigation may only be undertaken by permission of those authorities.

(b) Managed Natural Areas. These areas conform to the above description

of strict natural areas except that the competent authorities may take measures of intervention which they deem appropriate (including removal of animals and plants) in order to ensure the maintenance or development of a specific ecosystem, or to perpetuate various species or groups of species.

(c) Wilderness Areas. These are designed to protect extensive areas

- without roads and developed trails;
- that exhibit no readily apparent influence by man and throughout which no man-made structures exist;
- kept to demonstrate the action of natural laws and forces;

- of sufficient size to divorce the traveller from civilization;
- where approaching and entering the air, land or water by any motorized vehicle, except in emergency, is strictly prohibited;
- where recreation activities appropriate to wilderness experience are the dominant use;
- where access is limited to small groups, walking, snow-shoeing, cross-country skiing, dog-sledding, horseback riding and canoeing by way of natural paths, waterways and trails;
- and where scientific research which does not alter ecosystems or the natural forces acting upon them may be allowed.

(d) Natural Environment Recreation Areas. These are areas within a national park designated to receive the major visitor impacts, being set aside for extensive resource-based recreational activity. They will include internal road systems and other visitor facilities such as campgrounds, picnic areas and interpretive centers, and, in certain parks, hotels and other visitor accommodations with associated recreational facilities.

(2) Cultural Areas

Parks or park zones in this category are for conserving man-altered landscapes or man-made features of historical or archaeological value, or for providing for the perpetuation of certain forms of land use. They may be sub-classified according to the type of feature or activity, or according to the management or use that is carried out or permitted, as follows.

(a) Cultivated landscapes. These are areas that have been developed by past agricultural, pastoral or other forms of land use, that would be endangered by changing patterns of land use or by new technologies in the absence of specific measures taken for their preservation. Their protection depends on perpetuation of the domesticated species and activities, e.g. farming or grazing, by which they were originally formed.

(b) Archaeological or historical sites. These may include towns, villages, or other structures and their surroundings, of high value for their archaeological or historical interest, which are to be protected from those changes that would destroy or impair that value.

(c) Anthropological areas. These are areas which, while still dominated by wild species and natural biotic communities, are set aside to protect pre-agricultural ways of life and the peoples who practice them, such as the hunters, fishermen, food gatherers or pastoralists living in hitherto remote areas of tropical forest or desert lands. Normally such areas are protected from visitation by the public, and reserved for the exclusive use of their indigenous inhabitants.

OTHER CATEGORIES OF PROTECTED AREAS

Although the two main categories described above have seven sub-categories, any of which may exist as zones within a national park, several of them would more usually be found as dominant zones in other categories of reservation which are generally to be excluded from designation as national parks. This applies particularly to strict nature reserves, anthropological reserves, and

historical sites, to which wildlife refuges or games reserves may be added. Cultivated landscapes and towns and villages of historical interest may also be adequately protected outside of reserves altogether, through zoning laws or other land-use controls, or controls over construction.

A listing and description of protected areas, including national parks but also including other types of reserves established primarily for conservation, is being developed by IUCN, following its 11th General Assembly, in the form of a World Directory of Protected Areas. Such a directory will serve not only as a source of information but perhaps also as an incentive to establish and protect a wide range of areas other than national parks.

MANAGEMENT POLICIES, PLANS

The role of planning and of management policies and plans is essential to the long term conservation of protected areas. Master plans, establishing specific perpetuation and use objectives, and management guidelines can provide a framework for interpreting international criteria for each park as they relate to the peculiarities of local features and biotopes and the forces that bear upon them. To lessen the chance of future management dilemmas arising from either ambiguity of purpose or inadequate planning, the following points could usefully be adopted as the basis of policy:

1. Governments should, in areas under their direct control, draft and implement management plans; in other areas they should encourage the drafting and implementation of such plans by means of technical and financial assistance.
2. Management plans must be formulated on the basis of surveys and research, including an inventory of resources, and studies of the rate of growth and renewal, the behavior of species and their relation to the environment, economic and social aspects, and the means of integrating the proposed management with land use practices in adjacent areas.
3. The conditions governing the classification, perpetuation and use of each park should be set forth in the form of a master plan control document, constituting a long range policy guide which identifies the physical and intangible resources on which the park is based, the long term aims and objectives to be pursued within the ecological, economic and social context, and the more immediate objectives and the action necessary to achieve them. Included will be a management concept for how the parks resources are to be administered and how they are to be used by the public and made more meaningful to them. A special zoning plan would denote areas managed to meet different perpetuation and use objectives within the park. All these plans will necessarily be flexible in their execution and will be subject to periodic revision.

A new philosophy and a more comprehensive approach to the long term management of national parklands would thereby be assured, with each master plan being firmly rooted in an understanding of the relationships between the particular qualities and ecosystems under consideration and the objectives for perpetuation and use. A general interpretation of the limitations and opportunities afforded by the resources themselves, relative to national park principles, would suggest the kinds of activities to be allowed and the extent to which they are appropriate.

A very considerable effort is required to prepare master plans. Moreover, considerable ecological and human behavioral research is needed to develop the policies for guiding proper and consistent management. One of the major steps in planning will be to identify all of the relevant resources and forces that bear upon the problems, the formulation of the objectives of the park and the determination of how it is to be used by the public and made accessible to them. Each park will be chosen for specific reasons which must be clearly defined and understood. These reasons must be transferred into clearly identified objectives for successful application of management policies. If the main reasons for the perpetuation and use of a park's resources were merely that they had outstanding recreational and scenic quality, it would be difficult to administer the area in a positive or objective manner that would guarantee the preservation of that quality. It will be necessary to identify the *kinds of features* and ecosystems that are to be protected, the *state in which they are* to be maintained and *how they are to be used* by people.

Once specific preservation-use objectives have been decided ecological guidelines can be established for management. On this basis compatible visitor activities and maximum visitor consumption levels can then be estimated. They must be carefully researched, bearing in mind two different concepts of resource carrying capacity: one based on tangible qualities, that of natural factors as determinants for maintaining ecological health; the other based on intangible qualities of park environments providing desired forms of visitor experience. They may be defined as follows:

Physical Carrying Capacity

The level of human impact which may be tolerable without exceeding the physical capacity of the ecosystem to regenerate itself, as extended by scientific knowledge and the overall feasibility of artificially maintaining an ecologically healthy balance. For each ecosystem or type of landscape there is some optimum, tolerable level of human impact.

Social Carrying Capacity

The level of human impact which if exceeded would cause a deterioration in the quality of outdoor recreational experience. For every type of outdoor recreational experience there may be a social carrying capacity, an optimum, tolerable limit to the number of persons that may be present, to the kinds of activities they may be engaged in and to the kinds of man-made developments that may be compatible per unit of park landscape.

Although there has been very little research on the effects of visitors on natural ecosystems, the question of saturation is a very important consideration. Even a very crude estimate will be better than no consideration in the development of master plans. On-going research by resident ecologists may serve as the basis for further refinements over time. Following these principles, all improvements or developments for implementing perpetuation and use objectives should be located in such a way as to minimize conflicts between various activities and to prevent ecological damage. As a general rule, more intensive activities should be restricted to sites with higher physical carrying capacities and less vulnerable to wear and tear.

With increased pressures the classically formulated dilemma over resource perpetuation and use provides both the reason and the philosophy for careful planning. The basic aim will be to reconcile the conflicts between them. And the simple projection and accommodation of activity trends and tourism de-

mands should be avoided at all cost. Instead, the emphasis needs to be placed on absorbing these demands outside the parks or accommodating them in confined areas near park boundaries, and on making the conservation function more meaningful to the public through subtle educational programs and encouragement of the kind of use and restraint that promotes wider ecological understanding.

In addition to improving international criteria there are several other ways to reduce trends toward improper use of parks. For example, far seeing park administrators can do much, immediately, to reduce internal conflicts through imaginative educational programs and carefully planned visitor deployment. But the ultimate solution to the problem requires accommodating unwanted activity outside national park boundaries. A coordinated approach is therefore needed for implementing an integrated system of conservation and tourism-recreation areas designed to balance the wide range of resources, resource potentials, user demands and management objectives.

4 Systems Planning beyond National Park Boundaries

Once perpetuation and use objectives have been determined for national parks and carrying capacity limits have been estimated, positive action programmes are necessary to prevent excessive or inappropriate use of these areas. Non-compatible activities must generally be prohibited and ceilings maintained on numbers of visitors which may be permitted at one time. But the success of any such measures will depend on whether unwanted pressures can be effectively absorbed outside the parks. The widespread public misunderstanding of national park purposes at the root of those pressures cannot be effectively coped with by simply prohibiting certain uses or posting the 'house full' sign at park entrances. From the standpoint of governments the concept of use has been so generally understood in strictly economic or physical terms that the preservation of undisturbed natural areas for science or certain recreative experiences is equated with non-use (L. K. Caldwell, 1966). As argued earlier, experience from many countries suggests that parks must appear to be used heavily if their future is to be assured and more parks created. And there will be enormous political pressures to provide more popularly oriented facilities and to take in more visitors as the demands increase.

The ideal solution to the management dilemma must therefore recognize the symbolic attractiveness and economic value of national parks by accommodating tourism, recreation and related facilities in well designed adjacent areas. These areas may have to be of lesser grandeur than the areas of outstanding quality within the park itself, and management objectives and standards will be of a very different nature. The major consideration will be location, that sites be readily accessible and highly absorptive in terms of their physical carrying capacities.

Availability of intermediate outdoor recreation areas near urban populations will greatly reduce pressures on the national parks. In both the industrialized and rapidly developing countries the more popular and more economically attractive forms of outdoor recreation have come to be known in economic terms as mass recreation. Activities associated with mass recreation generally involve a significant degree of social contact among participants. When presented with a choice, many urban dwellers prefer to conduct much of their outdoor recreation in the presence of other people. People often seek the company of the sort of numbers experienced at crowded public beaches and

campgrounds. The more successful urbanized parks are usually places having certain artificially created demand goods such as golf courses, downhill ski runs and tows, tennis courts, health spas or bathing facilities; where large numbers of people consciously or unconsciously congregate for recreation involving a high degree of social interaction; 'where the action is', to use a modern expression. Many who have not been exposed to wilderness or related natural environment experiences fear the unknown qualities of nature and will not enter remote primitive areas until they have been educated to appreciate their value. But, because adequate facilities for highly resource consumptive mass recreation activities have not been available close to urban areas, and because of past management emphasis, many national parks have been fulfilling mass recreation needs. These involve the very activities conflicting most with perpetuation values. Another significant argument against the popular view of national parks is that not only is mass recreation unsuitable for them but they make an equally poor substitute for regional and local playgrounds. The most popular mass-recreation oriented outdoor experiences are not highly demanding in terms of their natural resource requirements and can be carried out on rather ordinary outdoor areas (M. Clawson, 1969). As location is the prime consideration, people seldom will seek the more outstanding resources found in national parks if they can find lesser areas more conveniently located, where various attractions can easily be created to satisfy their needs.

In many industrialized countries, however, a critical shortage now exists of alternative sites offering mass recreational opportunities. Attempts to place more restrictions on the use of the national parks are therefore unlikely to be successful until there is a more equitable distribution of outdoor recreation facilities. Provision of adequate and convenient facilities adjacent to both urban areas and to national parklands would divert many potential users seeking only the people-oriented pleasures of mass recreation and thus remove considerable pressure from national protected areas.

One aspect frequently unexplored to its full potential by national park authorities is the role of private enterprise or of quasi-public authorities in providing facilities for accommodation of tourism and intensive user-oriented recreation outside park boundaries. Such needs can often be met on a wholly commercial basis and developments would be attractive to private and quasi-public investment, given some degree of stimulus in the form of planning assistance and retention of some qualitative control over development by the authority. This would enable national park administrators to confine their responsibilities primarily to managing areas within the parks for interpretation and resource-based recreation. In evaluating the latter role it should be borne in mind that perpetuation of large areas for such extensive use can only be achieved with large scale public investment. By locating areas for profitable tourism and mass recreation nearby national parklands, full economic advantage can be taken of the parks as international symbols for attracting visitors without destroying the very environments valued by those who understand the true meaning and aims of a National Park.

The sorting out of regional demands and other planning factors is not an easy task for park planners and administrators. It will not be sufficient to simply rely on the old unitary park concept and draw up master plans for each national park, ignoring demand trends as if national parks and compatible recreational experiences were the only kinds of outdoor areas and compatible. An understanding of the place of national parks in the whole public and private system of outdoor recreational areas is essential, and it will be necessary to

plan beyond park boundaries or there will be no way to prevent ultimate impairment. To do this properly, national parks should be planned in a systems context which includes all other major outdoor tourism-recreation and conservation areas. Such an open space system can be more comprehensively planned, available resources being carefully balanced with various human needs and conservation functions.¹ It involves research on the relationship between the functions of national parks and other non-urban open space areas, their potential users and the jurisdictions of administrative authorities.

A total system conceived in this way forms an inter-related set of areas selected and managed to meet a range of aesthetic, educative, productive, protective and recreational needs. It would include areas for tourism and outdoor recreation, wildlife production, scientific experimentation, protection of natural and cultural resources, land reserves for future urban development, etc. It would also link in a comprehensive and logical way the range of demand that people have or may have in the future in respect of the kinds of areas that are available or may be available. Only by placing national parks within a systems framework will their full potential be realized. And by orienting the system much more to people and their needs than merely to geographical areas and their bio-physical features the whole subject of conservation will gain more popular understanding and support (see J. L. Fisher, 1968).

A balanced open space system requires a holistic approach to the allocation of resources for conservation and tourism-recreation. Planning for the system should be completely coordinated with other land use and related resource planning. Open space activities must be reconciled within the total planning framework against the competing demands of other land and resource using activities such as agriculture, forestry, industry, housing and transportation. Taking this idea of more comprehensive planning a little further, an ultimate conservation solution may be entertained for achieving a more equitable arrangement between man and his environment. It would entail planning on the basis of regions that approximate to ecologically closed systems. All fundamental ecological lines of dependence and interdependence would be defined and quantified. Were it feasible, such a comprehensive approach would enable all natural, economic and cultural resources and consumptive patterns to be carefully balanced on economic-ecologic input-output matrices to maintain a more desirable equilibrium between man and his environment. Such things as pollutants resultant from by-products or spillover effects could be anticipated in advance and controlled as to their environmental impacts. This approach is not likely to be realized in the foreseeable future, appealing as it may be. The problems of insufficient knowledge of basic food chains and relationships, of defining regions of influence, of overlapping political jurisdictions, of including both supply and market areas, or of attempting to maintain regions as more or less closed systems in violation of universally accepted desires for material betterment, are only several of many reasons why it remains a utopian ideal.

Nations do sorely need to have an overall scheme of things in this environmental field. There should be national studies of resource problems, a

¹ Open space is defined as all urban or non-urban land and water open to the sky; both publicly and/or privately owned; accessible, subject to management limitations, to freely chosen activity and/or visual exploration; and which provides services for man and nature and the structure for man-made development in an educative, ornamental, productive, protective and recreational capacity.

... sound ecological and economic functions of specific lands and related assets (see W. J. Hart, 1966, for a discussion of this approach). The haphazard, *ad hoc* methods that we now employ in dealing with the relationship between man and environment must be replaced by a more normative, systematic and open-ended approach. The open-space-systems approach based solidly on human needs and resource supply potentials is clearly a major step forward. The task involves an unprecedented degree of communication and co-operation to overcome the inertia of fragmented planning functions at various governmental levels. Clearly, a whole complex organization for integrating national park planning with other open space functions and with related land and resource activities cannot be implemented, anywhere, overnight.

Planning in the broader context must be preceded by the promotion of appropriate public attitudes and institutional arrangements at national and regional levels in addition to localized community efforts that are more commonplace. Progress is perhaps most difficult in the highly advanced countries where institutions which deal with increasingly narrower aspects of environment, have proliferated over the years. Environmental attitudes in many countries are rapidly coalescing, however, and there is cause for some optimism as awareness of the loss of environmental quality grows throughout the world. Although deterioration of environment has been taking place for centuries it seems to be reaching a critical threshold in respect of air, water and soil pollution. These specific ills have been producing a popular demand for corrective measure that will expand to include the long term design and control of the total environment. Parallel with this concern is a realization that traditional ways of developing and using natural resources must be changed from single-purpose efforts, both public and private, with little regard for attendant consequences, to multiple use of resources and wider social goals, and must give way to recognition that the biosphere is a system all of which is affected by action on any part of it. As a result, it will be increasingly recognized that use of natural resources must be based on integrated, interdisciplinary studies.

One aspect of the new awareness is that natural science and technology alone are seen to be inadequate for modern solutions to resource management problems; one must also consider social sciences, in particular politics and public administration, landscape planning, economics, law, sociology and psychology. There will be increasing emphasis on national and regional forms of planning and institutional arrangements that will permit the implementation of more comprehensive approaches to environmental control.

In developing countries there is opportunity now to avoid the mistakes and fragmented approaches of the industrialized states by establishing centralized agencies for planning infrastructures for conservation and tourism. In both industrialized and developing countries, integrated approaches for open space could be initiated and coordinated by a central authority responsible for environment. In geographically large countries, or federations with more or less autonomous provinces or states, additional agencies would be needed at that lower level of government. Although management of national parks is entirely the responsibility of the central government, administration of recreational lands adjacent to the parks can be delegated to a large extent to regional and local governments, given adequate cooperation and coordination between the various levels. In many countries national and regional agencies already exist to do the work of coordinating open space functions and it could be geared with national and regional planning in general (J. L. Fisher, 1966).

Government departments charged with responsibility for open space are usually too compartmentalized and overlapping in purpose for achieving such an integrated approach. The fractionalized allocation of responsibility for specific resource decisions has continually frustrated coordinated public policy on environmental issues. One way to get coordination amongst various agencies may be to establish national environmental advisory councils with subfunctional groups for planning open space systems. The councils would take a comprehensive look at resources, environment and pollution and recommend broad policies for action. They would constitute an additional, non-political component in the traditional framework of administrative agencies, a sort of environmental watchdog reporting directly to the head of state.

Organization of such councils would have to overcome many problems that have beset previous attempts at an administrative organization designed to foster integration within the traditional governmental framework. Functional divisions of public administration impose formidable barriers to effective environmental policy and attempts to reshuffle administrative functions or to create new super agencies in government, invariably result in severing nearly as many channels for interagency communication and cooperation as they create. The National Resources Planning Board of the United States in the nineteen-thirties represented the closest approach to comprehensive environmental planning ever attempted for that nation as a whole and it failed. Its broad decision-making powers conflicted with the views of too many special interest lobbies. It led a very short-lived existence (see L. K. Caldwell, 1966).

Strong and independent advisory councils on environment could overcome many of these problems by stimulating and coordinating an integrated program on resources research involving most governmental departments. If they could have guaranteed access to governmental reports and secure program funding largely from non-governmental sources, councils could provide forums for developing long term policies on management of the environment.

National park planners and administrators need to explore every opportunity for coordinated planning with other national agencies and other levels of government, and with the private sector in tourism and outdoor recreation. Indeed, integrated land-use planning with effective use of zoning and other control incentives at national and regional levels could provide a broad spectrum of recreational opportunities while protecting valuable ecosystems in the form of national parks. But national purpose may often conflict with the interests of local governments and local interest groups. Although in many countries public attitudes toward environment may be changing, a vast amount of bureaucratic compartmentalization has to be overcome before effective control can be realized either for private lands adjacent to national parks or for areas in general.

Until formal coordination mechanisms are developed, national park planners and administrators may have to initiate informal cooperative efforts and offer free advisory services to encourage local and regional agencies to provide tourism and visitor-service facilities in well designed areas adjacent to national parks. Areas containing these facilities may serve as buffer zones for protecting the resources and visitors within the park proper from more commonplace ugly commercial encroachments that are often precipitated by park designation. Where the quality of design and management is likely to be inconsistent with appropriate standards for adjacent lands the assistance of ecologists and planners may be volunteered for planning and design. If more formal arrangements are required to guarantee the quality of adjacent facilities, the national parks authority may have to acquire the necessary land and

rights and develop appropriate facilities and then turn them over to local authorities for administration. Such facilities could also be leased back to private concessionaires, as is done in many national parks today, or they could be sold subject to maintaining certain rights for quality control.

In the United States, the National Park Service is now attempting to co-ordinate its park master planning with other Federal agencies and with state and local authorities, so that park plans can be integrated with plans for surrounding regions. In cooperation with the Parks Service, the National Forest Service has been assuming increased responsibility for developing areas in adjacent forest lands for multiple purpose use. Where there are no land use plans for non-federally administered areas surrounding the parks, the Park Service encourages local governments to apply for Federal assistance to undertake planning programs which can be coordinated so as to mesh park plans with these areas. The new Cascades National Park in the State of Washington is an example where cooperation is being achieved with both the Forest Service and local authorities participating (U.S. Department of Interior, 1965).

Another significant trend in the United States is where the Parks Service has been assuming additional responsibility for providing National Recreation Areas convenient to large urban populations. To date, this has been limited to establishing areas where other programs are not likely to fulfil high priority recreational needs within the foreseeable future. Although this move to provide a more adequate distribution of open space may be applauded as a measure for reducing pressures on the national parks, it begs the question of pre-occupation and of dilution of the function of the Parks Service by an activity which may not be in the best long term perpetuation interests of national parks.

Recognizing that it is desirable to have a system of national parks with functional limitations offset by other areas planned within a total, balanced, open space system, the problem of coordinating fragmented governmental agencies and of persuading officials to maintain national parks for low intensity resource-based use, renders the systems approach a long range solution that is difficult to effectuate immediately. The situation is likely to prevail in many countries at least until present attitudes change and political structures become more flexible.

In the meantime something can be done to halt rapid deterioration within the parks. Where unwanted activity cannot be accommodated by outside means, national park administrators may have no choice but to assume more responsibilities for other kinds of outdoor recreation than the limited type and extent of activity compatible with national park ideals. The concept of zoning within parks on the basis of the intensity and kind of use allowed, would appear to offer a more immediate solution, although it remains but a temporary measure for minimizing conflicts between visitors and perpetuation of park resources.

5 Zoning and Visitor Deployment within the Single Park Jurisdiction

People differ widely in their recreational habits and desires and will be inclined to make use of a park in different ways according to their age, background, education, family circumstances and abilities. Ideally, parks might be open to freely chosen activity and provide opportunities for a wide variety of leisure pursuits. Unfortunately, any national park environment that attempts to accommodate all acceptable activities without reserving different areas for various functions will have conflicts that will cause impairment of park values from either the physical or the social standpoint. Since conservation of nature must be of paramount importance in any national park, all visitor activities need be adapted toward accomplishment of this primary objective. Zoning is one very effective way to provide administrative and development control over areas designed to meet different perpetuation and use objectives. Long range planning cannot proceed with any assurance that desired objectives will be met without the guidance of a carefully developed zoning plan. If park areas can be classified into different zones managed to meet different sets of objectives, the tension between perpetuation and use will be minimized, and the ecological requirements for effective conservation can be met. If the zoning plan is made a keystone of administrative policy, management continuity will be more assured through successive park administrations.

The location, size, type and quality of resources are important considerations in delimiting zones. The zoning plan would detail the type and extent of acceptable use and development and the acceptable means of access for each of the zoned areas. In accordance with the criteria recommended in Chapter 3, one or more primary management categories (i.e. Strict Natural Area, Wilderness Area, etc.) would constitute the different management zones within a given park. There could also be a number of special zone variations developed to meet local needs and conditions. For example, special buffer zones for more intensive use may be located around primary management areas, especially at the park periphery. These in turn may contain within them additional secondary management zones or nodes for interpretive facilities and for necessary administrative works and visitor service facilities, including maintenance compounds, hotels and other accommodations in certain large parks where there is no alternative but to locate them within the boundaries. Regional mass recreation demands would also be absorbed in these zones.

but the facilities provided should be at the minimal level required for effective administration or to serve as mere staging points for visitors on their way to experience the natural features of the remainder of the park, in their relatively undisturbed surroundings.

The overall region subject to the management influence of a park authority may of course contain zones that do not necessarily form part of the administrative area of the park proper, such as a permanent townsite or tourist-resort village situated in a visitor-service-oriented area outside the national park boundary. Such a zone need not be controlled by the national park authority itself, so long as it is subject to appropriate cooperative agreements between it and the various other authorities concerned. Park land should preferably not be turned over for the purpose unless there is no practical alternative, but, rather, development should be encouraged on lands outside existing park boundaries.

A zoning plan should be prepared for each national park, together with cooperative agreements for adjacent areas, in accordance with a statement of objectives and as an integral part of a coordinated set of long-range policies and plans embodied in the park master plan. No violations or exceptions to the zoning plan should be permitted and changes to the plan itself should be made only by the competent authority and after thorough study of the consequences to the ecosystems and status of the national park itself. Unless there is a proper zoning plan parks may eventually be left without suitable wilderness or other remote areas accessible only by foot, horseback or canoe, and without many other qualities that are part of the reason for their establishment. In preparing the plan it is essential that studies of the recreational potential of the resource be carried out to determine possible recreational land uses within the limitations of basic park purposes, in order that development of each park may make optimum use of the land available.

THE CONCENTRIC ZONE CONCEPT

Various zone combinations may be developed in response to local conditions and needs. The simplest arrangement consists of a core zone where the natural habitat or resource character is to be least disturbed, surrounded by a buffer zone where more intensive use would be allowed. In such a two-zone scheme major visitor accommodations and administrative compounds would be located outside the park. The two zones might respectively comprise:-

- (1) Natural areas, primarily for protection of habitat or features, where access and use would be restricted (i.e. in the strict natural area, managed natural area or wilderness area sub-categories); and
- (2) Recreational areas, surrounding the natural areas, to accommodate more intensive visitor use. (i.e. in the natural environment recreation area sub-category).

In the natural area zone, if it was a wilderness area, perception and appreciation of the environment would be the primary human use. The kinds of user activity and development permitted would be limited to those forms of recreation concerned with simple observation and appreciation of resources and minimum improvements to facilitate such use. Pedestrian-oriented activity such as hiking, canoeing or wilderness camping would prevail. Facilities would be minimal, perhaps including nature walks, paths, interpretive overlooks and primitive camps. The natural area zone would probably constitute the largest section of the park and the surrounding recreational zone could

be regarded as a 'pre-park' or buffer zone. Access roads would be restricted to the latter and it would form the natural setting for all the more intensive recreational activities permitted in the park. However, as previously mentioned, regional mass recreation demands, hotels and other visitor services, and park maintenance facilities, should always if practicable be located outside the park itself.

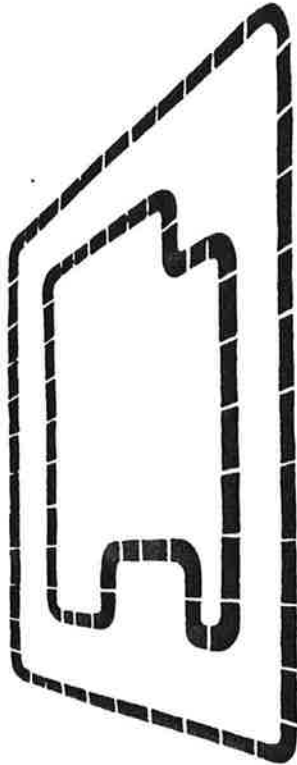


figure (1)

One well-known example of the two-zone concept, although it occurred quite accidentally, rather than by design, is the Olympic National Park in the State of Washington, U.S.A. (F. Fraser Darling and N. Eichhorn, 1967). Here the central core of the park remains inviolate and is intended to continue in its semi-wilderness state. However, various facilities, which in this case include visitor centers, staff housing and maintenance services, have been developed in the peripheral zone. The reason for this two-zone approach, which as stated was not deliberately planned, is simply that the core of the park is mountainous and relatively inaccessible so any development naturally was forced to occur near the park perimeter.

The model (Fig. 1) and the example quoted are generally illustrative of the principles underlying the concentric theory of zoning, one of the most important of which is control of access. Prime preservation areas for less intensive use are deliberately kept remote by distance and by other means of limiting access. Ecologically vulnerable sites and areas where solitude and the natural or primitive character of the resource is to be preserved form the core zone. By limiting vehicular access to areas surrounding these sites, damage can be minimized and carrying capacity limits more readily enforced. Where solitude is a key factor in areas valued for their aesthetic or inspirational qualities, overcrowding beyond maximum limits of social carrying capacity can also be more easily prevented, as people seeking more intensive forms of recreation will seldom venture far from access roads.

THE CLASSIC THREE-ZONE CONFIGURATION

A still more satisfactory arrangement involves establishing zones for visitor services, accommodation, etc. around the perimeter of the park outside the recreational zone, which now becomes a buffer between the former and the core area. In large management areas, strict natural areas or wilderness

it desirable to buffer these areas from encroachment and high use areas by their location within a zone in which surrounding use and development can be regulated.



figure (2)

In Poland, a proposed plan for the Bialowieza National Park illustrates the concentric three-zone configuration (T. Suczczyn, 1967). The core area has the general character of a managed natural area or strict natural area, where entry is limited to scientists on special permit or others who must be accompanied by guides. Tourists are generally prohibited from this zone. The core is surrounded by a partial reserve or protective buffer where free access is permitted for observation and study but where movement is limited to authorized paths for vehicles, bicycles and pedestrians. Although this would be more suitable in the peripheral zone, limited parking is also permitted and ski runs and lifts have been installed for winter use. The third or outer zone is a recreation zone with free access to tourists. Ski runs and lifts would have been more appropriately included in this area which has multiple-use facilities of a varied nature including camping, lodging, administration, maintenance and concession facilities and commercial centers.

NODES AND LINKAGES

The ideas for concentric zoning discussed up to this point apply largely to smaller parks (e.g. less than 100 square km) in which facilities should be located outside the park, as a general rule, or be confined within special zones near the periphery of a park, where this is unavoidable to meet demands. The concentric concept may be impractical in very large parks, comprising perhaps several thousand square km, where facilities for use must be internally located, or in both smaller and larger parks where certain sectors have been considerably developed. Under these circumstances a network of cellular nodes or zones of intense activity, connected by linkages consisting of access corridor zones, may be best interspersed within the natural environment zones. The natural environment recreation zones could in fact be drawn so as to contain and buffer the wilderness areas, strict natural areas, managed natural areas, etc.; they would serve as ecological corridors,

enlarging the genetic range and linking the more primitive areas where no development is allowed. This principle is being used successfully in the United Kingdom to augment nature reserves as it provides an ecological transition area between developed and undisturbed zones. It is illustrated in the next model (Fig. 3), based on a simple two-zone concept: the outer boundary contains a large zone where no development is permitted, inside which, in this instance, a branching corridor zone is situated, which may contain access roads, minor visitor services, etc.

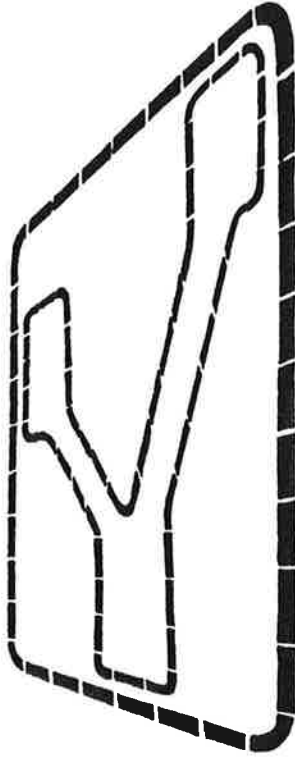


figure (3)

An example of precisely this type of lay-out is afforded by the Terra Nova National Park of the Province of Newfoundland in eastern Canada, and reflects the rather unusual physiographic conditions of an embayed shoreline (Fig. 4). The relationship of the two zones permits reasonable movement between man-made conditions and natural, primitive areas. As explained by the Canadian Department of Indian Affairs and Northern Development:-

'The transition zone delineates that area of the park wherein developments are permitted. Service centers, activity cores, day-use areas, camping areas and special use areas can occur. Main and secondary arteries are devised to connect the possible uses. The intensity of use will vary directly with the terrain condition, the available services, the distance factor and the attractions of the area... The area designed as a nature preserve is remote for the average park visitor. Nonetheless, to maintain a fair representation of the park's resources, a considerable amount of land is set aside. This area is accessible by foot or by boat trails.'

Using this idea of interspersing natural areas with activity nodes and access linkages, it is easy to draw a model of a zoning plan which would leave most of a park as undisturbed natural areas, the next greatest portion as transitional buffer areas, and the smallest sector allocated to development nodes and access (Fig. 5):

On some occasions it may be possible to classify an entire park under a single, primary management category (e.g. wilderness area), but with increasing conflicts between tourism and perpetuation it is understandable that such cases are rare.

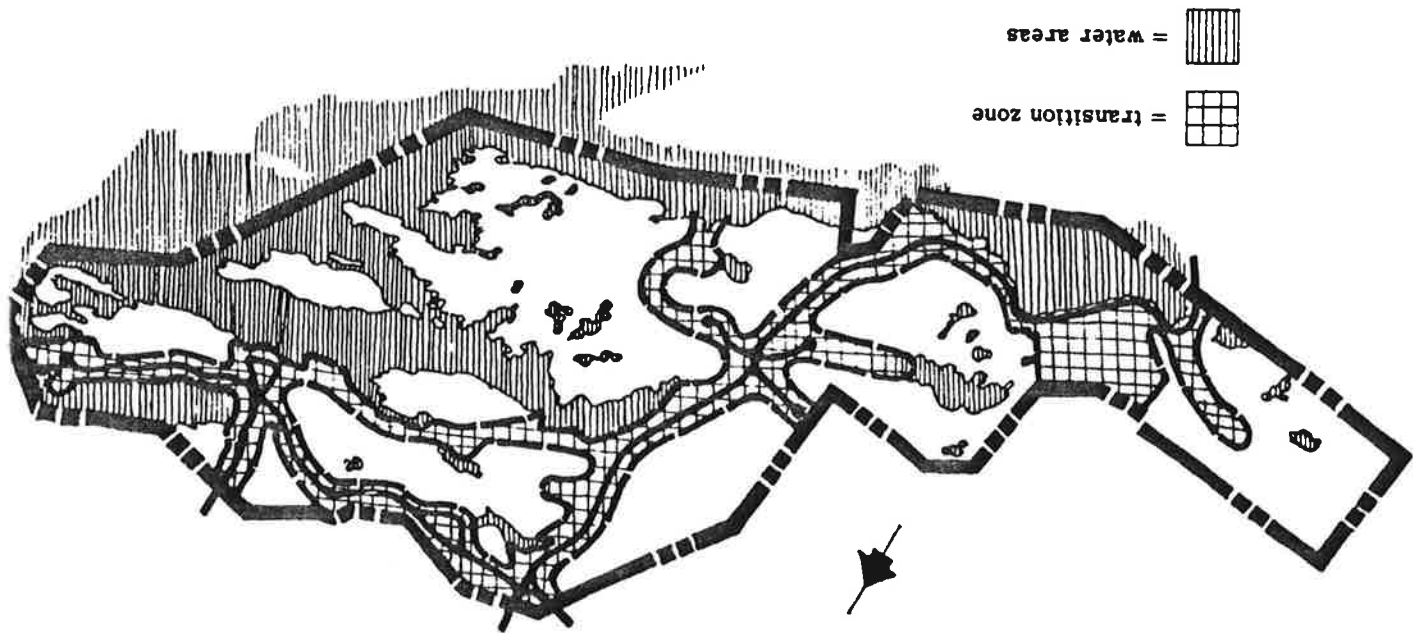


figure (4) Adapted from a plan of Terra Nova National Park in Canada, situated in an embayed shoreline area. The unmarked white areas are zoned as nature reserves, which the average park visitor would regard as too remote, confining his activities to the transition zone, where roads and visitor services are permitted.

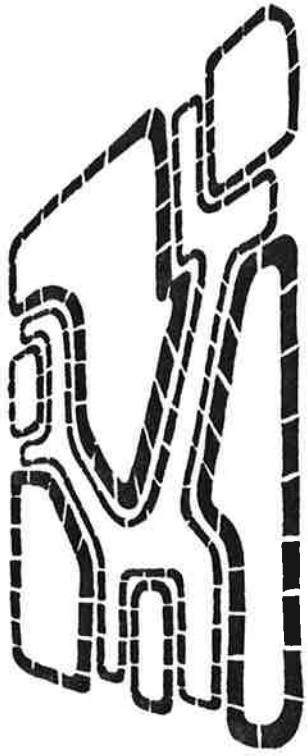


figure (5)



figure (6)

ROADS AND ACCESS

The setting aside of isolated, unrelated tracts for the purpose of protecting valued resource qualities should not be considered as proper zoning, although it may be in a partial or figurative sense. Control of access to internal areas of decreasing intensity of use is important in order to enforce restrictions. Access can be limited in a number of ways, but the location or absence of roads and parking areas is a most important factor. Roads generate traffic and they are tongues of penetration which will load and eventually overload park areas. Moreover, there tends to be a multiplier-effect associated with roadbuilding, whereby increased use and development of adjacent areas and lateral penetrations inevitably occurs. Roads must be available in many national parks; the important points are the way in which they are constructed and the question whether, for ecological or scientific or recreational reasons, certain districts ought to be opened up by roads at all. Figs. 6 and 7 demonstrate how a primitive 'stepping-stone' concept of the use of the access zones can develop into a complex of two-way traffic routes, parking lots and visitor centres.

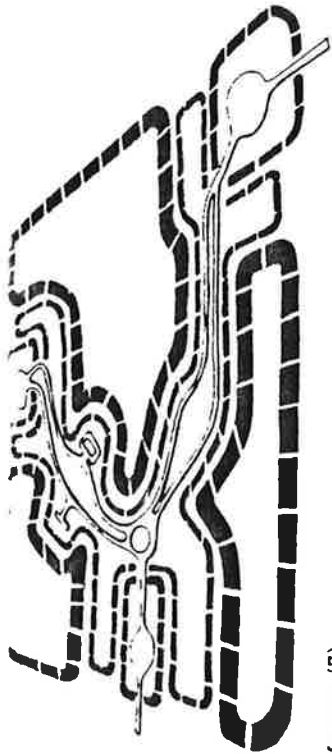


figure (7)

Major highways or through-roads should never be built within or to the edges of core areas to be left undisturbed (e.g. Wilderness or Strict Natural Areas). They should always be limited to outer zones. In some national parks completely divided double-track road systems have been proposed to cope with heavier park traffic and they are much more suitable for experiencing park environments than non-separated two-directional paths (R. C. Lucas, 1969). They provide closer contact with the natural environment and less distraction from on-coming traffic as the two lanes are narrower and out of sight of each other. They can also be made less conspicuous when carefully fitted to the landscape, using curvilinear alignments with less extensive cuts and fills (Fig. 8). When road improvements are absolutely necessary it may be useful to keep the existing road as a one-way path and build a new return facility with an independent alignment. A most acceptable arrangement would be to allow ring roads only in the outer zones of a park with dead-end spurs penetrating toward core zones where vehicular access is required. One-way loop roads skirting core zones would be particularly advantageous 'educational' facilities for seeing and enjoying the park at a leisurely pace.

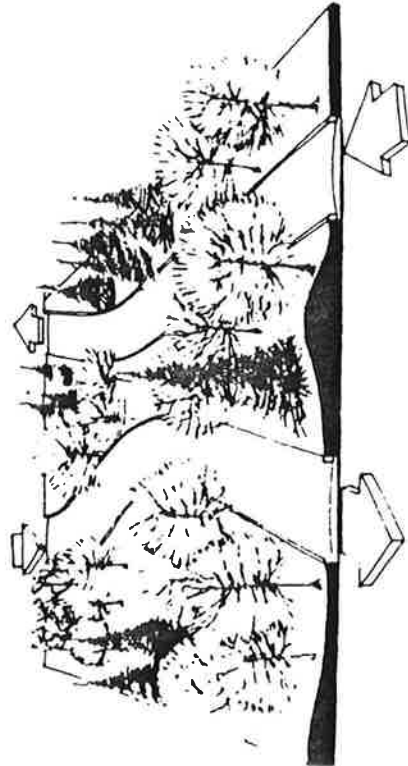


figure (8)

should be considered before constructing new roads. Electric trams, as used generally for deploying visitors and residents in the Swiss landscape, or mini-railways with open cars would not only be more efficient but would also have less visual and ecological impact than hordes of autos. In Point Pelee National Park, Ontario, a very fragile area, consisting of a sandspit projecting from the shoreline of one of the Great Lakes (Erie) and only slightly over 1.5 km² in area, yet with peak daily visitation reaching 1400-1800, officials have begun to phase out all visitor auto traffic. Instead, small 'elephant' trains, pulled by non-polluting tractors, will carry visitors from a large parking facility outside the park to various points along the existing road network, as shown below in Photo. 2.

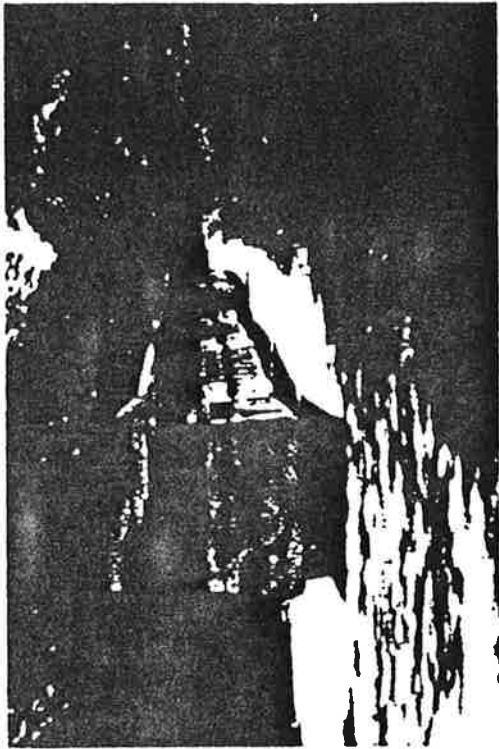


Photo 2. Train pulled by propane fueled tractor. Point Pelee National Park in Canada.

Photograph: R. Forster

Concluding this discussion of zoning, it is worth remarking that such natural features as ridgelines or rapids isolating navigable sections of rivers can often be conveniently selected as the boundaries of zones, since access can easily be limited to one or other side of them by the physical barriers involved.

INFORMATIVE AND INTERPRETIVE PROGRAMS

Visitor overload and undesirable use can be screened from core zones by locating interpretive orientation centres at peripheral entry points. Visitors can be informed on the purpose of the park and given a better understanding of what they will see, thus making the park more meaningful to them. When overuse problems develop, interpretive centres located in this way can be used to educate visitors who will be better qualified to enter unique areas

through imaginative use of stimulating exhibits and displays. Ultimately some form of 'entrance examination' or 'park literacy test' may have to be employed if there is no alternative for avoiding overuse and impairment (see G. M. Jemison, 1967; Darling and Eichhorn, 1967, also concur that such measures may become necessary). Devices of this kind can be viewed as means for training visitors to be careful as well as qualifying them to gain increased enjoyment from added understanding of park resources. Similarly, interpretive centers, used in this way, should be very influential in controlling undesirable activity in core zones: use patterns—amount, type, timing and location—are influenced by people's objectives and by what they know and think about the environment itself (R. C. Lucas, 1969). The centers would also have the effect of making allocation decisions for restricted use areas more acceptable to the public, as growing demands for scarce park resources will require increasingly difficult allocations among different groups of users. To accept decisions, and to participate effectively in them, the public will therefore need a better understanding of the purposes and limitations of valued park resources.

As previously emphasized, a major consideration in zoning is to provide an adequate range of alternative recreation possibilities in areas that will divert unwanted pressures from the most valued park resources. Where there is sufficient parkland available, or where park boundaries can be expanded, providing a variety of recreational opportunities in areas near the park periphery may be one of the most effective ways to minimize impact. And it can be accomplished in a positive way with incentives to guide voluntary action and with a minimum of prohibitive restrictions. It has been argued that people who tend to seek mass recreation experiences are more concerned about the accessibility of an area than its quality. If a range of alternative recreation possibilities can be provided near the exterior of the park, sited in more ordinary sectors better able to withstand adverse ecological impacts many people seeking forms of recreation harmful to ecological or aesthetic perpetuation values can be diverted before they reach interior zones. Those who seek only a few natural amenities and a change from the usual environment may be perfectly content on a sandy swimming beach that is virtually impossible to wear out by trampling. In general, beach and back shore areas near park boundaries and entrances should be reserved for intensive day use.

The Kennemerduinen National Park in the Netherlands is an example of a successful attempt to concentrate visitors in small areas near park boundaries, so as to protect the natural qualities of the remainder of the park. It is a small area (1240 hectares) of dune-land, located on the North Sea Coast in the densely populated Amsterdam-Haarlem area and established in 1950 by the Foundation 'National Park De Kennemerduinen'. Impact has been minimized by causing voluntary concentration of visitors near park entrances through careful disposition of mass recreation-oriented facilities. Visitors can move freely over areas comprising 123 hectares (approximately a tenth of the total park), but elsewhere roaming is not permitted and marked and surfaced vehicle, bicycle and pedestrian routes must be followed. Very little damage has been done to the landscape as a result of steps taken to ensure that the majority of visitors congregate voluntarily in small, less vulnerable areas near park entrances. Studies showed that the majority of visitors preferred mass recreation and valued more open scenery, sand and water for these purposes (E. C. M. Roderkerk, 1961: see Photo 3). Parking was accordingly provided near the entrances and the landscape in their immediate vicinity adapted as closely as possible to visitor preferences by providing



Photo 3: Focal point for visitors to Kennemerduinen National Park: the "t Wed" lake.

Photograph: E. C. M. Roderkerk



Photo 4: Part of the undisturbed central area of Kennemerduinen.

Photograph: E. C. M. Roderkerk

camping facilities, children's wading ponds and opportunities to walk and play nearby. In this way visitor impact was limited to less vulnerable areas near the park boundary and to a nearby strip of beach along the North Sea Coast where vehicular access and parking was also provided. It was found that the majority of visitors did not venture far from these recreation areas even when they could do so on foot. Despite the large number of visitors (600,000 in 1965), there has been no significant effect on the flora and fauna. Solitude, for those who prefer it, can still be found throughout most of the park (Photo. 4). The park Director, Dr. E. C. M. Roderkerk (1961), gives the following reasons why the flora and fauna have not been affected by visitor impact:

1. Diversion to certain less vulnerable areas, not by means of signboards prohibiting access, or fencing in, but by rendering particularly attractive places where a concentration of visitors is both desirable and admissible. The most important spots in this respect are the paddling pools because of their great likeness to the beach.
2. Information of the public by special signboards which render understandable the reasons for certain prohibitions, by visual representation and clearly intelligible text (Photo. 5).



Photo 5: "Please keep to the path over there. On the other side of this noticeboard I and the other wild animals living round here prefer not to be disturbed!"

Photograph: E. C. M. Roderkerk

3. Patrolling, with particular emphasis on the information of the public; police action will only be proceeded in cases of extreme necessity.
4. Effecting changes in the resistance of the ground, particularly by covering driftsand patches with branches.
5. Fencing in (of young plantations only).

Roderkerk also feels that the visual impact of these protective measures on the landscape is negligible. He notes that the pools may be even considered as additional beauty spots. The most unsightly intrusions are no doubt the parking areas; but they have been camouflaged as far as possible with earth berms and plantings. Because of their location in the vicinity of park entrances they are of little significance in the context of the natural beauty of 'De Kennemerduinen' as a whole.

The kinds of facilities provided for diversion and concentration of intensive visitor activity should always if possible be resource-oriented. There are many commercial and artificial entertainments such as movie houses, mechanical rides and suchlike amusements which should never be allowed in national parks. Bathing, picnicking, camping and certain outdoor play facilities would in most cases be suitable uses for tourism-recreational zones. Facilities for visitor orientation and education 'awareness' programs would also be appropriate in such zones.

ACTIVITY ALLOCATION

Zoning within a park should be based on a system of priorities regarding perpetuation and use. In general, the extent of ecosystems, compatibility of visitor activities and estimates of physical and social carrying capacities would have to be considered when classifying special areas. Allocating more intensive uses to less vulnerable ecological sites is an important first step. Roads, campsites and other necessary visitor services should be located in areas that will withstand higher intensities of use without suffering physical damage. Protection of soils and vegetation is usually needed for areas subjected to concentrated visitor use. By careful design and arrangement of facilities, these areas can be divided into the part people occupy and the part they look at. By using paved surfaces and trails that go where people wish to walk and by arranging indigenous plantings and barriers, tables, toilets and other facilities in careful relation to each other, much indiscriminate trampling and damage can be avoided. Such site planning considerations are normal for landscape architects who are specialists in this field.

The National and Historic Parks Branch of the Canadian Government has set forth several well-considered development priorities in its general policy statement on national parks:

1. outstanding park features must be preserved in their natural state for public benefit, education and enjoyment;
2. areas adjacent to outstanding park features are to be preserved as part of the scene or reserved to facilitate public use and enjoyment of the feature;
3. facilities for the convenience of visitors such as parking areas, rest rooms, picnic areas and campgrounds may be located near a feature but not so close as to detract from a feature or its setting;
4. Visitor Service Centers or areas containing accommodation such as motels, cabins, hotels, campgrounds, trailer parks, and stores, restaurants, service stations, etc. should be located in reasonably attractive surroundings where the services available will assist in enjoyment of the park; such areas should not occupy or encroach upon outstanding natural features (Note: especially in small parks, i.e. under 100 square km, these facilities should be located outside the park);

5. residences for Park Staff should have a reasonably attractive area but they may not be sited on or near major features or attractions; preferably the location should be inconspicuous and off the main stream of traffic (Note: as above these facilities should be located adjacent to the national park proper or, under very exceptional circumstances in very large park areas, they may be located within special internally zoned compounds);
6. Park Management compounds and other purely servicing establishments should be sited where the buildings and activities can be completely concealed.

Wherever possible, in parks that are not too large, areas for mass recreation, for visitor services and for park maintenance and administration facilities should be concentrated within peripheral zones. Where necessary in large remote parks, lodging facilities may also be appropriate to these zones. In general, facilities should be allowed in interior zones only if they are essential for the purpose of public visitation to larger parks and provided they are not constructed in 'ribbon-development' fashion along park roads. If and when necessary, they should be integrated in compact visitor-services centers at key transportation access points, ideally just within park boundaries.

By careful siting and architectural design, facilities can be made to harmonize quite inconspicuously with the environment. Thus, wherever appropriate and practicable, indigenous construction materials and building techniques should be employed. Structures should if possible be clustered in small clearings surrounded by existing indigenous vegetation. In the development of access roads it is imperative that ecologists and landscape architects participate in both route location and design, to avoid the minimum standard, single-purpose approach typically adopted by too many highway engineers.

Where additional land is required to establish buffers or divert mass recreation from highly valued sites, costly total acquisition of property rights may not always be necessary. Partial control of rights may be adequate for these purposes. Easements may be purchased to limit use or maintain existing farm or forest patterns. Economic incentives such as tax relief, loans or free planning services can be used to promote private development of needed facilities outside the parks. Design services may have to be provided and written into agreements to ensure proper control of design quality. When park systems planning cannot be coordinated and effectuated as an established principle, it may sometimes be desirable for facilities in adjacent or buffer areas to be developed by national park authorities themselves and later turned over to local agencies or private concessions to manage.

EXAMPLES OF LAND USE CLASSIFICATION SYSTEMS FOR NATIONAL PARKS

Elaborate classifications for parklands have been developed in several countries. Thus, in Poland particularly significant progress is known to have been made and written up by Maria Luczynska-Bruzda and the late Professor W. Goetel, but unfortunately a detailed review has been precluded by translation problems. Examples from Canada and the United States must therefore suffice.

(1) Canadian National and Historic Parks Branch classification

The system which has been developed and is being introduced in all national parks, is based on five land-use categories:

- Class I - special areas
- Class II - wilderness recreation areas
- Class III - natural environment areas
- Class IV - general outdoor recreation areas
- Class V - intensive use areas

All of these classes would not necessarily be present in a given park. The general objective is to have as much of the parkland as possible under classes II and III. The zones are conveniently defined as follows in the provisional Master Plan for the Fundy National Park:

'Class I—Special areas.

Special areas are those which have unique or otherwise valuable qualities worthy of total preservation and strict protection. There are two general types: special ecological areas and special historical or cultural features. Ecological areas may contain major plant types, entire watersheds, animal habitats and special research areas within the park. Management and use will be directed with a minimum of interference to life cycles of plant and animal communities. Management may be restricted to the prevention of a natural disaster or unacceptable hazard to the important features of the areas. Vehicles will not be permitted in these areas and, in certain sections, there will be no obvious trail access. Visitor use may be limited to nature observation, Interpretation and walking trips in daylight hours only.

Class II—Wilderness recreation areas.

The predominant character of such an area is the result of the interplay of purely natural processes. It is large enough and so situated that it is unaffected, except in minor ways, by what takes place in the non-wilderness around it. Access within a wilderness area is confined to non-mechanized means such as hiking, horseback or canoeing. In Class II areas the primary aim is preservation of a wilderness recreation environment. Wildlife habitat is plentiful and primitive campsites may be available for back-country use.

Class III—Natural environment areas.

The concept of a wilderness threshold best describes these areas. They serve as buffers between wild terrain and the more developed areas, present a natural background to developed facilities, and are essential to the preservation of the wildland character of the park. Class III lands are in many ways the most difficult to define. Some portions might be regarded as a land bank. With increased knowledge of these areas, some may be added to Class I or II lands. Permitted uses are the same as in Class II lands, but at higher rates of intensity consistent with the capacity of each area. Class III lands may also include internal park roads.

Class IV—General outdoor recreation areas.

These areas delineate the limits of existing and potential facility developments. They include access roads, campgrounds, view points and other outdoor activity areas. Class IV areas will be subjected to intensive use, which may exceed their resource potential. This may require certain

types of construction such as trails, paths, campsites, roads, parking lots and drainage systems to reduce unacceptable impairment of the landscape.

Class V—Intensive-use areas.

In some of the larger national parks, major visitor services centres provide a wide range of visitor facilities.

H. K. Eldsvik (1971), Chief of Planning in Canada's National and Historic Parks Branch uses the following process in applying zoning to the parks:

'... we first identify those essential features which must be preserved (Class I). Secondly, we identify existing and potential use patterns which in many cases pre-date the park (Class IV). Next, we assess those areas which are extensive and can be protected as wilderness (Class II), and finally, lands remaining fall into a buffer category which in many cases provides a scenic backdrop (Class III).'

The following criteria are also used in allocating specific areas to a particular land use class:

1. identification of natural and cultural features of the park, their location, size and quality;
2. use of topographic and hydrographic boundaries for most special areas and the majority of wilderness recreation areas (Class I and II);
3. designation of natural-environment areas (Class III) to provide a natural background to access routes and recreation areas;
4. inclusion of land required for the construction of campgrounds and other facilities in general outdoor recreation areas (Class IV);
5. consideration of present development or lack of development when classifying each part of the park; and
6. evaluation of future developments and transportation patterns to preclude conflicts in land-use.'

(2) ORRRC Land Use Classification, United States

In the United States a rather similar classification for parklands was developed in 1962 by the Outdoor Recreation Resources Review Commission and is now prescribed for use in making planning and management decisions on Federal lands.* As adapted for lands and waters administered by the National Park Service, it is being used for delineating six management categories or zone classes (Fig. 9).

- Class I — High Density Recreation and Public Service Parklands
- Class II — General Outdoor Recreation Parklands
- Class III — Natural Environment Parklands
- Class IV — Outstanding Natural Features
- Class V — Primitive Parklands
- Class VI — Historic, Archaeological and Cultural Resources

Class I—High Density Recreation and Public Service Parklands: compact areas or nodes located on land suitable for site development and intensive visitor use with direct access to the circulation system and utilities—managed primarily to meet regional demands for intensive use with a high degree of facility development.

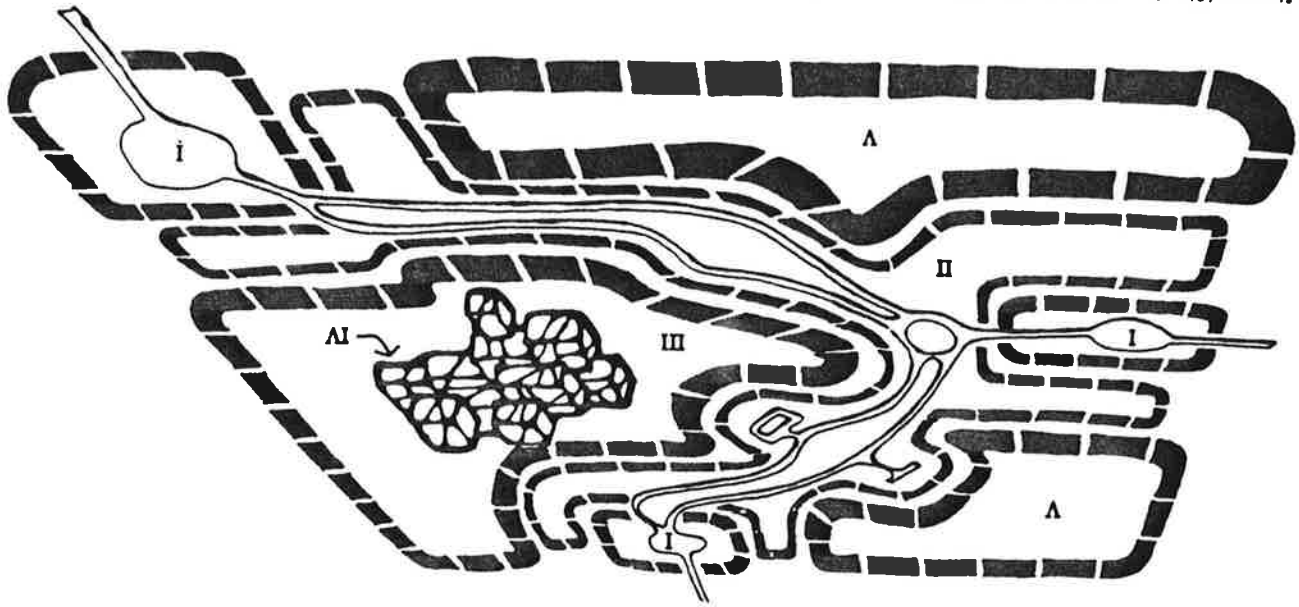


Figure (9) Conceptual, zoning and circulation scheme based on ORRRC Parkland classification, USA.

* ORRRC 1962.

Class II—General Outdoor Recreation Parklands:

located around major and minor park roads and around Class I areas—contain visitor services facilities and orientation and interpretation centres—managed to sustain a variety of visitor activities in a natural setting including camping, picnicking, winter sports, etc.

Class III—Natural Environment Parklands:

large areas often buffering Class IV, V and VI parklands and wilderness—facilities are minimal and must be in complete harmony with the environment—may serve park research needs and resources study needs for environmental education programmes.

Class IV—Outstanding Natural Features:

areas containing features of high scenic or scientific value requiring the highest order of protection—to be interspersed among Class III and V parklands—very limited facilities essential to protection and appropriate visitor use such as trails, nature walks and interpretive overlooks for observation and study—International Biological Program (IBP) research natural areas would be placed in this category.

Class V—Primitive Parklands:

extensive natural undeveloped areas free from presence of mechanized transport—for hiking, nature study and back-country use—limited primitive trails, campsites, and pit toilets—wilderness is a special sub-class requiring Congressional authorization.

Class VI—Historic, Archaeological and Cultural Resources— criteria similar to Class IV parklands—visitor activities limited to observation and study.

CONCLUDING COMMENTS ON ZONING PRINCIPLES

Zoning on the basis of intensity of use is a control strategy to ensure a proper balance between visitor use and perpetuation of each park. Because there are many conflicts between recreational activities it will usually be necessary to provide a graded series of zones within one park to accommodate competing uses.

As countries become more economically advanced and society becomes more affluent, a kind of 'quality revolution' occurs with regard to demand for recreation and leisure time services. Not only do people demand a greater variety and choice for leisure opportunities but they become more particular about the quality of their outdoor recreation areas and experiences. There is a continuum of recreation areas and related experiences which calls for a variety of environments differentiated by the degree of solitude or crowding desired and the natural or man-made qualities of outdoor areas. People will wish to make use of parks in many ways and will prefer the option of experiencing different environments at different times to vary their recreational diets. Park management objectives would normally respond with a range of specific uses subject to appropriate management limitations. The diversity of recreational uses leads to the need for a variety of areas from the remote mountain or lake of superb natural beauty and solitude to the more ordinary kind of bathing beach or picnic forest. When planning for recreation it is necessary to provide choice through flexibility of use and a wide range of

recreational opportunities. But park environments that are too flexible regarding use will obviously lead to conflicts between competing activities and values associated with the quality of the landscape and the recreational experience obtained. It is therefore necessary to regulate the activities of people not only in terms of their potential threats to the landscape, but also according to the potential dissatisfactions of other users. A sound management plan therefore must provide a basic policy for structuring environments that offer a range of choice for satisfying different values associated with nature and environmental quality. A range of alternative opportunities, in graded steps, could accommodate competing recreational uses and protect valued natural areas from visitors who seek experiences more logically provided elsewhere.

In larger park areas where a wider range of competing management interests can be accommodated, more complex classifications of use zones may be desirable. By establishing a co-ordinated system of zones, each individual zone or site can be tailored to the opportunities for which it is intended, using the combination of incentives and controls outlined. A range of alternative recreation environments could be zoned in a series of graded steps to coincide with various kinds of recreation experiences and the kinds of environments they require. Incompatible classes of recreational experiences would have to be isolated. Various kinds of compatible activities can be grouped into complexes. These activity complexes would then be allocated to different recognizable zone classes, in order of decreasing intensity of use and in accordance with estimated ecological and social carrying capacity limits and the degree and type of access required.

The extremes of zoning on this basis would range from the remote wilderness area or strict natural area, reserved for very limited use, to a crowded mass recreation site or visitor service center located near park entrances. There could be as many variations in between as there is sufficient area to accommodate. But the extremes or all of the many variations between them would not have to be present in every park.

In more intensively used exterior zones the problem of ecological carrying capacity would be a critical management factor. In interior zones set aside as wilderness, strict natural area or something similar, where solitude and lack of human interference are key factors, social carrying capacity would be one of the principle management problems. The size of zones would have to be carefully considered in all cases but interior zones would need to be more extensive in area. The high quality of environment necessary for user satisfaction in primitive areas can only be maintained with very limited use by a small number of people.

Establishing a range of zones for different kinds and intensities of use will minimize conflicts between park users and impairment to park values. Limiting access to zones by degree and mode of circulation will go far to preserve natural qualities and prevent misuse by those who seek more active or conflicting forms of outdoor recreation. Visitors who prefer to probe the depth of nature in interior zones will tend to be more educated people who derive satisfaction from experiencing the difficulty of hiking to and from more remote areas. They are not only willing to go some distance to reach their goal but will be better prepared to leave the areas as they found them. Greater emphasis on environmental education programs in the parks will encourage others who may not be aware of the benefits of such environmental experiences.

Several problems are apparent with zoning on the intensity of use basis. As population and demands for outdoor recreation increase it will be extremely difficult to resist pressure for zoning changes to allow increased intensities of use. The problem has been well demonstrated by the multitude of recurrent adjustments and changes to zoning in cities. If zoning policies are developed in too hasty or dogmatic fashion and are universally applied to all national parks they may become blunt and inflexible tools that cannot cope with localized or unique conditions.

In combination with a carefully executed zoning plan, other related variables of access, road design and location, information, diversionary attractions, etc., can be very effectively structured to influence visitors and their activities to achieve desired perpetuation and use patterns. But, it must be remembered that zoning of parklands is only a delaying tactic. It will be difficult to preserve natural areas for limited use or maintain high levels of user satisfaction in more primitive park areas under overwhelming external pressures. Hopefully, zoning can be used to buy time until park systems planning and other forms of direct regulation of population and development become feasible. While preparing master plans and zoning to guide use and development of unitary parks, these other contingency measures should be given all possible encouragement and support.

Wise advance planning is necessary to determine protection and use objectives and the suitability and location of areas for tourism and intensive recreation. Long-range planning cannot proceed with assurance that desired objectives will be met without the guidance of an established zoning plan. It will define areas within the park and its periphery in accordance with the type and extent of acceptable use and development and acceptable means of success. Location of circulation facilities, juxtaposition of zones on the basis of intensity of use and the size, type and quality of resource areas, are the key factors for distinguishing zones. The kinds of zones within a park will depend upon many factors including the size of the park, how remote it is, its proximity to densely populated areas, etc. Without such a zoning plan developed as part of the Master Plan and statement of purpose, each succeeding administration will add to increasingly conflicting development patterns. Without a zoning plan for guiding day to day management and remedial actions there is no effective basis for controlling change and subsequent loss of park values.

6 Developing & Planning Program

Every park must have a long range management program. It is a necessary adjunct of any administration. The program consists of a set of coordinated policies and plans that establish the concept, the rationale and the control guidelines for protection and use of the park's resources. The classically formulated dilemma over perpetuation and use provides both the reason and the philosophy for careful planning. The amount of planning required will vary for each park area according to the physical and intangible qualities of its resources and the social, political and economic forces bearing upon them. Generally, it increases with the diversity of ecosystems and features to be perpetuated, and the demands upon them for human use and enjoyment.

PLANNING PHILOSOPHY AND APPROACH

The basic philosophy and approach is an indispensable part of every program. Park planning can involve complex and elaborate procedures but the details of its methodology are less important than the basic philosophy that effective planning must proceed from a clear understanding of the physical and intangible resources of an area and all the objective factors which bear upon them. The principal determinants for appropriate use and development therefore come from an understanding of the intrinsic potentials and limitations of the area's resources. This approach was recently incorporated in a statement that the National Parks Service in the United States prepared for its staff (US Department of the Interior, 1966):

'the key to our planning is implicit in the forgoing distinctions. Though parklands are of many types, our attitude toward them stems largely from one point of view: these lands attract people because of values which derive from the lands themselves. It is these values which we use. It follows that the nature of the land normally should dictate the use. In natural . . . areas, this use is a simple viewing of the land qualities for their own sake or for the emotional associations, patriotism or spiritual qualities they evoke. In recreational areas, the use is an activity appropriate to the environment.'

The implications of this environmental approach are most significant for master plans and planners:

'Master Plans, if they are to be successful, must be firmly based on the resources of the study area and master planners must be committed to the view that... planning grows out of a careful investigation of the areas physical and intangible realities. Planning must ultimately adjust all goals and objectives to the unalterable aspects of the resource.'

After establishing the broad philosophical basis for park planning, the state-ment divides the planning process into four major areas:

1. inventory and evaluation of the physical and intangible resources and forces, processes, and events they represent;
2. an analysis of the relevant legal and socio-economic factors;
3. formulation of the purposes and objectives of the area and how its re-sources will be used by people; and
4. development of guidelines for applying these purposes and objectives to the resource.

Approached in this way, a master plan—and by extension, all plans for im-plementation will evolve from understanding the resources of the area and relating them to the central concept of the park itself. The resources of the park thus will constitute the ultimate objective standard by which the management, development, and public use of any given park can be measured.'

It is a characteristic of modern organization and governments that they deal more effectively with immediate problems and specific tasks than with long-range objectives. The pitfalls of coordination and adjustment planning to meet problems and visitor needs on an *ad hoc* basis were outlined earlier. It was shown that preoccupation with this kind of activity precluded effective long-range planning to avoid unwanted situations resulting in impairment to park resources. Planning must anticipate problems and developmental by taking a long look into the future. Visitors are attracted to national parks because they are valued ground. Planning for their needs for today is a difficult enough task, but planning for the future is even more demanding. We must plan ahead, not merely to anticipate situations based on current trends pro-jected into the future, but to understand them and find ways to modify, halt or reverse them if they threaten to impair recognized park values. This requires the collective knowledge, wisdom and skill of several disciplines, not only to understand the conditions of the present but to look as far down the road as possible to anticipate what problems and conditions the future may bring.

THE PLANNING TEAM

Each person who contributes to the planning of a national park bears great responsibilities, as the task is to protect some of the most meaningful and outstanding natural and historic resources of the nation while providing for their use and enjoyment. These responsibilities include recognizing and reconciling many conflicting interests. Balancing public use with effective conservation requires a great deal of insight and imagination. It requires that an interdisciplinary planning team be established to define the purposes of the park and to formulate guidelines for the protection, use, development and interpretation of its resources. The planning team should be composed

of experts having different professional backgrounds such as ecology, land-scape architecture, architecture, park planning, resource management and engineering. Working together, these people can exert the greatest impact on park management. Natural scientists from various disciplines and geo-graphers and economists working with general applied ecologists and planners can provide the knowledge base leading to an understanding of the relevant forces and resources interacting within and upon a park area.

The professional planners on the team are the coordinators who are especially acquainted with the planning process itself. They provide the design skills for formulating and evaluating the possible policy alternatives and assist in the choice of the best solution. Planners may be qualified in one of a number of fields including park planning and landscape architecture, but they must have an awareness for the total man-environmental situation; in short, they must think systematically and ecologically, being ever mindful of the inter-dependencies and interrelatedness between all things. Planners must also have an awareness and aesthetic appreciation of the landscape and of the values and functions of environmental form, especially as related to behavioral and development needs of park visitors. They must share an understanding for the interpretation of human needs and for the construction of facilities associated with park development within the context of park values and eco-logical principles. Above all, planners must have the ability to ask the right questions objectively, weigh the evidence contributed by the scientific experts and work with them to determine management alternatives and the relative long-term effects on values held by various interests. They must contribute their special design knowledge and skill in reconciling conflicting use and management interests, by employing appropriate physical planning and other incentive mechanisms to ensure that use and development is in harmony with the long range perpetuation objectives of the park. The potentials of the re-source base must be used to their best advantage while being effectively con-served for the future.

MASTER PLAN

The master plan consists of a report or series of reports and maps dealing with various aspects of the management program. It is a control document which constitutes a long-range policy guide for the management of park programs and services to the people. It sets forth the physical and intangible resources upon which the park is based, the purpose and objectives, a manage-ment concept for how the parks resources are to be administered and how they are to be used by the public and made more meaningful to them. It estab-lishes the philosophical basis and the rationale whereby the use of the park is reconciled with the conservation of its resources. It identifies necessary control measures and strategies for implementing long term development and day to day administration and use consistent with the objectives. On the basis of master plan policy statements, detailed area plans and action plans can be prepared for specific construction or for resource management operations. The basic purpose of the master plan then, is to ensure that all implementation plans and projects evolve from an understanding of the re-sources of the area and relate to the central concept of the park itself. It set forth a sensitively balanced range of objectives and all of the necessary policies, plans, legislative controls, investment requirements and other development incentives plus the organizational means to carry them out. The

master plan documents represent the accumulation of the total planning process; all of the decisions, reasons, policies and plans which evolve. Used as a constant reference for all development and operations, they will ensure continuity in management policy and practice.

DEVELOPING A MASTER PLAN SEQUENCE

Planning is a generic term which deals with any activity which contributes to the establishing of objectives for the future and their attainment over time. Preparing park master plans requires advance preparation, in a reasonably systematic fashion, of recommendations for policies and courses of action with careful attention to their probable by-products and side-effects, to achieve the established long-range objectives for protection, use and interpretation.

It is impossible to detailed here a universal method that will apply to the political and economic realities of each country, or even to study-areas within a particular country which differ in size, physical and biological nature, political complexity, and the time and manpower resources available for planning and operation. However, a general concept is outlined that may serve as a guide for developing appropriate master plan procedures. The suggestions contain the essence of a good planning program and are based on the observations of experienced staff in the Park Service of the United States Department of Interior. These people provided much of the background material used in developing the guide (summarized in Fig. 10 on p. 78).

The need for planning will often exceed the capacity of governments to perform it. However desirable comprehensive long range planning may be, seldom will all the resources or knowledge be available to explore the many ramifications of any course of action. One aspect in preparing master plans is to identify areas requiring further research. Planning can certainly be more effective than it has been in the past. For this it is necessary to develop a procedural method of component steps which serves to systematize the total process. Such a method carries a park area from the proposal stage through the establishment and management stages and it should be formally established by the central administrative authority for national parks in each country.

The very complex nature of problems in national parks requires that various planning phases be carefully sequenced. Each phase will depend largely on the proceeding one and in turn partly determines the succeeding phase. Arranging an orderly planning sequence provides a more systematic and rational basis for a greater understanding of all of the factors which must be looked into. It forces explicitness and it helps in the coordination of various experts involved. It also leads to a wider understanding of the total resource and human value problem. As planning can be a rather frustrating experience, it should be cautioned that although a carefully phase sequence is desirable, the process will not function entirely in linear progression. This would assume one begins with the first step, completes it, sets it aside and moves on to the next in succession, until the plan is completed. Instead, planning must be viewed as a more complicated process involving constant feed-back and re-cycling to incorporate new information and changes in preceding steps. It may sometimes be necessary and even desirable to be working on different phases at a given time. The process involves constant

evaluation, recommendations and administrative or public approval; it requires frequent revision of completed work and occasional re-cycling of major steps until a balanced and workable solution is completed. Planning never ends with the master plan nor when park operations begin. It is a never-ending, on-going process. Minor refinements and policy changes will always be required on a continuing basis to meet newly anticipated conditions. Once a master plan has been prepared for a given area it must be improved and updated as new information becomes available.

The planning process begins once a proposal has been made for a new area or for the replanning of an existing park. The following are major steps which should be considered in developing a sequence.

PRELIMINARY RECONNAISSANCE AND PROGRAMMING

It is necessary to program and coordinate planning activities to assure that the need for planning is properly evaluated, that adequate resources are allocated to complete the task, and that various planning phases mesh together. A short term field investigation of the area is made to assess the general nature of the resources to be conserved, their significance to the nation and the scope of planning problems arising. The makeup of the reconnaissance team would vary with the nature of the proposed area but will usually include the ecologist and a planner to identify areas requiring further research and to program the subsequent planning phases. The various planning efforts for dealing effectively with the area are then identified and the required time, manpower and money resources are allocated. Because the need for planning will generally exceed the resources available, an order of priorities must be established and incorporated into a program coordinating schedule. The order of priorities would have to be worked out in relationship to planning needs for other park areas in the system.

ESTABLISHMENT OF THE PARK PLANNING COORDINATION COMMITTEE

In the absence of an environmental advisory council or some other coordinating agency as described in Chapter 4, a special committee should be established to effectively coordinate the various planning efforts, both internally within the national parks administration and externally with other agencies and groups. Within the parks administration, this group would determine priorities for all planning studies for both new and existing areas and maintain schedules for all planning activity. It would also act as a special review board to approve management plans. Externally, official channels should be established for coordinating park planning activity with other governmental agencies at national, regional and local levels, and with private interests, citizen groups and international assistance organizations. The committee may include several high ranking and experienced scientists and conservationists, outside the national parks administration, who possess special knowledge of the parks program and its ideals. Appointing such experts from universities and other organizations concerned with environment can extend the comprehensiveness of planning teams. Such appointments should be made with great care, as experience in the US Park Service indicates that outside experts have sometimes caused many problems on planning teams. It is rather uncommon for people not professionally employed in the national

parks field to have sufficient knowledge of an overall park system and this is essential for planning any part of the system. Outside advice may have to be co-opted where necessary to extend the expertise of planning teams.

BASIC INVENTORY

Before successful planning can proceed the planning team must develop an understanding and appreciation of the resource qualities which make the park significant and for various human and natural factors affecting the area. Answers to the following questions will provide the essentially unalterable conditions to which planning efforts must be adjusted.

1. What are the physical and intangible resources of the area?
2. For what reasons are they valued?
3. What natural or historic processes, forces or events do they represent?
4. Upon what factors does the existence of these resources depend?
5. What are the human factors or constraints affecting the area—the legal and political situation, the land ownership pattern and the existing uses of the area?
6. How does the surrounding area affect the park—ecologically, socio-logically, economically?
7. What are the major areas of conflict between the various park interests and values?

An Inventory may include an ecosystem survey, a historic survey, a study of intrinsic resource potentials and a socio-economic and legal analysis.

Ecosystem Survey

A simple inventory of different natural features such as weather and precipitation rates, soils, plants, animals, etc., does not provide adequate understanding for planning. These are simply static attributes of ecological processes which must be understood in terms of interdependencies and relationships and as a functioning whole, if particular features or qualities derived from them are to be perpetuated. What is required is a description of the major indicator species and components of each ecosystem and their relative dependencies upon various resource factors. Resource specialists familiar with local history, climatology, geology, soils, limnology, botany and wildlife can provide this information for the planning team. The relationship of major resource components must be described relative to such influences that bear upon them as climate, historical geology, hydrology, physiography and topography, soils, plant associations, animal life, cultural interventions and patterns of land use. An important consideration in boundary selection during later phases will be the extent of important ecosystems and the influences upon them of both existing and projected land uses within the area and the surrounding region. The position of the area within the general chain of ecological succession would also have to be understood. A particular combination of features present at a given time will not necessarily continue to remain in that form, so the team must develop an understanding of the potentials of the ecosystem in addition to current characteristics.

Historic Survey

For areas that are especially valued for historic and cultural reasons, planning must be based upon a thorough understanding of the particular events that

took place, their historic context, including the cultural conditions that produced them, and the significance of the relationship of these to the land and the physical remains. The general scene should be described as it once occurred and be compared to the remains of the scene in the present.

Study of Intrinsic Resource Potentials and Limitations

For both natural and historic areas the intrinsic potentials and limitations of the features and resources should be assessed for management, use and interpretation. These evaluations should be made with special attention given to the identification of:

1. features and processes suitable for interpretive and education programs;
2. remote areas suitable for providing a primitive wilderness or wild-lands quality of experience or for replicating a way of life or land use practice which once existed;
3. areas that will withstand more intensive use and development required for necessary visitor services;
4. fragile environments in terms of social or ecological carrying capacity which can withstand only limited use and development; and
5. areas to be set aside as strict natural areas and areas requiring restoration of natural ecosystem balance, as well as areas requiring continuing management to maintain biotic communities or species of particular interest or concern.

Socio-economic and Legal Analyses

Another set of realities to which planning must be adjusted are the human factors affecting the area, including various public policies in effect or projected, the pattern of land ownership and other legislative and legal conditions and prevailing political attitudes. The planning team should also understand the various legal tools available for implementing park objectives with respect to land and water rights. A survey and evaluation of the human activities in and around the study area should include various population and income characteristics and user-recreation habits with respect to available recreational opportunities. Major transportation patterns and trends within the region should be considered in relation to their possible effects upon the study area. Various recreation or conservation groups and agencies should be contacted and monitored so that every opportunity can be taken of a coordinated approach.

All subsequent planning is based on information compiled during the inventory phase and the success of planning will depend upon the comprehensiveness and competence with which the information is gathered and interpreted.

STUDY OF MANAGEMENT ALTERNATIVES

After the inventory has been made and evaluated, alternatives can be explored for the management and use of the proposed area. After various possible approaches have been explored, their relative advantages and disadvantages are evaluated and the best solution is selected. The alternative selected is the one upon which the subsequent master plan study is based.

STATEMENT OF MANAGEMENT PURPOSE

After a course of action has been determined from the study of management alternatives, a statement of purpose and a set of specific objectives for management, use and interpretation are prepared, including estimates of visitor carrying capacities and the most feasible strategies for deployment. This fixes the basic intent of management, although the statement may be refined and modified as planning continues.

PREPARATION OF THE MASTER PLAN DOCUMENTS

The preparation of the master plan begins upon completion of the inventory, the resolution of management alternatives and subsequent determination of the purpose and objectives. Since it is the primary control document for a park, it must set the policy for the perpetuation, use and interpretation of park areas and establish the philosophical basis whereby use is reconciled with the conservation of the physical resources upon which the park is based. It may include the following:

Summary of Analysis Factors

It is very important that relevant data and conclusions from the previous planning steps be incorporated into the master plan to convey the rationale behind management decisions to those who will prepare and implement action plans and programs.

Master Plan Concept

The necessary control principles can be set forth in the form of a design concept in graphic form with accompanying text and descriptions, including a resource classification for management-use zones and an outline of other control measures to be employed. All points of access, roads, interpretation centers and other major facilities would also be shown graphically in plan form. Together they form the conceptual framework for guiding more detailed plans, projects and operations that translate the ideas into action.

Although some detailed action programs and plans are most likely to be prepared following the establishment of the master plan, the master plan document should also identify the nature of these programs and the basic parameters for establishing them. They would include the following where applicable:

Study of Economic Impact—to determine the effect of a new area proposal upon the economy of the nation, region or locality;

Legislative Proposals—to establish new parks or revise the status of existing ones;

Cooperative Agreements With Other Agencies—where necessary to formalize certain procedures and responsibilities with regard to a systems approach for open space management;

Interpretation and Visitor Services—for all interpretive programs and facilities and for visitor services that are required;

Schedule for Acquisition of Land and Water Rights—specifying what interests are to be acquired in lands and what water rights are needed to implement the park in accordance with the guidelines laid down in the master plan concept;

Resource Management Plans—specifying management procedures that will be initiated or developed to adequately protect natural and cultural-historic resources;

The Research Plan—provides the basic outlines for meeting research needs brought to light by the planning process in the areas of ecosystem ecology, history and human behavior;

Administration and Operations—a summary of the establishments for both manpower and equipment and staff training programs which will be required to carry out the administration, interpretation and maintenance of areas once they reach the operational stage;

Developed Area Site Plans—contain detailed layouts and preliminary project plans of areas to be developed, showing how the area is to be utilized and the interrelationships and size of physical facilities; the Plans may also be used to introduce specific projects into the construction program;

Development Staging and Capital Costs—an estimate of capital costs to be assigned to projects for each area where development is required, together with priorities based on overall demand for and availability of funds; a cost estimate covering the entire development program will provide at the outset a clear picture of the financial commitments which will have to be made and which can be reviewed and revised, along with the entire master plan, at minimum regular intervals or, ideally, once every five years;

The Design Theme for Facilities—for assuring appropriate design for facilities that are in harmonious relationship with each other and with the character of the environments to be perpetuated.

REFERENCES

- ADAMS, A. ed. 1964. *First World Conference on National Parks*. US Government Printing Office, Washington.
- ANDERSON, K. R. 1968. Proposal for an International Park Planning Advisory Institute. Report of an exploratory study for the Ford Foundation, New York.
- CANADA DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT, National and Historic Parks Branch (no date). National Parks Policy. Queen's Printer, Ottawa.
- (no date). Provisional Master Plan: Fundy National Park. Queen's Printer, Ottawa.
- (no date). Provisional Master Plan: Terra Nova National Park. Queen's Printer, Ottawa.
- CALDWELL, L. K. 1966. Administrative Possibilities for Environmental Control. In DARLING F. F. and J. P. MILTON ed. *Future Environments of North America*: 648-671. National History Press, Garden City, N.Y.
- CARHART, A. 1964. The Input-Output Approach to Disaster. *Landscape Architecture* 55(1): 41-42.
- CLAWSON, M. 1969. The Development of Recreation in the United States and Canada and its Implications for the National Parks. In NELSON, J. G. and R. C. SCACE ed. *The Canadian National Parks Today and Tomorrow*: Vol. 1, 53-65. University of Calgary.
- DARLING, F. F. and N. EICHHORN, 1967. *Man and Nature in the National Parks: Reflections on Policy*. The Conservation Foundation, Washington.
- DAY, M. F. 1964. Preservation versus Concentrated Visitor Use. In ADAMS, A. ed. *First World Conference on National Parks*: 150-158. US Government Printing Office, Washington.
- EIDSVIK, H. K. 1971. Personal communication: comments on draft working paper for Planning for Man and Nature in National Parks.
- FISHER, J. L. 1968. Parks and National Areas in the Natural Landscape. In Landscape Planning, IUCN New Series Supplementary Paper No. 16: 28-34. Morges.
- HARROY, J.-P. 1969. The Development of the National Park Movement. In NELSON, J. G. and R. C. SCACE ed. *The Canadian National Parks Today and Tomorrow*: Vol. 1, 17-34. University of Calgary.
- HARROY, J.-P. ed. 1971. *United Nations List of National Parks and Equivalent Reserves*, Second Edition. Hayez, Brussels.
- HART, W. J. 1966. *A Systems Approach to Park Planning*. IUCN Publications New Series Supplementary Paper No. 4, Morges.
- ISE, J. 1964. Preservation from Injury or Spoliation. *Landscape Architecture* 54(4): 292-296.
- IUCN 1970. Resolutions Adopted by the Tenth General Assembly. In Proceedings of the Tenth General Assembly: p. 156. IUCN Publications new series Supplementary Paper No. 27, Morges.

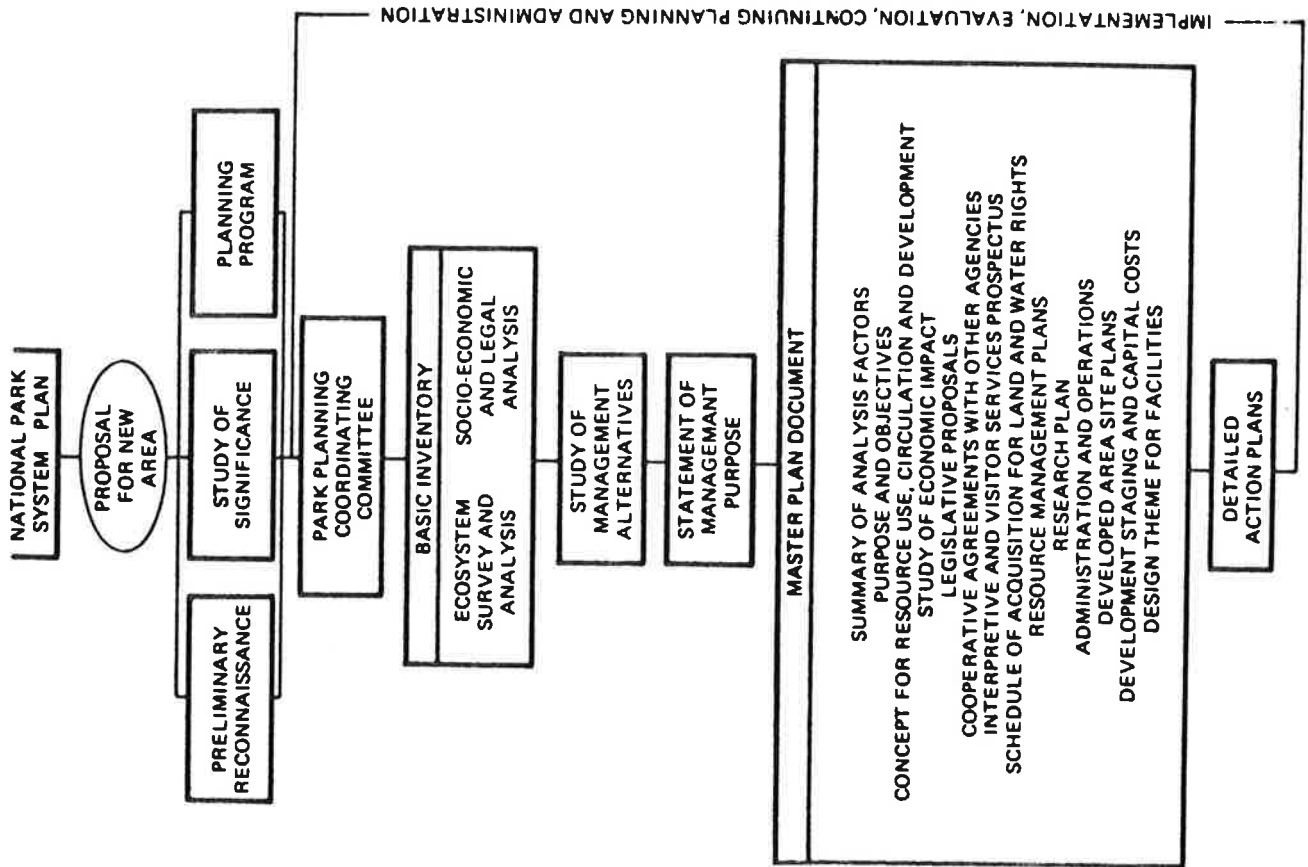


figure (10) Master plan sequence.

JEMISON, G. M. 1967. Impacts of Recreation on the Ecology of Temperate North American Forests. *In* Towards a New Relationship of Man and Nature in Temperate Lands, Proceedings of the 10th Technical Meeting, Part 1. IUCN Publications new series No. 7: 173-185. Morges.

LEONARD, R. 1964. Comment as Rapporteur in ADAMS, A. ed. *First World Conference on National Parks*: 176-177. US Government Printing Office, Washington.

LUCAS, R. C. 1969. Research Needs for National Parks. *In* NELSON, J. G. and R. C. SCACE ed. *The Canadian National Parks Today and Tomorrow*: Vol. II, 904-930. University of Calgary.

LYNDON, J. E. 1968. *Landscape Planning in the International Organisations*. IUCN Publications New Series Supplementary Paper No. 10. Morges.

ORRRC 1962. Outdoor Recreation for America. Report to the President and the Congress, US Government Printing Office, Washington.

RODERKERK, E. C. M. 1961. Recreatie, Recreatieverzorging En Natur Be Scherming in De Kennemerduinen. Drukkerijlen Hoogland en Waltman, Delft.

SZCZESNY, T. 1967. La contribution de l'architecte paysagiste à l'aménagement des parcs nationaux. *In* Towards a New Relationship of Man and Nature in Temperate Lands, Proceedings of the 10th Technical Meeting, Part 2: 109-115. IUCN Publications new series No. 8, Morges.

US DEPARTMENT OF INTERIOR, 1965. *The North Cascades Study Report*. US Government Printing Office, Washington.

— 1966. *Summary Report of Park Planning Techniques*. National Parks Service, Washington.

Appendix

Statement of National Park Policy

Department of the Interior
Washington, May 13, 1918

Dear Mr. Mather:

The National Park Service has been established as a bureau of this department just one year. During this period our efforts have been chiefly directed toward the building of an effective organization while engaged in the performance of duties relating to the administration, protection, and improvement of the national parks and monuments, as required by law. This constructive work is now completed. The new Service is fully organized; its personnel has been carefully chosen; it has been conveniently and comfortably situated in the new Interior Department Building; and it has been splendidly equipped for the quick and effective transaction of its business.

For the information of the public an outline of the administrative policy to which the new Service will adhere may now be announced. This policy is based on three broad principles: 'First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; and third, that the national interest must dictate all decisions affecting public or private enterprise in the parks.'

Every activity of the Service is subordinate to the duties imposed upon it to faithfully preserve the parks for posterity in essentially their natural state. The commercial use of these reservations, except as specially authorized by law, or such as may be incidental to the accommodation and entertainment of visitors, will not be permitted under any circumstances.

In all of the national parks except Yellowstone you may permit the grazing of cattle in isolated regions not frequented by visitors, and where no injury to the natural features of the parks may result from such use. The grazing of sheep, however, must not be permitted in any national park.

In leasing lands for the operation of hotels, camps, transportation facilities, or other public service under strict Government control, concessioners should be confined to tracts no larger than absolutely necessary for the purposes of their business enterprises.

You should not permit the leasing of park lands for summer homes. It is conceivable, and even exceedingly probable, that within a few years under a policy of permitting the establishment of summer homes in national parks, these reservations might become so generally settled as to exclude the public from convenient access to their streams, lakes, and other natural features, and thus destroy the very basis upon which this national playground system is being constructed.

You should not permit the cutting of trees except where timber is needed in the construction of buildings or other improvements within the park and can be removed without injury to the forests or disfigurement of the landscape, where the thinning of forests or cutting of vistas will improve the scenic features of the parks, or where their destruction is necessary to eliminate insect infestations or diseases common to forests and shrubs.

In the construction of roads, trails, buildings, and other improvements, particular attention must be devoted always to the harmonizing of these improvements with the landscape. This is a most important item in our program of development and requires the employment of trained engineers who either possess a knowledge of landscape architecture or have a proper appreciation of the aesthetic value of park lands. All improvements will be carried out in accordance with a preconceived plan developed with special reference to the preservation of the landscape, and comprehensive plans for future development of the national parks on an adequate scale will be prepared as funds are available for this purpose.

Wherever the Federal Government has exclusive jurisdiction over national parks it is clear that more effective measures for the protection of the parks can be taken. The Federal Government has exclusive jurisdiction over the national parks in the States of Arkansas, Oklahoma, Wyoming, Montana, Washington, and Oregon, and also in the Territories of Hawaii and Alaska. We should urge the cession of exclusive jurisdiction over the parks in the other States, and particularly in California and Colorado.

There are many private holdings in the national parks, and many of these seriously hamper the administration of these reservations. All of them should be eliminated as far as it is practicable to accomplish this purpose in the course of time, either through congressional appropriation or by acceptance of donations of these lands. Isolated tracts in important scenic areas should be given first consideration, of course, in the purchase of private property.

Every opportunity should be afforded the public, wherever possible, to enjoy the national parks in the manner that best satisfies the individual taste. Automobiles and motorcycles will be permitted in all of the national parks; in fact, the parks will be kept accessible by any means practicable.

All outdoor sports which may be maintained consistently with the observation of the safeguards thrown around the national parks by law will be heartily endorsed and aided wherever possible. Mountain climbing, horseback riding, walking, motoring, swimming, boating, and fishing will ever be the favorite sports. Winter sports will be developed in the parks that are accessible throughout the year. Hunting will not be permitted in any national park.

The educational, as well as the recreational, use of the national parks should be encouraged in every practicable way. University and high school classes in science will find special facilities for their vacation-period studies.

Museums containing specimens of wild flowers, shrubs, and trees, and mounted animals, birds, and fish native to the parks, and other exhibits of this character will be established as authorized.

Low-priced camps operated by concessioners should be maintained, as well as comfortable and even luxurious hotels wherever the volume of travel warrants the establishment of these classes of accommodations. In each reservation, as funds are available, a system of free camp sites will be cleared, and these grounds will be equipped with adequate water and sanitation facilities.

As concessions in the national parks represent in most instances a large investment, and as the obligation to render service satisfactory to the department at carefully regulated rates is imposed, these enterprises must be given a large measure of protection, and, generally speaking, competitive business should not be authorized where a concession is meeting our requirements, which, of course, will as nearly as possible coincide with the needs of the traveling public.

All concessioners should yield revenue to the Federal Government, but the development of the revenues of the parks should not impose a burden upon the visitor.

Automobile fees in the parks should be reduced as the volume of motor travel increases.

For assistance in the solution of administrative problems in the parks relating both to their protection and use the scientific bureaus of the Government offer facilities of the highest worth and authority. In the protection of the public health, for instance, the destruction of insect pests in the forests, the care of wild animals, and the propagation and distribution of fish, you should utilize their hearty cooperation to the utmost.

You should utilize to the fullest extent the opportunity afforded by the Railroad Administration in appointing a committee of western railroads to inform the traveling public how to comfortably reach the national parks; you should diligently extend and use the splendid cooperation developed during the last three years among chambers of commerce, tourist bureaus, and automobile highway associations for the purpose of spreading information about our national parks and facilitating their use and enjoyment; you should keep informed of park movements and park progress, municipal, county, and State, both at home and abroad, for the purpose of adapting, whenever practicable, the world's best thought to the needs of the national parks. You should encourage all movements looking to outdoor living. In particular, you should maintain close working relationship with the Dominion parks branch of the Canadian Department of the Interior and assist in the solution of park problems of an international character.

The department is often requested for reports on pending legislation proposing the establishment of new national parks or the addition of lands to existing parks. Complete data on such park projects should be obtained by the National Park Service and submitted to the department in tentative form for report to Congress.

In studying new park projects you should seek to find scenery of supreme and distinctive quality or some natural feature so extraordinary or unique

as to be of national interest and importance.' You should seek 'distinguished examples of typical forms of world architecture,' such, for instance, as the Grand Canyon, as exemplifying the highest accomplishment of stream erosion, and the high, rugged portion of Mount Desert Island as exemplifying the oldest rock forms in America and the luxuriance of deciduous forests.

The national park system as now constituted should not be lowered in standard, dignity, and prestige by the inclusion of areas which express in less than the highest terms the particular class or kind of exhibit which they represent. It is not necessary that a national park should have a large area. The element of size is of no importance as long as the park is susceptible of effective administration and control.

You should study existing national parks with the idea of improving them by the addition of adjacent areas which will complete their scenic purposes or facilitate administration. The addition of the Teton Mountains to the Yellowstone National Park, for instance, will supply Yellowstone's greatest need, which is an uplift of glacier-bearing peaks; and the addition to the Sequoia National Park of the Sierra summits and slopes to the north and east, as contemplated by pending legislation, will create a reservation unique in the world, because of its combination of gigantic trees, extraordinary canyons, and mountain masses.

In considering projects involving the establishment of new national parks or the extension of existing park areas by delimitation of national forests, you should observe what effect such delimitation would have on the administration of adjacent forest lands, and, wherever practicable, you should engage in an investigation of such park projects jointly with officers of the Forest Service, in order that questions of national park and national forest policy as they affect the lands involved may be thoroughly understood.

Cordially yours,

/s/ Franklin K. Lane
Franklin K. Lane
Secretary

Mr. Stephen T. Mather
Director, National Park Service

The International Union for Conservation of Nature and Natural Resources (IUCN) is an independent international body, formed in 1948, which has its headquarters in Morges, Switzerland. It is a Union of sovereign states, government agencies and non-governmental organizations concerned with the initiation and promotion of scientifically-based action that will ensure perpetuation of the living world—man's natural environment—and the natural resources on which all living things depend, not only for their intrinsic cultural or scientific values but also for the long-term economic and social welfare of mankind.

This objective can be achieved through active conservation programmes for wise use of natural resources based on scientific principles. IUCN believes that its aims can be achieved most effectively by international effort in cooperation with other international agencies, such as Unesco and FAO.

The World Wildlife Fund (WWF) is an international charitable organization dedicated to saving the world's wildlife and wild places, carrying out the wide variety of programmes and actions that this entails. WWF was established in 1961 under Swiss law, with headquarters also in Morges.

Since 1961, IUCN has enjoyed a symbiotic relationship with its sister organization, the World Wildlife Fund, with which it works closely throughout the world on projects of mutual interest. IUCN and WWF now jointly operate the various projects originated by, or submitted to them.

The projects cover a very wide range from environmental policy and planning, environmental law, education, ecological studies and surveys, to the establishment and management of areas as national parks and reserves and emergency programmes for the safeguarding of animal and plant species threatened with extinction as well as support for certain key international conservation bodies.

WWF fund-raising and publicity activities are mainly carried out by National Appeals in a number of countries, and its international governing body is made up of prominent personalities in many fields.