

IRAN : Concepts of biotic community conservation

A paper presented at the International Meeting on
Ecological Guidelines for the Use of Natural Resources
in the Middle East and South West Asia
held at

Persepolis, Iran
24-30 May 1975

Convened by IUCN and hosted by the Imperial
Government of Iran; sponsored by IUCN, UNEP,
UNESCO and the Iran Department of Environmental
Conservation, with support from UNEP, SIDA and WWF

by

Eskandar Firouz

Director

Department of the Environment of Iran
Tehran

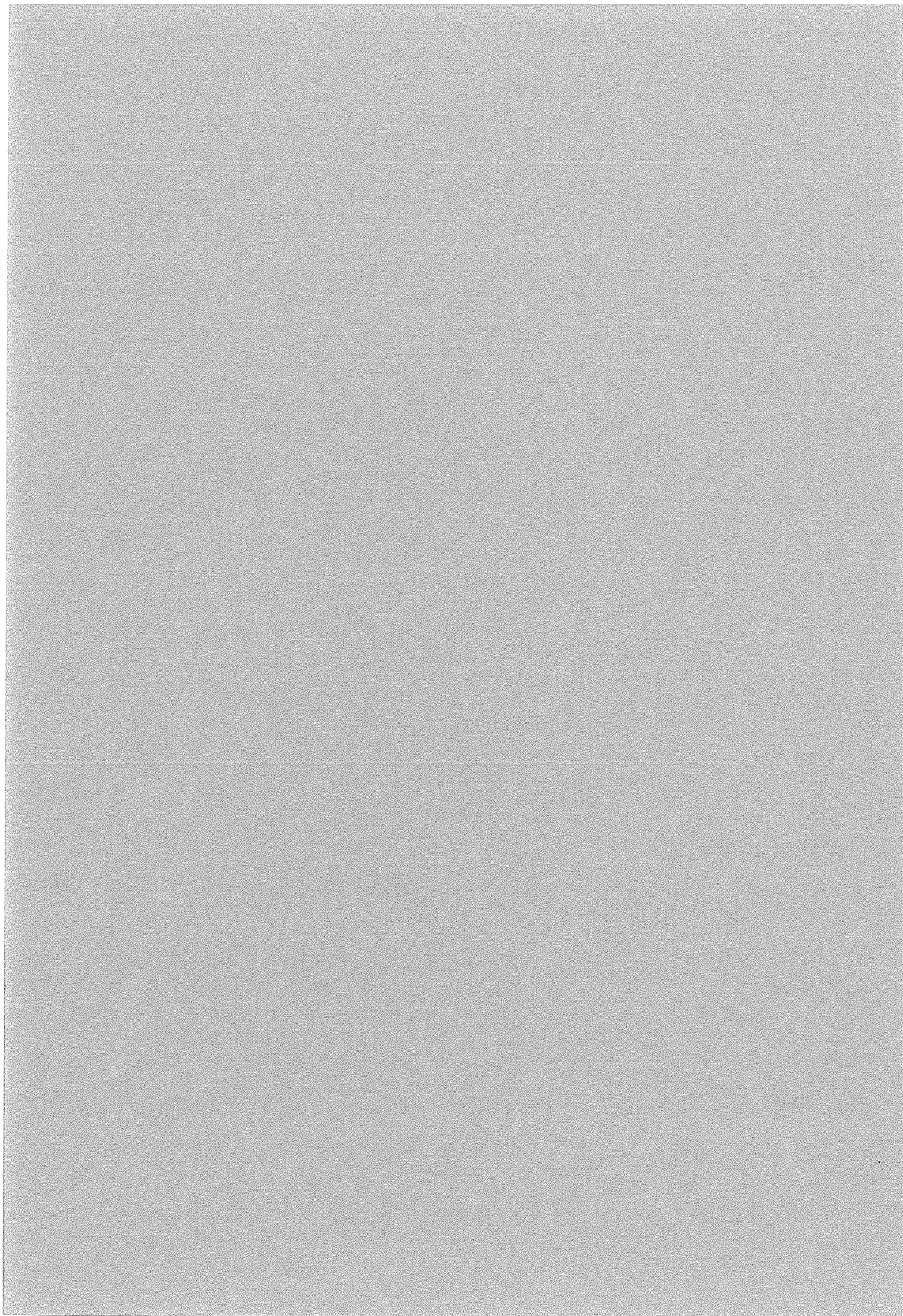
and

Fred A. Harrington, Jr.

Advisor, Division of Parks and Wildlife
Department of the Environment of Iran
Tehran

IUCN Occasional Paper No. 15

International Union for Conservation of Nature and Natural Resources
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FOREWORD

One of the main tasks of IUCN since its foundation has been the promotion of a series of protected areas to safeguard examples of ecosystems and the habitats of species of animals and plants. In doing this it has from time to time drawn up criteria for the choice of such areas and standards for protection and management.

As knowledge increases and the needs of society for such areas become better defined, it becomes necessary to examine these criteria and standards and match them against the objectives for which areas are safeguarded and the uses to which they may be put. An example of such a study is one of the earlier publications in IUCN's 'Occasional Papers' series, No. 4 of 1973, in which Dr. R.F. Dasmann discusses the 'Classification and Use of Protected Natural and Cultural Areas'. However, there is always room for improvement in designing more effective systems for there are many possible different ways of insuring the conservation of nature and the wise use of natural resources. What is most appropriate for one country may not be for another with different culture, history and problems.

The present paper accordingly deals with the model which has been developed over the past 10 years in Iran and has proved conspicuously successful in the conditions there. It sets out a possible framework in which the conservation of species and ecosystems can be ensured, and gives a convincing demonstration of the way in which natural resources may recover under protection and provide the basis for more profitable and productive long-term land use.

The paper was presented at a meeting held in May 1975, at Persepolis in Iran, to formulate ecological guidelines for management and conservation of natural resources in arid and semi-arid regions of the Middle East and South West Asia. It will appear in the Proceedings of that meeting, shortly to be published as No. 34 in IUCN's New Series publications. Meanwhile, it is being reproduced separately as Occasional Paper No. 15, in the hope that it may prove useful in other countries, especially those with similar conditions.

Finally, it should be noted that this publication has been made possible by the support of the United Nations Educational, Scientific and Cultural Organization, the Swedish International Development Agency and the World Wildlife Fund.

Duncan Poore

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INTRODUCTION

The Department of the Environment of Iran, into which the former Game and Fish Department has been incorporated, administers 62 reserves for protection of the floral and faunal resources of Iran. This system of reserves, created over a 19-year period, now constitutes one of the most comprehensive programmes for nature conservation in Asia and the Middle East. Over the years, the system has undergone considerable modification owing to the advances in our knowledge, substantial socio-economic changes within the nation, and due to ever-broadening responsibilities of the Department with respect to land use. At this time, however, we are confident that present classifications, criteria and management strategies are adequate to insure proper resource protection within established and proposed reserves, to safeguard viable remnants of Iranian ecosystems, and to accommodate a wide range of anticipated demands.

This paper proposes to trace the evolution of the reserve system, to present current classifications and criteria, and to describe current management strategies in a fashion which will, hopefully, provide guidelines for the states of this region which recognize the need for nature reserves. It is not the intention to describe in detail Iranian reserves. Such an undertaking is beyond the scope of this paper and of the meeting at which it was presented. Nor is it the intent of the paper to dwell upon the need for, or rationalization of, the reserve system. The current literature contains ample justification for biotic community reservation in Asia and the Middle East. It is intended, however, to augment and supplement the extant literature in presenting a workable approach to nature protection in the Middle East and much of Asia and to present the philosophy of our programme, tempered with a few practical examples.

It is not claimed that the existing reserve system is complete or fully functional. The quality of the reserves varies greatly, from that of strictly protected reserves, with a minimum of disturbance, to a number which have been only conceptually identified, depending primarily upon date of establishment. Furthermore, re-classification of the reserves is not complete, due to the rather recent passage of the Environmental Law, which contains the current classification system. Our present reserves are being reviewed in terms of criteria presented below, and action is being taken to insure that each reserve meets criteria appropriate to the most applicable category.

HISTORY OF THE RESERVE SYSTEM

Firouz et al. (1970) have described the early history of the Iranian reserve system and the legal history of wildlife protection in Iran. For millenia the natural resources of Iran had been exploited with little or no consideration for the future. Aided by an abusive technology, this environmental deterioration accelerated markedly during the past few generations. The destruction of forest, range and wildlife resources was, by the mid-1950's, of such intensity as to alert a group of conservation-conscious individuals who, encouraged by H.I.M. the Shahanshah, and led by his younger brother H.I.H. Prince Abdorreza, initiated measures for the preservation of Iran's wildlife and its habitats.

The first conservation law, passed in 1956, created the Game Council of Iran. In view of the large size of Iran, and the limited funds at the disposal of the Game Council, it was recognized that if a significant percentage of the available resources was allocated to areas of special importance from an ecological point of view, the efficacy and success of the conservation effort would be greatly enhanced. Thus was born the concept of "Protected Regions". In these regions hunting was prohibited unless a special licence was obtained from the Game Council. Utilization of range-land and forest incorporated within their confines was subject to restriction promulgated by that organization and the Ministry of Agriculture and Natural Resources.

Proposals for the creation of "Wildlife Parks" were advanced in later years, shortly prior to the submittal of a new bill to Parliament, which when enacted into law in 1967, created the erstwhile Game and Fish Department of Iran. That law incorporated and clearly defined the concepts and legal aspects of both Wildlife Parks and Protected Regions.

In brief, Protected Regions were created to provide conditions conducive to the regeneration and amelioration of representative habitats and/or endangered species. Such regions were also envisaged as centres of breeding stocks for the repopulation of wildlife species that were on the wane in adjacent areas. Any part of Iran could be declared a "Protected Region". The presence or absence of a human population was legally immaterial, but in practice an effort was made to exclude villages and other habitations. Restrictions on hunting or fishing were enforced, while grazing, woodcutting and the like were curtailed in accordance with regulations enacted jointly by the Department and the Ministry of Agriculture and Natural Resources.

The "Wildlife Park" classification was applied to those reserves within which human habitations and exploitation of resources had been excluded through a process of up-grading "Protected Regions", and to smaller reserves which were under the ownership or full control of the Department. In short, "Wildlife Parks" enjoyed much the same status as National Parks elsewhere, except for provisions for regulated sport hunting.

By 1973, eight Wildlife Parks and 37 Protected Regions had been created. Recovery of vegetation and attendant wildlife populations were by now well advanced in many of these. In terms of resource protection, the reserve classifications and strategies had proved to be adequate. However, certain demands were emerging which suggested the need for new categories: they may be summarised as follows.

1. Outdoor Recreation and Education The increasing standard of living in Iran had brought with it a demand for non-consumptive outdoor recreation. Then, as now, on an average summer weekend an enormous number of private automobiles (now estimated at 80,000) and an unknown but large number of buses and taxis departed from Tehran, destined for recreation sites. A similar pattern was emerging throughout the country with urban residents fleeing the cities at week-ends. Approximately 2,500 persons per day visited our Mohammed Reza Shah National Park during the past summer, and demand is expected to increase ten-fold in the next five years. The wildlife reserves constituted a vast resource for recreation and the promotion of concepts of conservation. Unfortunately, there were no outdoor recreation funds at the disposal of the Game and Fish Department, and the Department did not have either the resources or personnel infrastructure to cope with the problems associated with such high visitation. The primary consideration was to accommodate visitors selectively while insuring adequate resource protection.

2. Research and Base-Line Monitoring The result of over a decade of ecosystem protection in many of the reserves had by now produced conditions which, it was recognized, would serve as models for this part of the Eurasian Continent. Classifications and/or zoning plans were necessary to insure that certain areas received the recognition and future protection which they deserved. It was clear that many Iranian reserves merited inclusion in the World Heritage, MAB and similar programmes.

3. Wildlife Protection, Harvest and Management The conservation movement in Iran began with strong emphasis on wildlife management. It was intended that a large number of reserves should continue to be managed on a primary use basis for wildlife. Such areas included habitats for the propagation of endangered species, waterfowl refuges, endangered habitats and numerous areas intended to be managed for optimum wildlife harvest. In many of these, a degree of manipulation had proven of extreme value in enhancing wildlife populations. It was deemed essential to designate reserves in which such manipulation was justified, in opposition to the aforementioned categories in which natural processes should govern.

4. Plant Protection and Plant Succession The improvement in vegetation conditions in a number of reserves became a source of surprise, often even to the most optimistic of our staff. For example, approximately 22,000 hectares of moving sand dunes existed in the Kavir Protected Region at the time of its establishment. Following eight years of protection from grazing, such species as Haloxylon, Ammodendron and Stipagrostis plumosa had pioneered the area. Not only has 80 per cent of the sand been stabilized, but in parts the once-barren area is

taking on a savannah appearance. Only the largest of dunes contain no vegetation, and these we hope to retain as such for their spectacular aesthetic appeal. Our calculated "treatment" cost, which entailed only protection from grazing, has been about six cents (U.S.) per hectare per annum. Conventional sand dune treatment costs elsewhere in Iran have occasionally exceeded \$500 per hectare.

Thus, we have defined the concept of "Trust Lands", i.e. lands which are of strategic value to the nation, which are badly degraded at this time, but which can be rehabilitated on an economically-extensive basis primarily through natural processes.

5. Multiple Land Use Models As indicated previously, it is widely acknowledged that many reserves administered by the Department have provided ample protection of the natural resources they contain. Unfortunately, conditions outside the reserves, often severely exploited on a subsistence to highly intensive basis, continue to deteriorate. It is recognized that the nation lacks at this time sufficient resource managers to cope with these problems on a national scale. In addition, the convening of the Persepolis meeting serves to underscore the fact that parameters do not yet exist to insure rational use of natural resources in the Middle East and Southwest Asia.

While the Department of the Environment has been singularly successful in managing "Single Use" reserves, i.e., nature sanctuaries, the success of any Iranian organization in managing areas on a multiple use basis has not been particularly remarkable to date. Nevertheless, a number of our reserves today offer an opportunity to serve as land use models, containing as they do a wide spectrum of land use practices. We recognize that this is an urgent need in the country at this time.

CURRENT RESERVE CLASSIFICATIONS AND CRITERIA

We believe that the nature reserve requirements of the nation fall into four general categories:

1. Large areas of outstanding national significance, within which outdoor recreation, education and research should receive high priority.
2. Relatively small areas or remnants, containing outstanding or unique examples of floral, faunal or geological phenomena.
3. A variety of areas in which wildlife management is of prime consideration.
4. Areas of importance which are in need of substantial amelioration, or within which guidelines for multiple use may be drawn.

After considerable deliberation to determine nomenclature which in Persian would convey the proper ecological connotations, the following names were chosen to represent the respective categories: Park-e-Melli (National Park); Asar-e-Tabii-ye-Melli (National Nature Monument); Panahgah-e-Hayat-e-Vahsh (Wildlife Refuge); and Manteqe-ye-Hefazat Shode (Protected Area). This classification, presented to Parliament and approved in the comprehensive Environment Law of 1974, departs somewhat from conventional terminology, including that of IUCN. However, one must recognize that conditions vary greatly from nation to nation, and it seems most appropriate to develop classifications which convey the proper connotation in the language of the particular country, and which assign a sufficient degree of prestige to each category. Indeed, in Iran, there remains some difficulty with the most conventional classification, namely National Park. Most citizens, and this applies to many other countries as well, associate "Park" with the urban environment. This, however, is being remedied through education.

In subsequent discussions, we shall refer to the English translations, although the reader must bear in mind that a great deal of the ecological or cultural connotation is lost in translation.

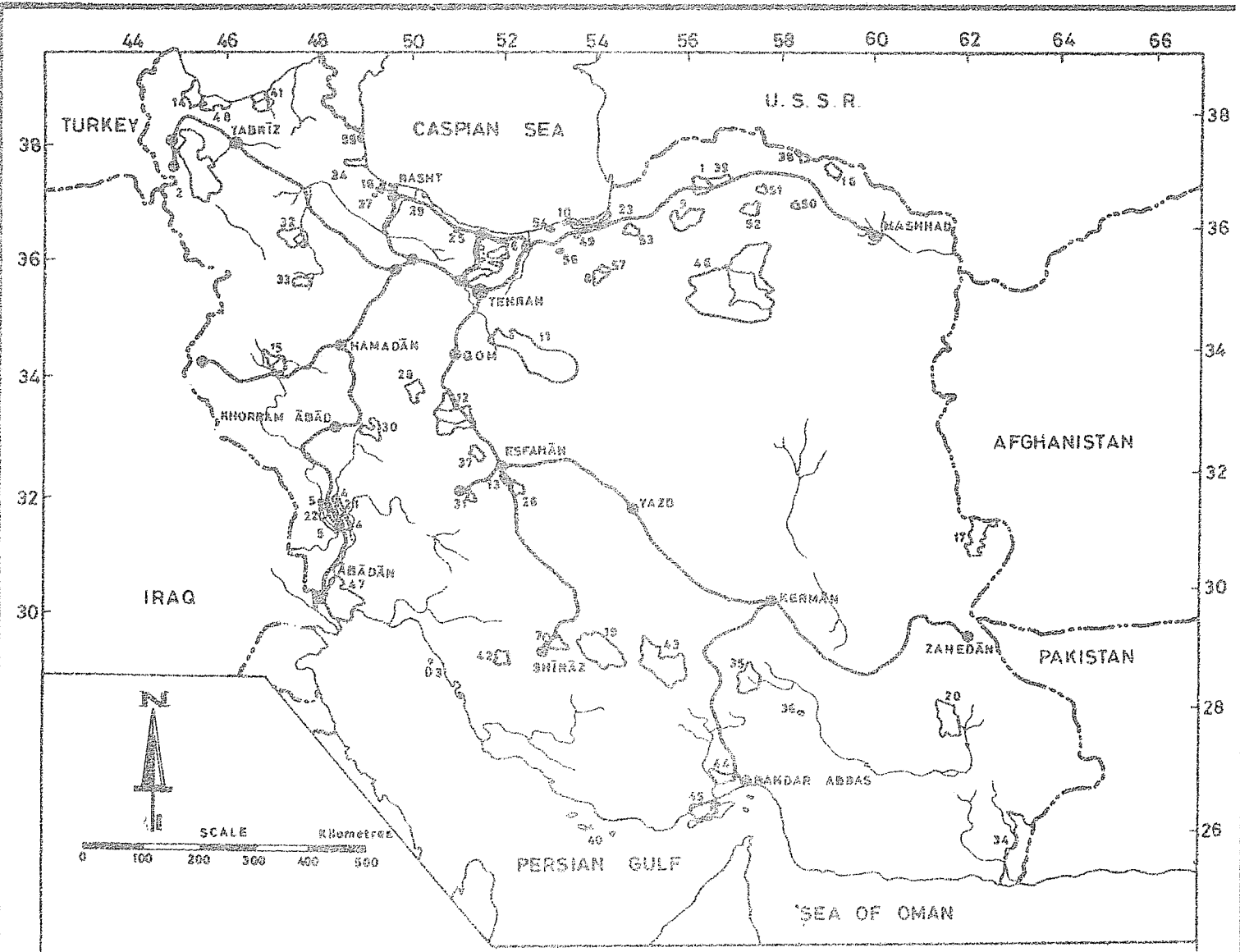
Figure 1 overleaf shows the present reserves, and the proposed category of each.

The definitions and criteria for the respective reserve categories are as follows:

National Park

Definition: National Parks are relatively large areas of national significance representing outstanding examples of Iran's Natural Heritage, and which have been a) placed under the administration, management and control of the Department of the Environment, the boundaries of which must not be altered, nor any portion be subject to alienation, except by competent legislative authority; b) set aside in perpetuity for the preservation, protection, and conservation of outstanding natural animal and plant species, habitats, geological features, natural geography and landscapes, and spectacular scenic beauty, for the benefit, education and enjoyment of the people of Iran in a manner consistent with the preservation of the values of the resource for scientific, cultural, educational, inspirational and interpretive purposes. When occasionally outstanding historical, archeological* or anthropological remains or sites are found within and forming part of the significance of the park, these features or sites may be protected as part of the resources of the National Park; c) in which opportunities exist for visitors to develop an understanding and appreciation for the values of natural history and outdoor life in a manner which allows for perpetuation of the inherent values of the Park.

* It should be pointed out that the Department of the Environment does not have jurisdiction over historical and archeological sites.



DEPARTMENT OF THE ENVIRONMENT

OFFICE OF GEOGRAPHICAL RESEARCH

BIOTIC COMMUNITY RESERVES

OF IRAN

	Name of Reserve	National Park	Protected Area	Wildlife Refuge	National Nature Monument		Name of Reserve	National Park	Protected Area	Wildlife Refuge	National Nature Monument
1	Mohammad Reza Shah	91895				31	Tang-e-Sayad		30800		
2	Lake Rezaieyeh	483000				32	Angouran		98875	12700	
3	Khark & Kharku			2438		33	Bijar		46500		
4	Dez		14975			34	Bahu Kalat		394750		
5	Karkheh		16587			35	Khabr-va-Rouchoon			169200	
6	Cental Alberz	203000	215450	50	4750	36	Mehrouyeh			6250	
7	Bamou	47440				37	Ghamishloo			37000	
8	Parvar		37937			38	Sarani	17800			
9	Khosh-Yeilagh			150595		39	Ghorkhed	34000			
10	Dasht-e-Naz			55		40	Sheedvar			160	
11	Kavir	609438				41	Arasbaran		34145	38320	
12	Mooteh		134910	163250		42	Arjan	65750			
13	Shah-Kuh		26650			43	Bahram-e-Gour		384560		
14	Marakan		92715			44	Geno	82400			
15	Bisotoun	30000	91937			45	Hara	82360			
16	Siakhesheem			3515		46	Touran		1410750	431250	
17	Hamoun			180000		47	Shadegan			290000	
18	Tandoureh	53780				48	Kismaki			84400	
19	Bakhtegan			310438		49	Semeskandeh			937	
20	Bazman		324688			50	Shah-Jahan		28000		
21	Dez			3837		51	Salook		16000		
22	Karkheh			1538		52	Miandasht			52000	
23	Miankaleh			68800		53	Jahan-Nema		30650		
24	Lisar		31250			54	Fereidoonkenar			90	
25	Khoshkedaran				227	55	Astara			949	
26	Koiah Ghazi	48000				56	Babolkenar		1133		
27	Selke			360		57	Dodangeh			6700	
28	Haftad-Gholle		82125								
29	Amir Kelayeh			1230			Total Area:				
30	Oshtrankoch		93950				7509239	1848863	3639337	2016062	4977
							Number:				
							65	13	23	27	2

Sep. 1975

ALL AREAS GIVEN IN HECTARES

Criteria expressing the national significance and integrity of a park and reasons for its establishment are ascribed to those regions which have the following features: a) possessing a natural character sufficiently superior in quality and beauty to make imperative its preservation for the enjoyment, education and inspiration of all people; b) having unique scenic, geomorphological and landscape features; c) possessing diverse and/or unique examples of biotic communities, ecosystems and processes; and, d) a sufficiently comprehensive unit and size to permit public use, management, research and zoning activities while allowing for the primary function of preservation and protection of the natural resource.

In addition, the significance of the park is enhanced by the existence of one or more of the following features: a) possessing historical, archeological or anthropological features of outstanding national significance; b) possessing unique flora or fauna of value to the nation; c) containing relatively pristine remnants of the regional flora representative of a particular geographical zone; and d) constituting a land unit widely acknowledged to be representative of an Iranian province or region and thus deserving of protection to perpetuate the natural characteristics of that province or region.

With the passage of the Environment Law in 1974, all "Wildlife Parks" automatically became "National Parks". Therefore, two small reserves, Dasht-i-Naz and Khoshkedaran, of 55 and 227 hectares, respectively, became "National Parks". These do not meet the above criteria, however, and will become, it is proposed, a Wildlife Refuge and National Nature Monument, respectively (see below). Bamou, near the site of the Persepolis meeting, was a Wildlife Park and also became a National Park with passage of the Law. However, unless it is modified to meet National Park criteria, it will become a Wildlife Refuge.

While we have not defined a minimum size for National Parks, no reserve presently under consideration for this category is less than 15,000 hectares in size.

Among the eight proposed National Parks now approved by the Environmental High Council, are Mohammed Reza Shah, our first reserve, containing a diversity of flora and fauna unique in the Middle East; Lake Razaiyeh and its uninhabited islands; the aforementioned Kavir reserve; and of course, Arjan. The latter reserve has many constraints facing it at the present time, but it is somewhat unique in its potential and in view of the fact that it has become the focal point of a national commitment to nature conservation.

National Nature Monument

Definition: Small areas of land, air, and water which have been designated for preservation, protection and management for the values inherent in their natural, physical or artificial state. The objective is to secure preservation of a special site, area, or living species of flora or fauna which illustrate outstanding examples of typical as well as unique or unusual phenomena of the nation's geological and ecological natural history. Such sites or areas may

or may not be opened to visitors depending on the requirements of the feature(s) for protection and preservation. Where feasible the area or site may be open to visitors for viewing, interpretation and education, in a manner appropriate to maintaining the natural values and integrity of the monument. Some sites, because of their unique, fragile or scientific character, shall be closed to all public use and may be available only for specific scientific or educational purposes.

Prospective sites for this classification have no minimum size, but boundaries shall be described which are sufficient to insure the integrity of the features within the site. The following criteria shall assess the representative and unique nature of a site for national significance: a) outstanding geological formations, landforms or features significantly illustrating geologic processes; b) specialized physiographic areas or extreme environmental conditions; c) zoogeographic features unique to the distribution and survival of the associated flora and fauna; d) evidence of geologic history representing important points in the evolution of plants and animals; e) aquatic ecosystems containing unique or unusual characteristics and associated flora and fauna; f) terrestrial ecosystems containing representative, unique or unusual characteristics and associated flora and fauna; g) a habitat supporting a vanishing, rare, endangered or restricted species; h) examples of scenic grandeur and high aesthetic appeal; i) individual specimens or groups of specimens representing the nation's zoologic, botanic, geologic or cultural natural history.

At this time, only one existing reserve is proposed to be classified under this category. This is Khoshkedaran, a 227-hectare stand of Alnus subcordata, representing the last significant remnant of this once-extensive Caspian lowland forest. This category, however, was not particularly appropriate to the earlier classification system, and personnel of the Parks and Wildlife Division are currently evaluating literally hundreds of sites, many of which are appropriate to this new category. Among the sites which seem especially appropriate for protection at this time are (to name only a few) a relict forest of Cupressus sempervirens; several nature sanctuaries near the larger cities; an active volcano; a mud volcano; a stand of Lilium ledebourii; and a tar spring.

Wildlife Refuge

Definition: Wildlife refuges are areas of representative habitat types set aside for a) the conservation and management of native wildlife and the protection and management of its habitat to include an area or areas involving feeding, breeding, spawning, resting, wintering, staging, shelter and other needs of wildlife, and the enhancement or restoration of these lands and water areas; b) within which hunting, fishing, trapping, poisoning, killing or capturing of wildlife or collection of flora or other objects is prohibited except where such activities are consonant with scientific and management purposes; c) where settlement and human activity shall be restricted, eliminated or prohibited as regulated by the Department of the Environment;

d) in which recreational use by the public shall be secondary to the primary purpose of management for wildlife and vegetation enhancement or restoration.

An area suitable for establishment of a wildlife refuge is a land unit of any size and typified by one or more of the following criteria: a) wetlands of national and international significance displaying the highest biological productivity of faunistic, floristic, limnological, hydrological and ecological importance; b) coastal marine areas, beaches, tidal flats, or inland bodies of marine waters containing sea birds, oceanic mammals or reptiles; c) seasonal refuges for concentrations of native species, migration routes, breeding, feeding or wintering areas; d) habitats capable of supporting an unusual diversity in species or communities; e) areas containing vanishing, rare or endangered species or assemblages of species; f) habitats suitable as managed game ranges, game breeding areas or fenced enclosures, for the enhancement of species whose survival or recruitment may be in jeopardy or requires special management; g) habitats not reasonably suited to the production of domestic livestock but which may produce a harvest of wildlife species, as the most rational resource use of the area; h) habitats which traditionally have supported heavy use by the hunting public and which therefore should be managed intensively in order to continue to support a significant wildlife harvest.

Of the 27 reserves which are proposed to fall into this category, one or more of the above criteria applies to each. At the present time approximately three quarters of the wetland areas of the nation fall under the jurisdiction of the Department of the Environment. It should be observed, however, that in accordance with the provisions of the new Environmental Law all wetlands will be administered by the Department of the Environment. Most of these will fall under the Wildlife Refuge category, although Arjan marsh and Parishan Lake, surrounded as they are by terrestrial sites of spectacular aesthetic and ecologic appeal, obviously merit inclusion in the National Park category. Our Dasht-i-Naz reserve, under intensive management for the rare Persian Fallow Deer Dama mesopotamica, and the Dez and Karkkeh reserves, which contain the last remnants of the wild populations of this species and its riparian habitat, will also fall under this category. Several reserves presently open to controlled sport hunting (all prospective National Parks have of course been closed to hunting) will continue to be managed for optimum harvest of species of high economic value under this category. One reserve, Mian Kaleh, uniquely enough, fits all the criteria for this category! This reserve encompasses Gorgan Bay and its brackish and fresh-water marshes, seasonal mud flats suitable for the establishment of saline-tolerant food species, and the Mian Kaleh peninsula with its extensive sand dunes and psammophilic vegetation. It contains high populations of waterfowl, game birds, large mammals and other species. Under proposed management plans, we feel the reserve will support a number and diversity of species rarely seen elsewhere, while accommodating reasonable public recreation on the beaches as well.

Protected Area

Definition: Lands which, owing to their strategic value to the conservation of the nation's natural resources, are to be managed in a manner that will prevent degradation or, if already degraded, can be rehabilitated primarily through natural processes. Protection, management and restoration of plant and animal life and the maintenance of the natural state will be afforded the highest priority in providing conditions conducive to the regeneration and amelioration of habitats and species. Protected Areas may be established to serve a multitude of environmental conservation and protection needs. The Master Plan for a particular Protected Area may reflect a multiple or integrated approach or may reflect the need for zoning along a limited or single use approach. Within the framework of multiple use objectives, the Department of the Environment will have the authority to set up specific regulations for the management of the natural resource.

Protected Areas have an important function in the role they can play in meeting scientific, economic, educational, cultural and recreational needs. Such areas are irreplaceable for studies of various ecosystems and of fundamental importance to the protection of natural biotic units representing major biogeographical regions and characterized by distinct flora, fauna, vegetation types or combinations of these. Criteria for the Protected Area category are numerous. However, since this concept is peculiarly Iranian, having evolved in the course of our experience in Middle East and Eurasian ecosystems and land use problems, we believe it is appropriate to enumerate all of these criteria, so that the scope and intent of this category will be fully understood. One or more of the following criteria may apply to the area:

1. Applied research on specific land management problems and alternatives to deleterious land use practices.
2. Measuring the effects of management practices on soils, productivity, pathogens, water yield, pollution, and other factors.
3. The protection and preservation of unique, unusual or representative flora and fauna as gene pools.
4. The maintenance of successional development and natural components of ecosystems and as comparisons to resource management practices.
5. Site in which the significance of man's influence on natural ecosystems can be observed and measured, and preserved for interpretation either by comparison of natural communities with others or in which details of human influence have been recorded.
6. Containing significant evidence illustrating important scientific discoveries or educational functions.
7. Demonstrating well-developed, diverse or unusual community structure and habitats.

8. Significantly illustrating the process of succession and restoration to natural conditions following disruptive natural or man-made change.
9. A biota of relative stability maintaining itself only under extant and/or prevailing conditions.
10. A habitat supporting a vanishing, rare, endangered or restricted species or a relict flora or fauna persisting from an earlier period.
11. A seasonal haven for concentration of native animals.
12. Containing species at the extremities of their ranges.
13. Exhibiting flora and fauna with unique anatomical, physiological and behavioral characteristics and adaptations for survival.
14. Illustrating unique breeding and population strategies of a species.
15. Illustrating unique feeding and energy strategies.
16. Exhibiting outstanding geological formations or processes, or prehistoric evidence of life on earth.
17. Of scenic grandeur, high aesthetic value or unique natural landscape feature.
18. Containing highly unstable or fragile soil, hydrologic or vegetation characteristics and within which, therefore, it can be demonstrated that the national interest is best served by excluding commercial development or land use practices.
19. Severely eroded, channelled or depleted soil or in which vegetation has been severely depleted and which has severe climatic, hydrologic or edaphic constraints which prevent rehabilitation by conventional methods except at prohibitive cost. Site, therefore, in which the national interest is best served by excluding land use practices for a specified or undetermined number of years, until natural processes provide rehabilitation of soil or vegetation.
20. Site peculiarly representative of a particular regional climate, soil or flora and, therefore, within which it is appropriate to exclude all land use practices, to establish a foundation for future comparisons against which to measure regional trends in pollution, soil losses, or other environmental degradation.

As can be readily seen, there is considerable over-lap in criteria between this and other classifications. This is due to the fact that

various constraints will often inhibit and prevent commitment to the degrees of protection required under other categories, and thus the designation of Protected Areas will provide suitable preemptive safeguards for such sites. It will be understood that such an area will therefore often be in a special category for "upgrading" to other reserve classifications in accordance with the applicable criteria. Especially worthy of note in this regard is the fact that one type of reserve may well be established within the confines of a lower grade area; e.g. a National Nature Monument or a Wildlife Refuge within a Protected Area. The very large Touran Protected Area is perhaps an apt illustration here. It has been selected as a prototype arid lands research area in which an attempt will be made to develop guidelines for rational use of the Iranian plateau region. At the same time the creation of a Wildlife Refuge has been approved within this Protected Area and encompassing perhaps a third of the area of Touran.

Further, where necessary and possible, we hope to surround National Parks eventually with buffer zones of Protected Areas, in which development can be regulated to avoid constraining influences in close proximity to the Parks.

Table 1 presents an abstract of comparisons between reserve categories. Other classifications which have been considered, such as Forest Parks, Historical Parks, Recreation Parks and the like, either do not fall under the jurisdiction of the Department of the Environment, or can be treated under the aforementioned classification system by careful attention to zoning.

Five marine reserves exist under the Department's present system of reserves, and five others have been proposed. Tied as they are to adjacent terrestrial areas, they will also be treated in accordance with the above classification system.

Biotic Community Reserves managed by other organizations warrant brief mention here. These include the Imperial Hunting Reserve near Tehran. Established sometime between 1792 and 1830, under the reign of Fath Ali Shah, this rather large reserve is presently managed by the Imperial Court for the Royal Family and their distinguished guests. Neglected at times in the past, parts of the reserve have within the past six years been protected from grazing as well as from unregulated hunting. Thus the reserve contains substantial populations of such species as wild sheep, Persian ibex and partridges. Vegetation recovery shows much promise in certain areas.

The Ministry of Agriculture and Natural Resources maintains a number of Forest Parks, designed primarily for picnicking. While heavy use has eliminated the understory of these reserves, they constitute important remnants of the Caspian lower forest belt genera, such as Quercus, Acer, Zelkova and Parrotia.

TABLE 1. ABSTRACT OF THE COMPARATIVE FEATURES OF THE CLASSIFICATION CATEGORIES

NATIONAL PARK	WILDLIFE REFUGE	PROTECTED AREA	NATIONAL NATURE MONUMENT
<p>Special Character:</p> <p>Outstanding example of the Nation's geologic, ecologic, geographic and scenic features of national significance.</p>	<p>Areas of representative habitat types supporting populations and species of wildlife significant to the Nation.</p>	<p>Lands of strategic conservation value set aside for the protection, management and restoration of plant and animal life in a manner that will prevent degradation.</p>	<p>Special feature of interest as a site, object, process or biota illustrating typical, unique or unusual phenomena of geological, scientific and/or historical natural history interest.</p>
<p>Purpose:</p> <p>Set aside in perpetuity for preservation, protection, conservation, and enjoyment in a natural condition.</p>	<p>Enhancement, preservation, protection or restoration of native wildlife and its habitat in an optimal condition.</p>	<p>To provide conditions conducive to the conservation, regeneration or amelioration of habitats and species for their scientific, economic, educational, cultural and recreational values.</p>	<p>To protect and preserve the scientific and special interest feature in a natural or near-natural condition and, where feasible, allow for viewing and interpretation in an appropriate manner.</p>

Management:

Minimal measures necessary for the essential conservation of the values of the natural conditions and integrity of the park and the prevention of damage from visitor use.

Vegetation, animal life or terrain may be managed or modified to enhance the survival or recruitment of a particular wildlife or plant species of concern. Enhancement of the natural ecosystem shall be considered the primary management function.

Zoning provisions for land use, designed to improve the natural condition and character of the reserve.

Essentially unspoiled natural example under the influence of natural forces. Manipulation of the environment may be necessary to neutralize unnecessary influences, to perpetuate a rare or particular species or object, or to better expose a feature for study or interpretation.

Size:

Relatively large area of a sufficiently comprehensive unit, to allow both for public use and also for continuing representation and protection of a diversity of resources and values.

Relatively large area dependent upon the ecological character of the reserve and the units of zoning against man-influenced disturbance.

No minimum size. Sufficient to insure the integrity of the values contained within the site.

Use:

Non-consumptive uses. Natural outdoor recreation experience with development facilities necessary for resource protection, public safety and interpretation as determined by zoning.

Natural outdoor recreational pursuits and regulation of the limits, methods and types of exploitation as determined by zoning.

Dependent upon the requirements of the feature(s) for preservation and protection. Controlled, interpretive public viewing and private ownership.

ZONING AND MASTER PLANS

We recognize that each reserve may perform a multiplicity of functions. Once a reserve has been judged appropriate to specific criteria, the next step is to develop a zoning plan intended to assure that long-range planning objectives will be met consonant with the designated purpose of the reserve, and the optimum use of the land and resource. Zoning plans are not unalterable, but changes should only be made after thorough study and evaluation. It is recognized that there may be certain features or conditions within a reserve which are not fully understood or assessed in terms of their uniqueness and importance. As additional studies are carried out, new zoning plans may be proposed and implemented.

Zoning plans of the Department of the Environment are aimed at identifying natural and cultural features, topographic and hydrographic boundaries and landscapes, identifying limits on facilities and activities for visitor use, administration, research, management and public use; defining lands suitable for visitor use and development; defining what land should not be developed due to significant or unique resources; designating limits and modes of access, and circulation patterns; providing a basis for policy decisions, management and operations; and ensuring adherence to the highest quality of the environment in balancing use, management and preservation. Table 2 (on pages 24 and 25 below) presents the zoning categories for National Parks and National Nature Monuments. It will be noted that Strict Nature Reserve or Nature Reserve, in the IUCN sense, constitutes not a reserve, but a zone within a reserve, in the Iranian classification system. National Parks are considered our highest reserve category. However, various zones within other categories of reserves may equal National Parks both in terms of the protection afforded to these and their ecological value. Indeed, it is intended that the same zone categories be treated equally, and irrespective of the reserve classification within which they fall.

Zones for Wildlife Refuges are identical to those of National Parks and National Nature Monuments, with the additional classifications of 1) Management Zone, in which land treatments are conducted by the Department, and 2) Public Use Zone, in which farming, grazing, cutting or other land use activities are permitted and sometimes encouraged to enhance the wildlife values of the reserves.

Zones for Protected Areas are under consideration and have not been approved at this time, since the nature of Protected Areas is highly complex, and the full scope of these has not yet been properly evaluated.

RESOURCE MANAGEMENT AND STRATEGY

The Department of the Environment places overwhelming emphasis on natural processes. It may be said that major emphasis in the reserves is placed on vegetation protection, for this has served both to stabilize soil and watersheds and to enhance the terrestrial and aquatic faunal populations while also obviously serving to protect remnants of the national flora.

Much has been written of late on the need for multiple use as the only workable approach to nature conservation in developing countries. We believe that for a variety of socio-economic reasons such an approach would have been unsuccessful in the formative stages of the Iranian reserve programme. In short, our strategy, and our source of success to date, has been to develop single or priority-use reserves, whether for ecosystems and/or wildlife, to insure preservation of the resource. Having succeeded, we feel, in protecting viable populations of plants and animals, we are now turning our energies to integrating wildlife into multiple use land practices. Through the application of existing legislation, and the cooperation of the Ministry of Agriculture and Natural Resources, the Department of the Environment hopes ultimately to ameliorate conditions in the interspaces between reserves, in order to avoid genetic isolation of plant and animal populations.

Selected comments on resource management guidelines for the various reserve categories:

In National Parks, management activities for the purpose of maintaining the desired flora and/or fauna essential to the conservation of the values of the park are permitted in designated zones. Management activities may include the removal of animals, the removal of undesirable vegetation, the use of controlled burning or grazing, water, fire and erosion control and other management practices; all of which, however, are aimed at maintaining the natural resource. All such activities shall be under the supervision of and shall be executed by the personnel of the Department and subject to the approval of competent scientific authorities established within the Department.

In some Parks it has been deemed valuable to maintain vegetation of certain zones in various successional stages, in order to retain successional species of plants and animals which would otherwise disappear as the Park approaches climax. Chief among these is Mohammed Reza Shah National Park. In the lower limits of the forest, farmland expropriated some 20 years ago has been succeeded by meadow and scrub vegetation, which in turn would be succeeded by deciduous forest if not managed in the meadow stage. Certain such meadows have been deemed essential to the over-all feeding strategies of Park wildlife.

TABLE 2. ZONING CLASSIFICATIONS, NATIONAL PARKS AND NATIONAL NATURE MONUMENTS

Management Category (Zone)	Natural Character	Management Objectives	Use, Development and Access Activities
I Strict Nature Reserve	Undisturbed natural state of pristine character, natural processes allowed to occur. Special features or ecosystems of significant scientific merit, uniqueness or sensitivity. Plant types, habitats, watersheds or research areas.	Manipulative practices prohibited except when judged indispensable for the safeguard and existence of the preserve. Natural processes in the absence of direct human interference. Non-disturbing research studies by special permit. No alteration of ground cover or hydrology.	Controlled access. Exclusion of public. Development facilities prohibited. No vehicle or trail development.
II Nature Reserve	Natural appeal of the park, optimum conditions of vegetation, animal life and terrain. Outstanding natural features of scenic interest and scientific value which derive their values from the maintenance of the natural character of the area. Transition between strict zone and low-use zone. Natural character dominates physical development.	Limited management and modifications for optimum conditions of a feature or process. Primary purpose is protection and perpetuation of natural conditions. Continued existence of indigenous animal and plant species is assured through management practices. Research.	Controlled public access by interpretive naturalist activities, special interest and educational groups by written permit. Use consistent with capacity and natural condition. Day use activities only, involving nature observation, view points and walking trips. Access trails undeveloped. No development facilities or physical in-place interpretive devices. Vehicle road access prohibited.

An area of varied and interesting natural attractions, high scenic interest and adaptable to low-density sustained visitor use patterns.	Research as a basis for management and interpretive programs. Applied manipulative practices to control accelerating erosion, epidemic diseases, insects or pests, and fire suppression or fire hazard reduction. General management practices as outlined in the management plan. The area delineates the limits of existing and potential facility development.	Development facilities necessary for protection of the resources, public safety and interpretation. May require certain types of construction such as trails, paths, primitive campsites, roads, parking lots and drainage systems to reduce unacceptable impairment of the landscape. Complementary uses of higher density such as sight-seeing, hiking, photography, nature study and picnicking. Numbers limited by facility development. Interpretation by physical aids, naturalists, self-guiding literature, etc. Trail access and provisions for interior use.
III Low Intensity Use	Rates and type of use consistent with carrying capacity in maintaining the natural character of the park. Wildlife habitat is plentiful and natural processes dominate the character of the area.	Facilities necessary for administration, operation, maintenance, protection and presentation of park values through a natural outdoor recreation experience. Interpretive facilities to orient park visitors and enhance their education. Access by park transportation. No provisions for artificial recreational developments. Facilities for visitor comfort and safety.

Attractive natural surroundings and orientation point to special interest features. Site is adaptable to man-made influences. Accommodation to high density use through management provisions. Site necessary for visitor access to the circulation system and for park operations to protect, present to the public and study the park resources. Includes maintenance and utilities, boat docks, research and interpretive facilities, and lands needed for development purposes.	Carrying capacity, management and interpretive research activities; manipulative practices will be necessary for protection, maintenance, replacement or removal of vegetation, soil or other site features, quasi-natural with pleasing transition to natural zones. Park image operations and general management practices as outlined in the management plan.	Facilities necessary for administration, operation, maintenance, protection and presentation of park values through a natural outdoor recreation experience. Interpretive facilities to orient park visitors and enhance their education. Access by park transportation. No provisions for artificial recreational developments. Facilities for visitor comfort and safety.
IV High Intensity Use	Carrying capacity, management and interpretive research activities; manipulative practices will be necessary for protection, maintenance, replacement or removal of vegetation, soil or other site features, quasi-natural with pleasing transition to natural zones. Park image operations and general management practices as outlined in the management plan.	Facilities necessary for administration, operation, maintenance, protection and presentation of park values through a natural outdoor recreation experience. Interpretive facilities to orient park visitors and enhance their education. Access by park transportation. No provisions for artificial recreational developments. Facilities for visitor comfort and safety.

For National Nature Monuments to possess national significance, the area or site must present a true, accurate and essentially unspoiled natural example of the process, feature or biota which are under the influence of natural forces. Manipulation of the environment may be judged acceptable by competent scientific authority in order to neutralize unnatural influences, to perpetuate a rare or particular species, or to better expose a feature for study or interpretation.

Management of Wildlife Refuges involves the full collection and application of biological information for the purposes of increasing the number of individuals within species and populations of wildlife up to the optimum carrying capacity of their habitat and maintaining such levels. This may involve the entire range of activities that constitute a modern scientific resource programme including research, census, law enforcement, habitat acquisition and improvement, and education. Management implies when necessary the periodic or total strict protection of species or populations as well as regulated, sustained harvesting in accordance with the dictates of proper wildlife management. Engineering and agricultural practices, mowing, livestock grazing, burning, manipulating water levels, vegetation or topographic manipulation, planting, cultivation and harvesting of grains and other crops related with habitat improvement, shall be influenced by an ecological approach and intensity. Refuge management will be based on the policy that refuges should serve as show places for a variety of wildlife and vegetation types, and enhancement of the natural ecosystem should be considered an essential component of the primary management function.

In Protected Areas, land use activities involving exploitation or alteration of the natural environment shall be zoned and regulated so as to produce a minimum impact on the total effective natural character and resource values of the Protected Area. Regulations shall define the limits, methods and type of exploitation, including the removal of vegetation and wildlife, agricultural and pastoral activities, removal or exploration of mineral resources, public works construction, and residential, commercial or industrial occupations. Where exploitation and private rights exist, management should be directed to applied research, to specific land use problems and alternatives to existing land use. Land use designed to improve the natural character and condition of the reserve should be encouraged to include agricultural practices of value to wildlife, afforestation, range rehabilitation, seed and gene pool development, wetland rehabilitation, and touristic and visitor-use developments.

ESTABLISHMENT, UP-GRADING AND AMELIORATION OF THE RESERVES

Recommendations for the establishment of reserves or changes in reserve classification are prepared by the Division of Parks and Wildlife, reviewed by all appropriate Divisions of the Department of

the Environment, and presented to the High Council of the Environment for approval (see Environmental Protection Act for composition of the High Council.)

This arrangement ensures that all government organizations with jurisdictions over or interests in lands proposed for protection will have an opportunity to assess the prospective impact on resources administered by their organizations. Where land acquisition is essential, legal negotiation is necessary (see Law).

Control of grazing and forestry within the reserves is determined by regulations adopted jointly by the Forest and Range Organization of the Ministry of Agriculture and the Department of the Environment. Control of mining, likewise, is determined by agreement between the latter Department and the Ministry of Economy. Control of water resources must be approved by the Ministry of Energy. Thus, regulation of the reserves of the Department of the Environment becomes a multi-disciplinary affair of the highest order, although objectives may often be somewhat single-purpose oriented.

The amelioration of a reserve implies a constant assessment of conditions and trends within each reserve. Appendix I is a standard evaluation form for conditions affecting the classification integrity.

PERSONNEL AND TRAINING

With a new law which vastly expands the jurisdiction and mandate, and with new reserve categories implying new responsibilities in outdoor recreation and management, the Department of the Environment is undergoing a transition of tremendous proportions. Many of the greatest problems are internal. In general terms, the Department has a highly conservative, law enforcement oriented personnel. Indeed, much of that which has been accomplished to date is due to a high degree of dedication on the part of members of the Enforcement Division. However, the Department is gradually changing from a strictly regulatory agency to one which is also public service oriented. Sources of many of the necessary personnel categories do not exist in the country.

The in-service training programme and Departmental College are being modified to accommodate these changes; i.e. the three-month "Environmental Guard" curriculum and the two-year "Environmental Officer" curriculum are being broadened to incorporate training in park management and education principles. Under the direction of FAO, a four-year curriculum in environmental conservation is in the initial planning stages under Tehran University. The Department is developing cooperative education programmes with several other Iranian Universities, and several candidates are being sent abroad for

post-graduate work. In addition, several prospective reserve administrators are receiving In-Service training in the Division of Parks and Wildlife.

SUMMARY AND DISCUSSION

In the foregoing, we have attempted to describe the development of the reserve system administered by the Department of the Environment in Iran. While much remains to be accomplished, progress is being made steadily toward a truly comprehensive system of biotic community reservations. The programme was too late to preserve the Asian lion in Iran, the last specimen of that species having been seen in 1942. The Caspian tiger, too, may be gone, for our intensive studies have failed to produce concrete evidence of tigers since 1958. It is likely that viable populations have not existed for two decades or more. Save for those two species for which protection came far too late, no other species in Iran, we feel, is truly endangered at the present time. But for this reserve system, however, and its supporting legislation, and taking into account trends in the Middle East today, it is likely that dozens, if not hundreds of species of plants, birds, fish, mammals and reptiles would otherwise be extinct by this time.

Many developing countries have proceeded on the basis that wildlife must be rationalized on an economic basis (cropping for food and fibre, etc.) or on the basis of its recreational value. In few of those countries has such an approach been successful. In Iran, while acknowledging and promoting the economic and recreational values of wildlife and nature, we have proceeded with the reserve system on none other than an ecological basis. We make it quite clear that the foundation of the Iranian reserve system is the preservation of a rich national nature heritage. This approach is gaining increasing support within the country, and in the final analysis is sufficient rationalization. Today, this system, though requiring much modification and improvement, constitutes a vast resource for recreation and aesthetic education, for economic returns and for research and the establishment of land use guidelines for much of the Middle East and Asia.

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REFERENCE

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APPENDIX 1

EVALUATION FORMS FOR
CONDITIONS AFFECTING THE CLASSIFICATION INTEGRITYI. Value Base for Judging Present and Future Impact of the Value
Limitations Affecting the Classification

<u>Rating value</u>	<u>Weighting factor</u>
0	Not applicable - absent at present time
1	Compatible - having no serious short term or long term effect on the resource or the integrity of the reserve.
2	Moderate - causing some but not serious change in the resource or integrity of the reserve.
3	Severe - serious effect and modification of the resource and reserve integrity.
4	Threshold - modification to the extent that recovery via natural processes is not feasible and integrity has been lost.

APPENDIX 2

MANAGEMENT CATEGORIES OF ACTION

<u>Identifier</u>	<u>Management Category</u>
a	redefine boundaries
b	purchase or expropriate lands
c	enforce existing regulations
d	new legislations and laws
e	terminate contracts or redefine
f	cooperative action with other agencies
g	limit or change land use practices
h	resettlement of human inhabitants
i	require feasibility and impact studies
j	enforce control over planning and implementation
k	incorporate resource management measures
l	statement of policy
m	enact easements or leases
n	research
o	master planning
p	zoning
q	develop visitor-use facilities
r	public relations and education

APPENDIX 3

SUMMARY VALUE OF THE VULNERABILITY OF THE SYSTEMS

		Well-Being					
Surface Water		0	1	2	3	4	
Soil							
Vegetation							
Wildlife							
Scientific Resources							
Visual Resources							
CONDITIONS AFFECTING CLASSIFICATION INTEGRITY							
Categories		Present within the Reserve	Strong outside influence	Present impact	Future impact	Management action required	Comment-Analysis
Land Transformation	human habitation buildings industrial sites airport - airway highway road trail bridges railroad transmission lines pipelines corridors communication systems fences and other barriers canals dams and impoundments recreational facilities erosion control terracing cut and fill and drainage reforestation						
Species Needs not Represented or Inadequately Represented	habitat requirements - feeding, breeding, moulting, resting, etc. shelter water winter range sensitivity to disturbance over-grazing over-population soil nutrient depletion watershed protection regeneration competition vigor disease law enforcement						

CONDITIONS AFFECTING
CLASSIFICATION INTEGRITY

Categories	Present within the Reserve	Strong outside influence	Present impact	Future impact	Management action required	Comment-Analysis
Modifications exotic flora and fauna biological controls alteration of ground cover modification of habitat alteration of ground water hydrology alteration of drainage river flow modification irrigation burning noise pollution						
Resource Extraction or Processing blasting and drilling surface excavation well digging and fluid removal dredging exploration lumbering fishing hunting grazing fuel collecting farming feed lots dairies energy generation mineral processing chemical use refineries food processing						

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 the wise use of natural resources in areas where the flora and fauna are of particular importance and where the landscape is especially beautiful or striking, or of historical, cultural or scientific significance. IUCN believes that its aims can be achieved most effectively by international effort in co-operation with other international agencies, such as UNESCO, UNEP 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 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.