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PARCS PARKS PARQUES

International Union for Conservation of Nature and Natural Resources

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Unión Internacional para la Conservación de la Naturaleza y de los Recursos Naturales

PARQUES PARCS PARKS

Union internationale pour la conservation de la nature et de ses ressources



Commission on National Parks and Protected Areas
Commission des parcs nationaux et des aires protégées
Comisión de Parques Nacionales y Areas Protegidas



PARKS PARQUES PARCS

An international journal for managers of national parks, historic sites, and other protected areas

Una revista internacional para directores de parques nacionales, campos arqueológicos y otras áreas protegidas

Revue internationale pour gestionnaires de parcs nationaux, de lieux historiques et autres lieux protégés

Editor: Tony Mence

Parks, IUCN Conservation Monitoring Centre, 219(c) Huntingdon Road, Cambridge CB3 0DL, UK

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PARKS is a practical journal for technical and management personnel dealing with natural, historical and cultural values of national parks and other protected areas. It covers all aspects of the planning, use and operation of these areas throughout the world. The aim of PARKS is to promote more effective management of protected areas and to facilitate communication between protected area managers worldwide.

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Editorial

The four issues of the new series of PARKS for the year 1986 are now safely completed. There have been inevitable problems along the way, but we have given priority to getting the magazine out and tried to overcome the snags as we went along. A major challenge was the requirement for the Spanish language content, introduced as a condition of funding after the decision had already been taken to start off with English only. We must therefore offer our apologies to our Spanish-speaking and, indeed, our French-speaking readers if our efforts to accommodate this within an already limited budget and editorial capacity has resulted in deficiencies in the translation sections. However, we have revised our arrangements for 1987 and trust these will prove to be more satisfactory.

We were sorry to see that some of our readers were confused by the fact that the Spanish language section of the double issue Volume 11, 2/3, was in its own cover – this for the reason that the whole contents could not be accommodated within a single cover by the binding method to which we are committed. Although the Editorial did explain the two sections, it seems that some readers had the impression that we were already producing a Spanish language version. Unfortunately we are still a long way from being able to do that; but it remains a long term objective to publish Spanish and French versions when funds are forthcoming to pay for them.

Another difficulty we encountered was the need for thorough revision of the mailing list entries. The magnitude of this task was totally unforeseen and our available facilities quite inadequate to carry it out within an acceptable time limit. The questionnaire distributed with

Volume 11, 2/3 will help to ensure that individual entries are correct. This questionnaire also sought readers' opinions about subscriptions to the magazine, a subject aired in the Editorial of the first issue in the new series (Volume 11, 1). At the time of writing, some 300 questionnaires of the 4,000 distributed had been returned. All replies will be analysed and taken into account for the future direction of PARKS.

Looking forward to prospects in 1987, we hope to continue improving. We do not, however, expect any dramatic changes in our fortunes. Our budget remains severely restricted and minimum funding for the year is not yet fully assured, but strenuous efforts are being made to secure further funds and we have no doubt that we shall pull through.

This first issue of 1987 contains another example of the creation of a park – or rather, in this case, a system of parks to meet the recreational needs of Hong Kong's huge urban population. In contrast to this, the approach used for identifying and effecting the protection of sensitive coastal and marine areas of Oman through existing infrastructures is explained. We expect that the next issue will take further the problems and methods of managing marine protected areas.

We are very encouraged by the increasing number of readers volunteering articles or other kinds of help. Nevertheless, we are experiencing great difficulty in finding suitable "parks techniques" material, for which many readers have asked. If you have any bright ideas, however simple, please do let us know about them.

TONY MENCE (*Editor*)

News

Mt Apo boundaries reinstated

The new Philippine Government has revoked a 1983 proclamation reclassifying park land for settlement purposes and has restored park boundaries to their original state. 20,000 settlers, however, still remain within the park and heavy encroachment continues.

Six new national nature reserves (NNR) in the UK

The new reserves are Ashford Hill, Martin Down, Beacon Hill, Little London Wood, Coed Ty Canal and Rhos Llawr Cwrt in Wales. The site at Ashford Hill consists of 20 ha of meadows which are the core of a wooded valley exceptionally rich in wildlife. The habitat had survived because it had been managed for many years without the use of fertilisers or pesticides. The 34 ha at Kitt's Grave has been acquired as an extension to Martin Down NNR, one of the largest and most biologically-important areas of agriculturally-unimproved chalk downland in Britain. At Beacon Hill, the NCC has acquired 40 ha of ancient chalk grassland, with woodland collectively supporting rich flora and fauna.

The 6 ha of woodland at Little London Wood NNR are largely planted with beech trees of mixed ages and were acquired from the Forestry Commission. No sites are available for the two NNRs in Wales where the distinguishing features include exceptional lichen growths and pingos.

Italy moves towards consolidating national parks

A new law, a new Ministry of Environment, and a new Director of Protected Areas are several new initiatives reported. Stelvio National Park is to receive priority due to the serious threats it is facing. Four new national parks will also be proposed. But one (Calabria) may also be "reclassified" as the local authorities have gradually developed it to the point where it no longer serves nature conservation objectives.

New training opportunity

A Heritage Resources (both natural and cultural) Centre has been established in Canada. For information write to the Centre, c/o Environmental Studies, University of Waterloo, Waterloo, Ontario.

Agreement to establish Ellesmere Island National Park Reserve signed

A 39,500 sq km portion of Canada's most northerly land area is to become a national park. An agreement signed on 20 September initiates the legal process which also requires settlement of native land claims. Musk oxen, Peary caribou and polar bear are among the fauna in the new reserve. The high Arctic was identified in the World Conservation Strategy as a priority for protected area establishment.

Private sector initiatives to improve natural resource management in the Eastern Caribbean

The St Thomas-based Island Resources Foundation (IRF) in partnership with WWF and the Caribbean Conservation Association (CCA) of Barbados has launched a 2-year project to strengthen private-sector natural resource management programmes in the Eastern Caribbean. The project will develop various pilot activities with selected local and regional environmental organizations to provide the basis for a long-term institutional development strategy.

Threatened protected areas of the world, additions for 1986

The following 23 sites have been added to the register of threatened protected areas maintained and updated annually by IUCN's Protected Areas Data Unit. The current register now totals 74 sites worldwide.

| Realm and site (Country) | Summary of threats |
|---|---|
| Neotropical | |
| (1) Iguaza National Park (Argentina) | Transfer of lands within park to local government for development purposes |
| (2) Los Glaciares National Park (Argentina) | Construction of new settlement; proposed excisions and hydro-dam development |
| (3) Fernando de Noronha National Marine Park (proposed) (Brazil) | Expansion of military facilities, siltation of reef due to land erosion |
| (4) Paracas Nature Reserve (Peru) | Proposed size reduction to exclude development zone |
| Nearctic | |
| (5) Chincoteague National Wildlife Refuge (USA) | Intensive recreational use by off-road vehicles, road redevelopment, serious impact on snow geese |
| (6) Lady Evelyn-Smooth Water Provincial Park (Canada) | Wilderness values to be compromised by expansion of logging activities and road construction in buffer zone |
| (7) Forillon National Park (Canada) | Air pollution, acid rain having severe effects on lakes and forests |
| Palearctic | |
| (8) Donana National Park (Spain) | Diversion of water (wells) outside park for irrigation will result in serious dry-season droughts |
| (9) Rosca-Letea Biosphere Reserve (Romania) | Hunting of pelicans by local fishermen, agricultural development plans for Danube Delta, water pollution |
| (10) Dneprovsko-Teterevskoe Nature Hunting Reserve (USSR) | Partly within zone A (total evacuation) of Chernobyl accident site |
| (11) Stelvio National Park (Italy) | Provincial authorities propose 50% reduction in size to allow additional forestry and hunting activities |
| (12) Hardangervidda National Park (Norway) | Uncontrolled motorized traffic, road and cottage development, inadequate supervision, legal claims, acid rain |
| (13) Datian Nature Reserve (China) | Declassification of 25% of area for cattle ranch; wood-cutting and poaching by reserve residents |
| Afrotropical | |
| (14) Selous Game Reserve (Tanzania) | Drastic drop in rhino and elephant population due to heavy poaching |
| (15) Ipassé-Makokou Nature Reserve (Gabon) | Issue of logging permits, heavy poaching |
| (16) Mosi-Oa-Tunya National Park (Zambia) | Rampant poaching, title deeds given for farming inside park |
| (17) Kainji Lake National Park (Nigeria) | Poaching, unauthorized fires, domestic livestock grazing, inadequate legislation and enforcement |
| (18) Gashaka-Gumti Game Reserve (Nigeria) | Expansion of enclaves within reserves, rampant poaching, agriculture by park staff, inadequate management resources |
| (19) Manova-Gounda-St Floris National Park (Central African Republic) | Extirpation of rhinos and poaching of 75% of elephants; invasion by nomads from Chad and Sudan with large herds of livestock carrying bovine rinderpest |
| (20) Niokolo-Koba National Park (Senegal) | Plan for construction of new road through park; pressure from surrounding land uses and poaching |
| Indomalayan | |
| (21) Taman Negara National Park (Malaysia) | Proposed construction of major road to interior of park |
| (22) Kepulauan Seribu Marine Park (Indonesia) | Proposed inappropriate tourism resort development |
| (23) Gunung Nyurut Nature Sanctuary (Indonesia) | Expansion of shifting cultivation activities, overhunting and collecting of forest products, timber concessions |
| Australian/Antarctica/Oceanian | |
| No new areas reported threatened | |

News – continued

Workshop on Mediterranean biosphere reserves

The workshop, co-sponsored by the French MAB Committee and UNESCO and hosted by the Parc national des Cévennes was held at Florac, France 9–12 September 1986. The aim of the meeting was to evaluate the functioning of the biosphere reserve network in the Mediterranean region and formulate an approach to implement the action plan for biosphere reserves within this region. More than 50 participants from eight Mediterranean countries (unfortunately lacking Eastern Mediterranean country members) included representatives from IUCN, UNESCO, UNEP, Mediterranean Specially Protected Area Regional Activity Centre, and the French Ministry of the Environment. Important conclusions included the need to promote biosphere reserve establishment in Algeria, Morocco and Turkey with overall priority given to the creation of reserves in marine, arid and steppic regions, the utilization of scientific criteria, an increase in information exchange, and the promotion of efficient cooperation between countries and within countries. The proceedings of the workshop and the individual country papers are to be published by the French MAB Committee.

Border parks in the Australian Alps

A commitment to cooperative management of national parks in three administrative units of the Australian Alps was announced in November 1985 by State and Federal Ministers responsible for national parks and other protected areas. The Australian Alps extend through the Namadgi National Park in the Australian Capital Territory, the adjacent Kosciusko National Park in New South Wales, and the national parks in the mountains of the State of Victoria. A three-state agreement will result in complementary policies to protect the scenery, water catchments, plants, animals and cultural heritage of the Alps. Cooperative arrangements will focus on the exchange of information and resources, integrated research programmes, planning of interstate tracks and associated recreation opportunities and the provision of information and educational material about the Alps. Both the public and the parks will benefit from an increased awareness of the importance of the area, its requirement for protection and the wide range of opportunities available for recreation. The agreement will encourage liaison and cooperation between the Australian Capital Territory, New South Wales, Victoria and Australian conservation agencies. A workshop involving representatives of the agencies has already been held to facilitate cooperative arrangements.

Country park usage and visitor impacts in Hong Kong

Dr C. Y. Jim

The Country parks in Hong Kong, covering 40 per cent of its land areas, were designated in the 1970s to conserve the countryside against unacceptable incursions and to cater for rising outdoor recreation demands. The conservation strategy aims at attracting most visitors to well-defined peripheral high-intensity recreation zones to limit their impacts on the parks themselves. Park usage is spatially and temporally uneven, with considerable concentration in certain popular barbecue/picnic sites and footpaths where soil, and vegetation damage is common. Frequent hill fires and widely scattered litter, detracting from the amenity value of the parks, are serious management problems. Some solutions to these pressing and aggravating problems are suggested.

Los parques campestres en Hong Kong, cubriendo 40 por ciento del área terrestre, fueron designados en los 1970s para conservar el campo contra incursiones inaceptables y para atender las crecientes demandas por recreación al aire libre. La estrategia para la conservación se propone atraer a la mayoría de los visitantes hacia zonas periféricas bien definidas de alta intensidad recreativa para limitar su impacto sobre los parques mismos. El uso del parque es espacial y temporalmente desigual, con concentraciones considerables en ciertos sitios populares para barbacoas/comidas y senderos donde el daño al suelo y a la vegetación es común. Frecuentes fuegos en las colinas y basura extensamente dispersa, desvirtúan el atractivo de los parques y son serios problemas administrativos. Se sugieren algunas soluciones a éstos apremiantes y graves problemas.

Les parcs ruraux de Hong-Kong couvrent 40% de la surface émergée. Ils ont été créés dans les années 70 pour protéger le milieu rural contre des incursions inacceptables et pour satisfaire la demande croissante d'activités de loisirs de plein air. La stratégie de conservation cherche à attirer la plupart des visiteurs vers des zones périphériques bien définies proposant des activités de loisir très variées, afin d'atténuer les effets les parcs eux-mêmes. L'utilisation des parcs varie dans l'espace et dans le temps. Les visiteurs ont tendance à se concentrer dans les aires de pique-nique et le long des sentiers les plus populaires ou la végétation est, de ce fait, généralement abîmée. Parmi les problèmes d'aménagement les plus graves, on note les feux fréquents et les ordures laissées par les visiteurs ce qui diminue l'attrait des parcs. Le texte propose quelques solutions à ces problèmes préoccupants.

The international image of Hong Kong is focused on its crowded urban morphology and bustling activities. Few realize that it has a sizeable countryside comprising about 75 per cent of the 1,068 square kilometres total area within easy reach by city inhabitants. In stark contrast to the congested city, this valuable extra-urban domain is virtually empty, consisting of undeveloped and unspoilt steep hills of high scenic and amenity value on crown lands with unrestricted public access. Despite centuries of agricultural development, the rugged terrain with its shallow and infertile soil, together with the difficulty of securing adequate irrigation water, had largely precluded cultivation from the hillslopes. Instead, intensive farming has been practised in pockets of fertile alluvial lowlands and valleys occupying only about 10 per cent of the land. Similarly, early city development was confined to the limited spaces around the harbour areas.

Rapid population and economic growth in the post-war years, and especially since the 1960s, necessitated large-scale expansion of existing urban areas and the creation of new towns in the rural areas. Lax statutory control over land use in the countryside, coupled with indiscriminate zeal of speculative developers, threatened to engulf large tracts of this heritage hitherto spared mainly by default. Meanwhile, increasingly popular but unregulated countryside outings began to have increasingly serious impacts on natural areas. To arrest further unbridled inroads upon this irreplaceable asset, a country parks programme was instituted—somewhat belatedly—in the early 1970s, but was virtually accomplished by mid-

1979. About 40 per cent of the land area, covering nearly all the hilly countryside deserving protection in perpetuity, has been designated as a park system of 21 separate parks (Figure 1).

The programme has been resoundingly successful in encouraging park usage, attracting some 9.46 million visitors in 1985–86, a notional average of 1.76 visits per capita. At the same time, however, it has generated some pressing ecological problems due to misuse or overuse of the limited resources. This article examines the country parks programme and the characteristics and impacts of visitor usage in the context of management.

The country park system

A brief history of the country parks programme is summarized in Table 1. The idea was voiced in the early 1960s by a small group of professionals, academics and amateur conservationists in response to the alarming pace and variety of destructive intrusions by the public. Government reaction, initially lukewarm, was soon stimulated by two trigger factors; namely, a strongly supportive IUCN scientists' report (Talbot and Talbot, 1965) and the civil disturbance report (Hong Kong Government, 1967) pressing for recreational outlets for the young. Meanwhile, despoliation of the countryside by uncontrolled visitors continued (Agriculture and Fisheries Department, 1971, 1972). Following a pilot scheme in 1971, a five-year plan (1972–77) was instituted during which the necessary legal and administrative infrastructures were established. Finally, a crash programme (1977–81) to accelerate the hitherto sluggish progress was put into operation and accomplished ahead of

Department of Geography and Geology, University of Hong Kong

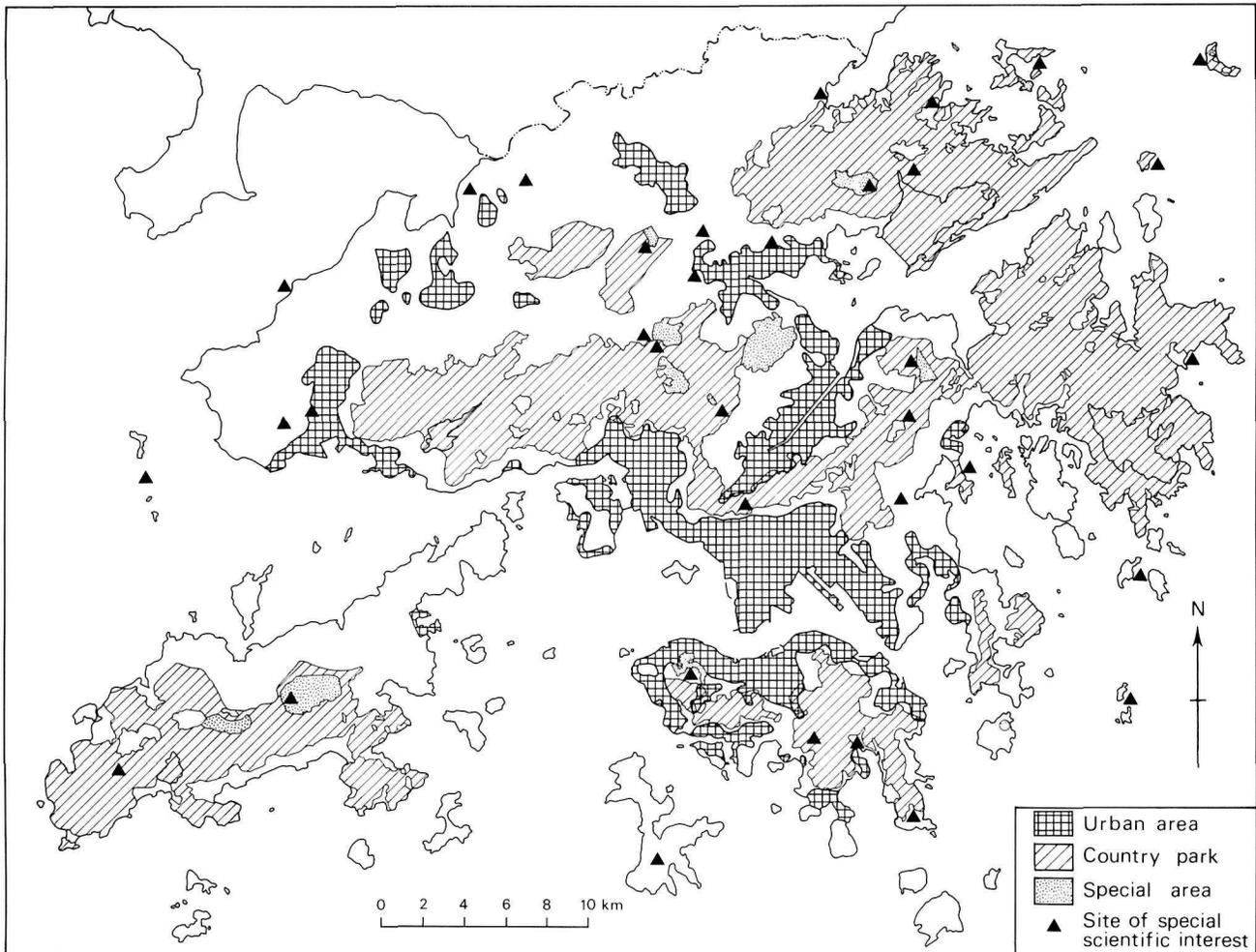


Figure 1 The country parks, special areas, and sites of special scientific interest in relation to the urban areas in Hong Kong.

schedule in mid-1979. This provided for close scrutiny of all future developments within the 21 parks (Figure 1) to ensure that only those providing essential services to the rural areas would normally be allowed. In short, the government, after a decade of procrastination, took only a few years to implement the bold scheme; a significant departure from the customary attitude of *laissez faire* to one of positive intervention.

The objectives of the programme are primarily to conserve the natural and cultural elements of the countryside, to meet burgeoning informal outdoor recreational demands, and to encourage educational and interpretive use of the countryside. To reconcile these apparently contradictory goals, and particularly to contain undesirable visitor impacts, a loose spatial segregation of activities was effected through park zonation. Most visitors are encouraged to congregate in the high-intensity recreation zone, “honey-pots” (Wholey, 1978) of fully-equipped barbecue/picnic sites situated at easily accessible points adjacent to principal travel lines, mainly in the lower-lying park periphery. Those visitors venturing into the low-intensity recreation zone in the park interior are confined to a footpath network and scattered camp sites where dispersed and low-impact activities can be pursued with a minimum provision of facilities. Outside these defined nodes and lines lies the vast main conservation zone into which intrusion is discouraged. Certain special areas and sites of special scientific interest by virtue of flora, fauna, geology, archaeology or history, with restricted access, are also designated (Figure 1). Thus the dominating hills in the park cores act largely as passive green backdrops

against which activities, mainly gregarious (Country Parks Authority, 1986b), are enjoyed.

Since most developable sites have now been listed, the emphasis of the programme has recently shifted to maintenance, repair and upgrading of facilities. Installations to satisfy the needs of special groups or interests, or to encourage countryside interpretation—such as trails for jogging, exercise, orienteering, long-distance hiking and nature studies, recreational sites for the physically handicapped—are provided. Design of facilities is also changing from imported standards to naturalistic ones with local flavour and vandal-resistant features.

Visitor characteristics and patronage regime

A questionnaire survey of 5,530 visitors, a 1 per cent sample of estimated visitor numbers, implemented by the Country Parks Authority (1986b) in late 1985 provides objective data for park planning and management. Most visitors are young (65.8 per cent are 15–30 years old), male (male : female ratio = 203 : 100), and relatively well educated (89 per cent secondary and above). The corresponding values for the whole population (Census and Statistics Department, 1986) are respectively 29.9 per cent, 106:100 and 51.1 per cent. Compared with total population figures, the clerical, sales and services occupation group is faithfully represented, whereas the professional, administrative and managerial group is over-represented, and the craftsman, labourer and technician group under-represented. Overall, the passive, inexpensive and unsophisticated pursuits are enjoyed by people

of different social backgrounds. Most visitors (93.4 per cent) came in groups of, most commonly, two to five and, slightly less commonly, six to ten persons, mainly with friends, family or schoolmates.

The increasing park patronage (Table 2 and Figure 2) could be explained by four sets of underlying factors. The size of the youthful population (5.5 million in 1986), increasing affluence and leisure time, and a changing attitude towards recreation furnish the socio-economic pre-conditions for a boom in countryside recreation. The crowded, bleak and stressful urban environment, with scanty green areas and open spaces (Jim, 1986), elicits a strong innate urge to re-establish the severed linkage with nature, and to seek physical and mental relaxation. The facilities, publicity programmes, comprehensive information—including guide maps, leaflets, booklets and a detailed book on country park interpretation (Thrower, 1984)—help to encourage the spontaneous demands.

Table 1 Landmarks in the history of country park development in Hong Kong

| | |
|----------------|---|
| ~ 1955–65 | The idea of multiple-use community forestry (Daley, 1965) proposed to serve the recreational demands of an increasingly urbanized population. Support was limited to the professionals and academics who were alarmed by the rapid rate of unbridled urbanization threatening to destroy the countryside. |
| March 1965 | Visit by two consultants from the International Union for Conservation of Nature and Natural Resources (IUCN); reported in April (Talbot and Talbot, 1965). |
| 1966 and 1967 | Civil disturbance in Hong Kong and a report (Hong Kong Government, 1967) by a Commission of Inquiry suggesting <i>inter alia</i> the need for recreational outlets for the youthful population. |
| May 1967 | Appointment of a Provisional Council for the Use and Conservation of the Countryside which reported in June 1968. |
| July 1970 | Appointment of two Advisory Committees for Recreational Development and Nature Conservation. Subsequently combined into one committee and reported in 1971. |
| 1971 | Initiation of a country park pilot scheme in Shing Mun Reservoir area. Benches, tables, barbecue pits and other recreational facilities were provided in accordance with the standard designs of the US National Parks Service. |
| June 1972 | Approval of the first five-year (1972–77) country park development programme. |
| December 1973 | Establishment of the Council for Recreation and Sport to encourage young people to participate in outdoor recreation. |
| October 1975 | Designation of the first Site of Special Scientific Interest. |
| March 1976 | Enactment of the Country Parks Ordinance. |
| August 1976 | Appointment of the Country Parks Board to advise the Country Parks Authority on policy and programmes, and to consider objections related to park designations. |
| May 1977 | Approval of the first Special Area. |
| June 1977 | Designation of the first country park in Shing Mun Reservoir area. |
| October 1977 | Approval of the Country Parks Crash Programme (1977–1981) to accelerate the pace of park designation. |
| September 1979 | The last (21st) country park in Clear Water Bay area was designated. Added together, they occupy 41,296 hectares, representing about 40 per cent of the total land area. |
| From 1981 | Consolidation of the country parks programme, with emphasis shifted from construction to maintenance, and from quantity to quality and variety of recreational experience, including special facilities to satisfy different interests and demands, to bring out the unique characters of individual parks, and to encourage interpretative use of the countryside. |

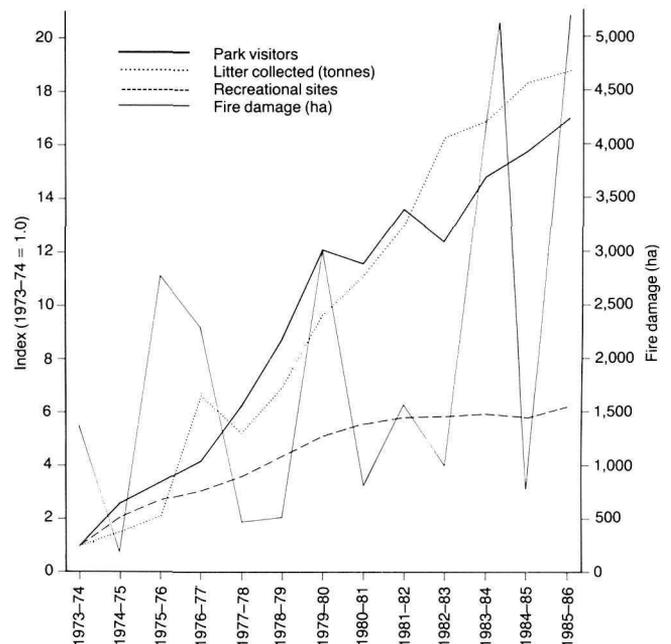


Figure 2 The trend in country park visitorship and its relation to some impact indicators between 1973–74 and 1985–86.

Ease of travel through improvements in transport routes and carrier services provides additional impetus.

The patronage regime is spatially and temporally uneven, with sharp demand peaks separating lulls. Most users cluster in the accessible sites and paths in a

Table 2 Some statistics related to country parks and visitor impacts

| Attributes | 1975–76 | 1980–81 | 1985–86 |
|--|---------|---------|---------|
| <i>Landuse*</i> | | | |
| Built-up land (%) | 12.4 | 16.0 | 16.5 |
| Woodland (%) | 11.8 | 11.7 | 11.7 |
| Shrub-grassland (%) | 58.9 | 58.7 | 58.5 |
| Agricultural land (%) | 11.6 | 9.2 | 9.0 |
| Others (%) | 5.3 | 4.4 | 4.4 |
| Total land area (km ²) | 1.049 | 1.064 | 1.068 |
| <i>Population†</i> | | | |
| Age group | | | |
| <15 (%) | 30.1 | 24.8 | 23.1 |
| 15–64 (%) | 64.4 | 68.6 | 69.3 |
| > 65 (%) | 5.5 | 6.6 | 7.6 |
| median age | 23.9 | 26.0 | 28.6 |
| Total (millions) | 4.403 | 4.986 | 5.396 |
| Persons per km ² | 4,207 | 4,760 | 5,052 |
| <i>Country park‡ and impact indicators</i> | | | |
| Park area (ha) [§] | – | 40,833 | 40,833 |
| recreation sites | 192 | 394 | 442 |
| seating capacity | 28,928 | 61,656 | 67,533 |
| Visitors (millions) [¶] | 2.00 | 7.12 | 9.46 |
| park area per capita (m ²) | – | 81.9 | 75.7 |
| visits per capita | 0.45 | 1.43 | 1.76 |
| visits per site | 10,417 | 18,071 | 23,063 |
| Hillfires attended (cases) | 382 | 281 | 306 |
| fire damage (trees) | 680,000 | 15,900 | 541,000 |
| fire damage (ha) | 2,800 | 820 | 5,415 |
| Litter collected (tonnes) | 446 | 2,364 | 4,000 |
| litter per visitor (kg) | 0.22 | 0.33 | 0.42 |

* Data extracted from Census and Statistics Department (1985) and Information Services Department (1986).

† Data extracted from Census and Statistics Department (1985, 1986).

‡ Data extracted from Agriculture and Fisheries Department (1976, 1981, 1986), unless otherwise indicated.

§ The first country park was not designated until June 1977, but recreational facilities were provided before the formal designation.

|| Assumed to be an average eight persons per picnic table or barbecue pit.

¶ Data extracted from Country Parks Authority (1980, 1981, 1986).

comparatively small number of popular parks, either peri-urban or remote and empty enough to offer wilderness experience. Most visits are day-trips concentrated into about 6 hours, on weekends or holidays, in the winter cool-dry months, and especially on sunny days (Country Parks Authority, 1986b). However, recent trends of spreading out in space and time are discernible (Country Parks Authority, 1986a).

Concentrated impacts

The zonation strategy deliberately concentrates most users into the high-intensity recreational sites. Half of the visitors enjoy barbecues and picnics (Country Parks Authority, 1986b); gregarious activities which are very much supply-induced. Most of the 442 sites were developed in roadside spaces or old fields. Their construction involved levelling, stone removal, topsoil laying and rough lawn establishment with relatively durable grass species commonly used in local sports fields and urban parks. No special measures were taken to reinforce the surfaces against heavy wear by foot traffic. The bulk of visitor impacts is received by these "sacrifice" sites (Cole, 1981), so that the countryside at large could be guarded from perturbations.

Most popular sites now show clear signs of unrelenting overuse. Excessive trampling pressure has decimated the grass cover through massive injuries (Beard, 1973), reducing vigour, disease-resistance and recuperative potential. With a diminished standing biomass, the cushioning effect is lost, thus allowing trampling stresses to reach the soil directly; leading to aggregate breakdown, compaction and erosion (Liddle, 1975). Eventually, thoroughly degraded sites result with almost total loss of ground vegetation, topsoil, and fine soil materials.

The exposed subsoil is densely packed and often crusted by rainsplash, with a bulk density exceeding 1.4 g/cm^3 . Such damaged soils, with a harsh microclimate and continued trampling, preclude any chance of natural vegetation recovery. Due to the visitor's inclination to explore the surroundings, sometimes rather indiscriminately, the vegetation and soil in the vicinity of popular sites are also often damaged, although to a lesser extent. The clearly demarcated boundaries, however, confine extreme impacts within these sites. The quality of a countryside experience in overcrowded, noisy, bare and dusty sites is nevertheless undoubtedly lowered.

Research is needed on suitable materials and methods to strengthen site surfaces, both grasses and their substrate, against trampling, and on the rehabilitation of degraded sites. However, the low usage threshold above which vegetation—soil damage appears (Young, 1978; Cole, 1985), coupled with the extremely high trampling pressure, may render any measures ineffective in particular situations. Some badly deteriorated sites have to be closed for rehabilitation, requiring drastic cultural adjustment and a long rest period. Such advanced degradation may have happened within only a short period of very heavy use. Additionally, the withdrawal of sites from public use, whether for repair or rotation, would inevitably increase the impacts on the remaining ones.

Even the most degraded sites would continue to draw heavy patronage due to the lack of alternatives and the tendency to continue using more accessible and familiar ones. Occasionally, a few extremely popular sites, as an expensive and somewhat undesirable last resort, are covered with stones or concrete slabs. Controls through user

restrictions (Stankey and Baden, 1977; Manning, 1979) have not been adopted; they may be found socially unacceptable and impossible to implement. Since much of the high visitation is supply-generated and hinges on accessibility, the improvement of transport to underused sites could well create new "honey-pots" to draw users from the overused ones. The possibility of licensing villagers to operate private recreational sites on the widespread abandoned farmlands might also be explored.

Dispersed impacts

Some pursuits directly or indirectly spread detrimental effects from the peripheral sites and paths into the park interiors. These dispersed impacts cause widespread degradation of the countryside's amenity value. Their occurrence indicates a failure in the zonation strategy to contain impacts, and contravenes the programme's ultimate conservation goal. Although their effects on recreationists are largely indirect, their consequences and implications are far wider than those of the concentrated impacts.

The countryside is criss-crossed by a dense network of footpaths of diverse origins and purposes. While some heavily-used paths and those running along water catchments are paved, most have bare soil surfaces. Whether footstep-induced or purpose-built, these bare surfaces are often strongly compacted and sometimes also crusted to the extent that they become resistant, rather than conducive, to erosion (Legg and Schneider, 1977). In fact, the paths constructed by "cut and fill" are routinely compacted manually to enhance durability. Apart from some less popular paths, which could be overgrown, most are kept free from vegetation colonization by continual usage. Some surface soils are compacted to a bulk density exceeding 1.5 g/cm^3 , often up to 20 per cent higher than adjacent undisturbed soils. Normally, most paths, especially the contoured ones, can sustain high levels of use. However, if excessive treading coincides with poorly-designed or constructed sections in sparsely-vegetated areas on erosion-prone soils, acute problems may arise.

Commonly encountered degradation, including vertical incision, track widening and braiding, and shortcuts, is mainly found in direct-ascent or oblique paths on steep slopes (Huxley, 1970). The paths on coarse-grained granitic parent materials are more susceptible than those on fine-grained volcanic ones. Trampling, soil compaction and vandalism eventually modify habitat conditions and species composition alongside the paths, although such interfacial impacts are generally limited because most parks have steep slopes which restrict users from wandering away from the path track. Occasionally, materials on the "cut and fill" slopes adjacent to paths might creep or slump, triggered by human disturbance. Careful planning and design of new paths and rerouting of problem sections in accordance with biophysical conditions could reduce these problems (Helgath, 1975; Agate, 1983).

Hillfire is the most pervasive destructive force in the country parks. Paradoxically, the rugged terrain that keeps out unwanted user intrusions also makes fire-fighting difficult. The major causes are fires left by hikers and illegal lighting of fires by recreationists. Burning of weeds and refuse by farmers and the tending of ancestral graves (involving incense offerings) by villagers, are



An overused barbecue/picnic site in a highly accessible location near the park entrance which has virtually all the ground vegetation eradicated and the eroded soil heavily compacted.



An overused site which is paved with stones. Note litter which is partly scattered from overloaded bins by wind.



A footpath running through a wooded slope which has a bare-soil surface under the vegetation litter cover. Note the vertical incision and track widening.

additional hazards. Most fires occur in the dry season between November and March, which is also the peak park-usage period, when environmental conditions are conducive to vigorous burning through low humidity, dryness of ground cover and a strong winter-monsoonal wind. More fires are started on weekends and holidays, hinting that recreationists are to blame.

Over the past 16 years, the number of trees killed by fire (5.42 million) has exceeded those planted (4.84 million). Some 26,150 hectares of land, equivalent to 64 per cent of the total parks area, were charred (Table 2 and Figure 2). The area under woodland cover has remained at around 11 per cent in the post-war years despite an assiduous afforestation programme. Recent strenuous efforts to upgrade publicity and educational campaigns, fire prevention and fire-fighting measures have apparently failed to abate the frequency and magnitude of fires, which continue to ruin the countryside and drain valuable resources.

Collection and disposal of litter left by recreationists is another heavy and aggravating management liability. In 1985–86, for instance, 16 per cent of available manpower, representing 35,160 man-days, was devoted to manual handling of 4,000 tonnes of litter. The amount discarded per visitor has been increasing steadily, nearly doubling from 2.2 to 4.2 kg between 1975 and 1986 (Table 2 and Figure 2). Whereas the litter left on-site (mainly dumped in the 4,880 litter bins and 235 stockades) could be cost-effectively removed, that scattered indiscriminately along paths penetrating into the remote hills is extremely difficult and expensive, if not impossible to retrieve, being further scattered by gravity, wind and running water. Besides the obvious need to step up educational and legislative measures, new approaches for combatting this anti-social behaviour should be developed (Clark, 1976).

Conclusions

The disproportionately high man/land ratio in Hong Kong is a fundamental but immutable park management burden. The poor quality of the congested urban environment makes the requirements for countryside recreation all the more imperative, if not indispensable, for physical and mental health. Thus far, the programme has been successful in encouraging and satisfying this demand; but the ever-increasing visitor numbers are not being matched by a corresponding increase in the management resource base. Meanwhile, the per-capita, and especially per-user, activity space continues to dwindle. The quality of the park-visit experience will inevitably suffer as both concentrated and dispersed impacts continue to spread and intensify.

For the future, besides effecting a more equitable spatial-temporal visitor distribution and improving the wear-resistance of sites and paths, low-impact pursuits like hiking, photography and educational-interpretive uses should be more actively encouraged to siphon off loadings from overused areas. Some visitor impacts could be transferred to coastal areas by encouraging water-based activities. Drastic new management approaches are necessary to contain the widespread damage from fire and litter. Hong Kong, despite rapid urbanization and tremendous population pressure, is extremely fortunate

in having 40 per cent of its land areas inalienably designated as country parks. The government, as a custodian of this valuable natural repository, faces an uphill task in conserving it against unacceptable perturbations.

Acknowledgements

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Public safety on public lands

K. F. Mills

Although having special reference to public lands in Australia, the principles of a manager's liability and responsibility in matters of public safety are similar in most countries. The dual task of protecting visitors from harm and the managing authority from unwarranted claims for damages is examined, and the particular aspects requiring the special attention of managers are emphasized.

Aunque con referencia especial a tierras públicas en Australia, los principios de las obligaciones y responsabilidades del administrador sobre asuntos de seguridad pública son parecidos en muchos países. Se examina la tarea de proteger a los visitantes contra peligros y a los autoridades administrativas contra demandas injustificadas de indemnización y se enfatizan los aspectos que requieren la atención especial de los administradores.

En dépit de références particulières au cas du domaine public en Australie, les principes de la responsabilité de l'administrateur en ce qui concerne la sécurité publique sont équivalents dans la plupart des pays. Le texte examine ici la double tâche consistant à veiller à la protection des visiteurs et à prendre les décisions voulues en cas de plainte en dommages injustifiée. Les points qui réclament une attention particulière de la part des administrateurs sont soulignés.

Weighty tomes are regularly produced on various issues affecting visitor safety in public areas, especially by lawyers. Topics include such fields as occupiers' liability, negligence and so on. It is not possible therefore in this type of article to do more than skim above the surface and make mention of some aspects which may be of interest and assistance to readers who are charged with the care, control and management of areas visited by members of the public.

Broadly speaking land managers have a two-fold responsibility. The first is to take reasonable steps to protect visitors from harm. The other is to protect their organizations from the financial and other burdens which stem from preventable or unwarranted claims for damages in respect of personal injuries to or death of visitors.

It should be recognized that it is virtually inevitable, at least in respect of large areas of land, that some incidents will occur. Damages claims will be received by land managers from time to time, no matter how careful they are and no matter what precautions are taken. In the absence of a universal national accident insurance scheme and given the difficulties and costs involved in arranging medical and long-term care, injured persons and especially very seriously injured persons (such as quadriplegics and paraplegics) are virtually forced to sue, and to sue all possible defendants, whatever the circumstances in which the injury occurred. Once there is some recognition of the inevitability of claims, one should be in a position to consider in a logical and planned fashion what steps need to be taken to meet the dual responsibilities referred to above.

This is not an easy task. Lawyers will frequently advise that as each case depends and will be determined on its own facts, it is impossible to state general rules. However, faced with the problem on the ground, managers must start somewhere and should be assisted in addressing the issue in a systematic manner.

The consideration of what steps can and should be taken is considerably confused in common law jurisdictions by the fixing of different degrees of legal responsi-

bility for different categories of persons coming upon the land of others. Further, a legal distinction is often drawn between the static state of the land and the activities carried on upon it. (All Australian States and the Commonwealth comprise part of the common law world, although it should be recognized that common law rules can be, and often are, negated or amended by Acts of Parliament, e.g., Acts dealing with occupiers' liability in the UK, New Zealand and Victoria.)

Persons who pay an entrance fee to come upon land and who, confusingly, are termed 'invitees' by lawyers, are at one end of the spectrum and are owed a 'high' duty of care; whilst trespassers, whom occupiers must not intentionally or recklessly harm, are at the other end. In between are those termed in law 'licensees' to whom a different duty of care, falling between the 'high' and 'low' is owed. Young children and persons suffering from various impediments or disabilities are classified differently from able-bodied adults. Contractors are in a different classification again.

As a great many visitors to public lands are fee paying and would be classified as 'invitees', and as perhaps the 'highest' duty of care is owed to them, it might be useful to quote from the leading court decision on the standard of care owed to invitees, thus:

"We consider it settled law that [the invitee], using reasonable care on his part for his own safety, is entitled to expect that the occupier shall on his part use reasonable care to prevent damage from unusual danger, which he knows or ought to know; and that, where there is evidence of neglect, the question whether such reasonable care has been taken, by notice, lighting, guarding or otherwise, and whether there was contributory negligence in the sufferer, must be determined by a jury as a matter of fact".

In addition to the above-mentioned legal rules classifying visitors, some authorities suggest that statutory landowners, such as Crown Lands, Forestry or National Parks authorities, owe a higher responsibility to members of the public who come on the lands as of right than is owed to visitors (in whatever category) by ordinary non-government landowners. This responsibility may in fact virtually amount to strict liability, i.e. liability to pay damages for whatever personal harm may befall the individual on the public land in whatever circumstances

Senior Legal Officer, New South Wales National Parks and Wildlife Service, PO Box N189, Grovesnor Street Post Office, Sydney NSW 2000, Australia

e.g. injury from a fallen tree branch in the depths of a wilderness area.

Further, a land manager's liability for accidents can even extend in some circumstances to adjoining areas over which he or she has exercised some *de facto* control e.g. to land adjoining a park boundary which is not fenced and which has been partly cleared by the manager or from which some potential hazard such as a rope swing from a tree above a waterway has been removed. Similarly, the rendering of any gratuitous service or advice to visitors in relation to use of park and, certainly, in respect of activities outside parks should be avoided as such action attracts a high duty of care e.g. offering suggestions to abseilers as to suitable climbing methods or approaches.

The legal situation is further complicated by recent High Court decisions which tend to break down or blur existing classifications.

Matters which might be considered by land managers in formulating a policy and procedures in the public safety area include the following:

As to the land

- What are the purposes for which this land has been set aside by the Government?
- Is it appropriate that all members of the public should be able to enter all parts of the area at all times? If not, what restrictions should be imposed, why and how can these be maintained or enforced?

As to activities thereon

- If members of the public are to be permitted to carry out hazardous or potentially hazardous pursuits on the land (e.g. hand-gliding, abseiling, wild river canoeing and so on) should they, rather than the taxpayer, be required to bear the risk? If so, should some legislative bar or limit on liability be imposed or should the obtaining of indemnities or other mechanisms be employed?

Generally

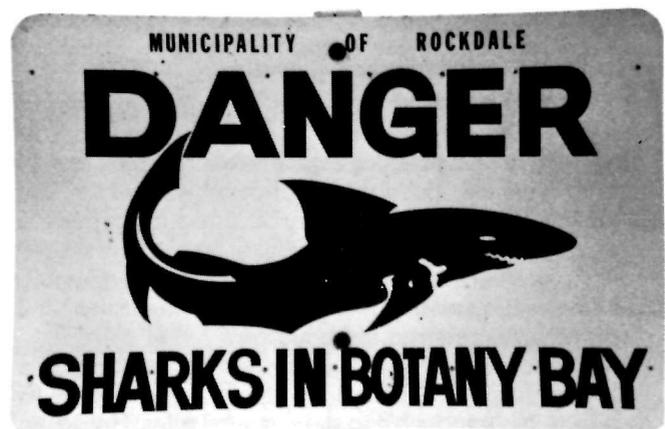
- For risk coverage, is reliance to be placed on public liability insurance or should the organization arrange to bear its own risk? What are the advantages and disadvantages of each approach?
- What mechanisms need to be adopted and employed to protect visitors from unusual dangers or from natural or other features which attract a high claim incidence? Are signs, barriers, leaflets or other mechanisms appropriate to the area and are these or any combination of them likely to be effective? What, if anything, can be done by education? Are law enforcement measures warranted or necessary? Are alternatives such as guided walks or tours feasible?
- What procedures should be adopted for recording and reporting on accidents and other incidents touching on public safety?
- What liaison procedures need to be instituted with, say, the police, fire fighting organizations, search and rescue bodies and so on?

Finally a great deal of conflicting and sometimes amusing material exists in relation to warning signs. (Recent research suggests that apparently polite words deter vandals but that stoutly constructed signs are still required as flimsy signs "invite attack"). Signs erected for public safety purposes must be sufficiently specific for persons to be able to recognize the danger involved. A sign saying "Take Care", standing in the middle of a paddock for no apparent reason serves no useful purpose. (There was a golf course over the hill). Factors applying to signs erected for law enforcement purposes (e.g. "No Parking") are not identical with those applying to signs erected for safety purposes (e.g. "Danger Shallow Water No Diving"). Pictorial depictions of danger may be more useful than worded signs in some circumstances and can well avoid the necessity for lengthy multi-lingual signs.

Reprinted from *Australian Ranger Bulletin* 3 (3), 1985.



An unsatisfactory graphic where the message disappears



An effective graphic (photos, K. Mills).

Editorial

Las cuatro ediciones de la nueva serie de PARQUES para el año de 1986 están ahora felizmente terminadas. Ha habido problemas inevitables durante el proceso, pero le hemos dado prioridad a sacar la revista y tratar de resolver los obstáculos conforme se nos iban presentando. El reto principal fue el requisito del contenido en Español, introducido como condición de financiamiento después de haber tomado la decisión de empezar solamente con Inglés. Debemos por lo tanto disculparnos con nuestros lectores de habla Hispana y por supuesto Francesa si nuestros esfuerzos por acomodar ésto dentro de un presupuesto y capacidad editorial de antemano limitados han resultado en deficiencias en las secciones traducidas. Sin embargo hemos revisado nuestros arreglos para 1987 y confiamos que estos serán más satisfactorios.

Estamos apenados de ver que algunos de nuestros lectores se confundieron por el hecho de que la sección en Español de la edición doble del volumen II 2/3 tuvo su propia cubierta – la Razón para esto fue que todo el contenido no pudo ser acomodado dentro de la misma cubierta por el método de encuadernación al cual estamos comprometidos. Aunque la Editorial explicó las dos secciones, parece ser que algunos lectores tuvieron la impresión de que ya estábamos produciendo una versión en Español. Desgraciadamente, todavía nos falta mucho para poder hacer eso, pero queda como un objetivo a largo plazo el publicar versiones en Español y Francés cuando existan fondos para cubrir los gastos.

Otra dificultad que encontramos fue la necesidad de revisar minuciosamente las entradas de la lista de correos. La magnitud de esta tarea fue totalmente imprevista y nuestras facilidades completamente inadecuadas para llevarla a cabo plentro de un límite de tiempo aceptable. El cuestionario distribuido con el Volumen II, 2/3 nos ayudará a asegurarnos que las entradas individuales sean

correctas. El cuestionario también solicitó las opiniones de los lectores acerca de suscripciones a la revista, tópico aireado en la Editorial de la primera edición de la nueva serie (Volumen II, I). Al tiempo de escribir, cerca de 200 cuestionarios de los 4,000 que fueron distribuidos han sido regresados. Todas las respuestas serán analizadas y tomadas en cuenta para la futura dirección de PARQUES.

Considerando los futuros prospectos para 1987, esperamos continuar mejorando. Sin embargo, no esperamos ningún cambio dramático en nuestra fortuna. Nuestro presupuesto continua severamente limitado y fondos mínimos para el año no han sido totalmente asegurados, pero arduos esfuerzos se están llevando a cabo para asegurar más fondos y no dudamos que saldremos adelante.

La primera edición para 1987 contiene otro ejemplo de la creación de un parque, o mejor dictio, en este caso, un sistema de parques para satisfacer las necesidades recreativas de la enorme población urbana de Hong Kong. En contraste, se ha explicado el enfoque usado para identificar y efectuar la protección de áreas costeras y marinas susceptibles en Omán a través de infraestructuras existentes. Esperamos que la siguiente edición llevará más lejos los problemas y métodos para administrar áreas marinas protegidas.

Estamos muy animados por el aumento del número de lectores que han ofrecido artículos u otro tipo de ayuda. No obstante, estamos experimentando gran dificultad en encontrar material apropiado para "técnicas de parques", que muchos lectores han pedido. Si usted tiene algunas buenas ideas, por favor háganoslas saber por simples que sean.

TONY MENCE (Editor)

Noticias

Se Fomentaran las Iniativas del Sector Privado Para Mejorar la Administración de los Recursos Naturales en el Este Del Caribe

La Fundación de Recursos de las Islas (FRI), que tiene su base en la isla de San Tomás (St Thomas), conjuntamente con el WWF y la Asociación de la Conservación del Caribe (ACC) de Barbados, ha lanzado un proyecto, por 2 años, para fortalecer la administración de los recursos naturales, por el sector privado, en el este del Caribe. El proyecto desarrollará varias actividades de prueba con algunas organizaciones medio ambientales locales y

regionales que proporcionaran la base para una estrategia de desarrollo institucional a largo plazo.

Pan de Azucar: Nuevo Parque en el Norte de Chile

La Región Ecológica del Desierto de Chile (parte de la provincia del Desierto Pacífico según Udvardy) está representada escasamente en el sistema de áreas protegidas. En Mayo de 1986 se creó el Parque Nacional Pan de Azucar, de 43,754 hectáreas (26°S–70°35'W) como el primer paso para llenar este vacío en el sistema.

El desierto de Atacama en el norte de

Chile es el más seco del mundo, con una precipitación media anual de menos de un milímetro, pero en las colinas de la costa, expuestas a la niebla, existe una formación destacada de especies de plantas, muchas de ellas son endémicas y limitadas. Las especies de cactus están especialmente amenazadas por los coleccionistas.

Dentro del límite de este parque costero existen colonias del Pingüino Humboldt, sitios de nidaje de aves marinas y sitios de reproducción de la nutria de mar. La presencia de vigilantes tendrá un efecto positivo sobre la colindante área marina.

Publicaciones

La vida silvestre de India y sus Reservas

por B. Seshadri

Publicado por Sterling Publishers, Nueva Delhi, India. Precio: 120 Rps.

El segundo libro de Seshadri intenta claramente ser una guía de los más importantes santuarios de la vida silvestre en India. Se ha extendido para incluir un resumen del estatus de los animales más importantes que habitan el subcontinente. De esta manera el libro está dividido en dos partes: la vida silvestre y las reservas. La idea es excelente y contiene mucha información útil en sus 216 páginas la cuál beneficiará a los amantes de la vida silvestre en India. Efectivamente, uno puede obtener una impresión de India y mucho de lo escrito es eminentemente ameno.

Una nueva revista sobre la investigación y la administración de la vida silvestre y de las tierras agrestes en las regiones neotropicales

Vida Silvestre Neotropical es una nueva revista para la publicación de artículos de alta calidad sobre la investigación y administración de la vida silvestre y las tierras agrestes en los Neotrópicos. Esta nueva publicación responde a la necesidad de una salida para divulgar la nueva información técnica que está siendo generada rápidamente en éste campo. La revista enfoca la conservación de especies de plantas y animales en peligro y sus hábitats, manejo del uso sostenido, control de plagas, mantenimiento de la diversidad biológica, uso indígena de la vida silvestre y métodos para diseñar sistemas de áreas protegidas. Vida Silvestre Neotropical se publica bienalmente por el WWF. Artículos principales, notas y anuncios son publicados en su idioma original Español, Portugués o Inglés. Para pedir información sobre suscripciones y pautas para la sumisión de manuscritos, escribir a Curtis Freese, Co-editor, Vida Silvestre Neotropical, WWF, 1255 23rd Street N.W., Washington DC 20037, Estados Unidos.

Nuestro Patrimonio Mundial

La sociedad de Geografía Nacional planea publicar este libro en el otoño de 1987. El volumen ilustrado de 300 páginas cubrirá una variedad de sitios culturales y naturales, seleccionados de la lista preparada por la Convención del Patrimonio Mundial. El personal del proyecto de la Sociedad de Geografía Nacional ha solicitado la asistencia de UNESCO, ICOMOS, UICN y otras organizaciones internacionales para preparar el libro. Preguntas y sugerencias deberán ser mandadas a la Sociedad de Geografía Nacional (a la atención de Jennifer Ackerman), Washington DC 20036, Estados Unidos.

Áreas protegidas amenazadas del mundo, adiciones para 1986

Los 23 sitios siguientes han sido añadidos al registro de áreas protegidas amenazadas mantenido y actualizado anualmente por la Unidad de Datos de Áreas Protegidas. El registro actual cuenta ahora con 74 sitios a nivel mundial.

| Región y sitio (País) | Resumen de amenazas |
|---|---|
| Neotropical | |
| (1) Parque Nacional Iguazú (Argentina) | Traspaso de tierras dentro del parque al gobierno local para propósitos de desarrollo. |
| (2) Parque Nacional Los Glaciares (Argentina) | Construcción de nuevas colonias; propuestos cortes y desarrollo de una hidropresa. |
| (3) Parque Marino Nacional Fernando de Noronha (propuesto) (Brasil) | Expansión de facilidades militares, sedimentación del arrecife debido a erosión terrestre. |
| (4) Reserva Natural Parcas (Peru) | Propuesta reducción en el tamaño para excluir zona de desarrollo. |
| Neartico | |
| (5) Refugio Silvestre Nacional Chincoteague (EUA) | Uso recreativo intenso por vehículos fuera de caminos, desarrollo de caminos, impacto serio sobre el ansar hiperbóreo (<i>Anser caerulescens</i>) |
| (6) Parque Provincial Lady Evelyn-Smooth Water (Canadá) | Valores silvestres serán comprometidos por expansión de actividades de explotación forestal y construcción de caminos en la zona amortiguadora. |
| (7) Parque Nacional Forillon (Canadá) | Contaminación de aire, lluvia ácida con efectos graves sobre lagos y bosques. |
| Palaártico | |
| (8) Parque Nacional Donana (España) | Diversión de aguas (pozos) fuera del parque para irrigación podría resultar en serias sequías en la temporada seca. |
| (9) Reserva de la Biósfera Rosca-Letea (Rumanía) | Caza de pelícanos por pescadores locales, planes de desarrollo agrícola para el Delta del Danubio, contaminación del agua. |
| (10) Reserva Natural de Caza Dneprovsko-Teterevskoe (URSS) | Parcialmente dentro de la zona A (evacuación total) sitio del accidente Chernobyl. |
| (11) Parque Nacional Stelvio (Italia) | Autoridades provinciales proponen una reducción del 50% en tamaño para permitir actividades forestales y de caza adicionales |
| (12) Parque Nacional Hardangervidda (Noruega) | Tráfico motorizado incontrolado, desarrollo de caminos y cabañas, supervisión inadecuada, demandas legales, lluvia ácida. |
| (13) Reserva Natural Datian (China) | Desclasificación de 25% del área para hacienda ganadera; tala de madera y contrabando por residentes de la reserva. |
| Afrotropical | |
| (14) Reserva de Caza Selous (Tanzania) | Decline drástico en poblaciones de rinocerontes y elefantes debido a fuerte contrabando. |
| (15) Reserva Natural Ipassé-Makokou (Gabón) | Emisión de permisos para tala, fuerte contrabando. |
| (16) Parque Nacional Mosi-Oa-Tunya (Zambia) | Contrabando desenfrenado, títulos de escrituras dados para cultivar dentro del parque. |
| (17) Parque Nacional Lago Kainji (Nigeria) | Contrabando, fuegos desautorizados, pastoreo de ganado domestico, inadecuada legislación y cumplimiento de la misma. |
| (18) Reserva de Caza Gashaka-Gumti (Nigeria) | Expansión de enclaves dentro de reservas, contrabando desenfrenado, agricultura por el personal del parque, manejo inadecuado de recursos. |
| (19) Parque Nacional Manova-Gounda-St Floris (República Africana Central) | Expiración de rinocerontes y contrabando del 75% de elefantes; invasión por nómadas de Chad y Sudán con grandes rebaños de ganado bovino portador de morriña. |
| (20) Parque Nacional Niokolo-Koba (Senegal) | Plan para construir un nuevo camino a través del parque; presión por el uso de la tierra y el contrabando en áreas circundantes. |
| Indomalayo | |
| (21) Parque Nacional Taman Negara (Malaysia) | Propuesta construcción de camino principal al interior del parque. |
| (22) Parque Marino Kepulan Seribu (Indonesia) | Impropia propuesta de desarrollo de punta turística. |
| (23) Santuario Natural Gunung Nyurut (Indonesia) | Expansión de actividades de cultivos rotativos, sobre caza y colecta de productos forestales, concesiones madereras |
| Australiano/Antártida/Oceanía | |
| Sin áreas amenazadas nuevas. | |

Los Parques Marinos de Costa Rica

Jorge Cortés

Cerca del 8% del territorio nacional de Costa Rica corresponde a reservas, protegiendo a una variedad de medio ambientes y recursos marinos. Las áreas marinas afrontan problemas ambientales causados por el hombre y por la naturaleza, entre los cuáles están la colecta irrestricta de organismos y la sedimentación de arrecifes. La recuperación de un arrecife siempre es lenta pero se retarda mucho más cuando hay intervención humana. La recolección de organismos podría regularse mediante leyes, sin embargo la sedimentación de los arrecifes es muy difícil de controlar pues las fuentes de sedimentos pueden estar fuera de los límites del área protegida. Se recomienda que al declarar una zona marina como reserva se consideren también las áreas aledañas, las cuencas de los ríos y los bosques próximos. Sin embargo, el éxito de éste tipo de proyectos solo se logrará mediante la educación y la concientización ambiental del pueblo.

Around 8% of the national territory of Costa Rica is devoted to reserves which protect a variety of marine environments and resources. Marine areas face environmental problems caused by man and nature, amongst which are the uncontrolled collection of organisms and sedimentation on the reefs. Recovery of reefs is always slow, and is exacerbated by human intervention. The collection of organisms could be regulated through legislation, but sedimentation of the reefs is very difficult to control as the sediment may come from outside the protected area. It is recommended that, when declaring a marine zone as a reserve, adjacent areas, river basins and nearby forests are also considered. However, the success of this type of project will only be achieved through environmental education and conscience of the people.

Environ huit pour cent du territoire national du Costa Rica est contenu dans des réserves protégeant toute une palette de ressources et de milieux marins. Les aires protégées connaissent des problèmes dont les causes sont aussi bien naturelles que l'oeuvre de l'homme, par exemple la sédimentation des récifs ou la collecte sauvage d'organismes sur les mêmes récifs. Les récifs ne se reconstituent que lentement et souffrent d'autant plus des activités de l'homme. La collecte des organismes pourrait être réglementée mais la sédimentation est très difficile à enrayer car les sédiments sont "importés" dans la zone protégée. Il est donc recommandé, au moment où l'on crée une réserve marine, de tenir compte également du contexte régional: bassins fluviaux et forêts voisines. Toutefois, ce type de projet ne peut réussir qu'avec un effort d'éducation et de sensibilisation de la population.

Costa Rica tiene un total de 400,000 ha de reservas, o sea, un área aproximada al 8% del territorio nacional. Estas zonas protegidas se distribuyen de la siguiente forma: trece Parques Nacionales, cuatro Reservas Biológicas, una Reserva Absoluta y un Monumento Nacional. Dos de los parques son considerados Parques Marinos: Cahuita, en la costa Caribe, declarado Parque Nacional en 1970, incluye el arrecife más grande y mejor desarrollado del país (Cortés y Risk, 1984) y; Manuel Antonio, en la costa Pacífica, establecido en 1972, cuenta con playas excepcionales y ricas zonas rocosas (Boza y Mendoza, 1981).

Tres parques más, aunque son principalmente terrestres, protegen importantes recursos marinos: (1) El Parque Nacional Tortuguero en el Caribe, protege las tortugas marinas, principalmente la tortuga verde, *Chelonia mydas* y tres especies más que desovan en las playas del parque: *Eretmochelys imbricata*, *Caretta caretta* y *Dermochelys coriacea* (Boza y Mendoza, 1981). (2) El Parque Nacional Isla del Coco, que se encuentra a 500 km de la costa en el Pacífico, fue establecido en 1978, y, en ese entonces, no incluía las áreas marinas aledañas. Sin embargo, en 1984, mediante decreto ejecutivo, se incluyó una zona de 3 km de ancho alrededor de la isla. De esta forma se pretende proteger unos de los arrecifes mejor desarrollados en el Pacífico Oriental. (3) Finalmente, la Isla del Caño, a 15 km de la costa en el Pacífico, fue decretada Reserva Biológica en 1976, y al igual que la Isla del Coco, en un principio, no se consideró la porción marina. Es a partir de 1985, que se incluyeron dentro de la zona protegida 3 km de mar

circundando la isla, asegurándose así la protección de riquísimas zonas rocosas y de arrecifes coralinos.

Problemas ambientales

Uno de los principales problemas ambientales que afrontan las áreas marinas, es la recolección de organismos. En los últimos años, he podido comprobar la depauperación de algunos arrecifes debido a la colecta irrestricta de corales y moluscos, tanto en el Caribe (Cortés y Guzmán, 1985), como en el Pacífico de Costa Rica (Cortés y Murillo, 1985).

Otro problema muy serio y más difícil de controlar es la destrucción de arrecifes por sedimentos terrígenos. Mediante estudios realizados en el arrecife coralino del Parque Nacional Cahuita (Cortés y Risk, 1984; 1985) se ha comprobado el efecto destructivo que tiene la sedimentación en los arrecifes. Una posible solución para reducir el impacto de los sedimentos en Cahuita, sería el control de áreas aledañas a la zona protegida. Si bien la totalidad del arrecife se encuentra dentro del área protegida, los sedimentos son generados en cerros situados al noroeste del Parque y luego son transportados al arrecife por el sistema de corrientes que hay a lo largo de la costa. La sedimentación en el Caribe de Costa Rica ha aumentado recientemente debido a la deforestación y malas prácticas agrícolas. En la costa Pacífica, también se ha observado la muerte de arrecifes coralinos debido a la presencia de sedimentos terrígenos en el mar (Cortés y Murillo, 1985).

En los últimos años, fenómenos naturales han contribuido a la alteración de ambientes marinos: la muerte del erizo, *Diadema antillarum* en 1983 (Murillo y Cortés, 1984); la muerte del abanico de mar, *Gorgonia flabellum*

Cimar y Escuela de Biología, Universidad de Costa Rica, San Pedro, Costa Rica

(Guzmán y Cortés, 1984); la muerte masiva de corales escleractinios debido al calentamiento del agua durante El Niño 1982/83 (Cortés *et al.*, 1984; Glynn, 1984) y finalmente, la mortandad de corales en el Pacífico durante 1985 debido a mareas rojas (Guzmán, 1986), son algunos ejemplos de la acción destructora de estas alteraciones naturales.

Posibles soluciones

En los arrecifes coralinos, las alteraciones naturales se han dado desde que estos empezaron a existir y, aparentemente, son necesarias para mantener la diversidad (Connell, 1978). Igualmente, es notorio que los arrecifes se recuperan, pero de forma muy lenta (Pearson, 1981; P. W. Glynn, comunicación personal, 1986); siendo esta recuperación mucho más lenta o del todo nula cuando la actividad humana interfiere en la sucesión natural.

El problema de la colecta de organismos, es quizás el que ofrece menos problemas a la hora de regularlo; se podría controlar mediante leyes que prohíban o restrinjan su extracción. A este respecto, en la costa Caribe de Costa Rica, he observado que en áreas donde no se permite la colecta de corales, aún cuando haya otros problemas ambientales, los arrecifes sobreviven (por ejemplo, en el Parque Nacional Cahuita). Lo opuesto es obvio en áreas donde se ha extraído mucho coral, el deterioro rápido del ambiente es palpable (por ejemplo, en los arrecifes cerca del pueblo de Puerto Viejo). Si consideramos la posibilidad de una perturbación natural severa, y además le sumamos la extracción de corales y de otros organismos, la recuperación será extremadamente lenta si es que llega a darse del todo.

Como mencioné arriba, el problema de la sedimentación alóctona en los arrecifes es muy difícil de controlar, ya que la fuente de los sedimentos puede residir fuera de las fronteras de las áreas protegidas. Es recomendable que al declarar una zona marina como reserva, se consideren además de las áreas alledañas, las cuencas de los ríos y los bosques próximos a la zona, para

evitar la generación de sedimentos que puedan alterar la zona que se pretende proteger. Kühlmann (1985) ha mostrado que los arrecifes que están en mejor condición en las islas Ishigaki, Japón, tienen bosques cerca, los cuales detienen sedimentos y compuestos químicos productos de las actividades agrícolas.

Finalmente, si no existe un convencimiento por parte de la gente sobre la necesidad de proteger ciertas áreas naturales, cualquier Parque que se establezca, o cualquier plan de manejo que se redacte, resultará inútil. Es solo mediante una buena educación ambiental que lograremos elevar la conciencia ambiental del pueblo, el cual protegerá y presionará para que se protejan mejor y más ambientes naturales.

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Islas en la Maleza: Historia Natural de la Reserva Nacional Kora, Kenya

por Malcolm Coe

Publicado por George Phillip, Londres, 1985. Precio: £14.95.

Kora no es una de las reservas mejor conocidas de Kenya ni es particularmente significativa en el contexto del Reino Afrotropical. Sin embargo, Malcolm Coe puede encontrar diversidad y maravillas en esta monótona parte de maleza de *Commiphora*. El resultado es un libro instructivo que es favorable a Kora. "Islas en la Maleza" es un relato popular de una expedición científica de la Sociedad Real Geográfica a Kora en 1983. Coe selecciona los resultados más importantes de las investigaciones desde mosquitos diminutos hasta bagres y acacias, y los describe en un estilo muy ameno. Tiene muy buenas ilustraciones. La introducción por Richard Leakey provee una percepción particular-

mente clara describiendo los significados más profundos de este tipo de inventarios y estudios de recursos naturales. Los únicos problemas, son los errores cometidos con algunos nombres de personas y lugares, y el tono informal del texto.

Administrando Areas Protegidas en los Trópicos

Compilado por John y Kathy Mackinnon, Graham Child y Jim Thorsell.

Precio: \$25.00, £17.50.

Este es el segundo producto de las conferencias celebradas durante el Congreso Mundial sobre Parques Nacionales en Bali en 1982. Es una introducción general al campo multidisciplinario de la administración de áreas protegidas, y contiene secciones sobre la base biogeográfica de la selección de sitios, los requerimientos y principios legales básicos, el uso púb-

lico y relaciones con la población local, guías para el manejo de los recursos, y medios de asistencia. Incluye ejemplos de todas las partes de los trópicos e intenta ser un libro de referencia para los administradores de niveles medios y altos en las 1,750 reservas tropicales del mundo.

Teoría del Ecosistema y su Aplicación

Editado por Nicholas Polunin.

Publicado por John Wiley and Sons Ltd., Boffins Lane, Chichester, Sussex PO19 1UD, UK. Precio: £49.95 o \$85.25.

Este libro usa el término "ecosistema" para describir a la BIOTA que co-existe como una unidad social y también a las partes inorgánicas y muertas del sistema. Tópicos cubiertos incluyen los ecosistemas ártico, desierto, marino y tropical, sus dinámicas y estructura, economía, evolución y fenómenos ecológicos.

World Heritage Report — 1986

Implementation of the World Heritage Convention moved significantly forward in a number of countries in 1986. Three more countries joined the Convention (Maldives, China and St Kitts/Nevis) bringing the total number state parties to 91. Eight natural properties were added to the list and the amount of support available in the fund increased by 50 per cent.

La implementación de la Convención del Patrimonio Mundial adelantó significativamente en algunos países en 1986. Tres países más se unieron a la Convención (Maldivas, China y San Cristóbal/Nevis) llegando a un total de 91 estados. Fueron añadidas a la lista ocho propiedades naturales y los fondos disponibles aumentaron en un 50 por ciento.

En 1986, la mise en oeuvre de la Convention du patrimoine mondial a fait de grands progrès dans plusieurs pays. Trois nouveaux pays ont adhéré à la Convention (Maldives, Chine et Saint-Christophe-et-Nevis) ce qui porte le nombre d'Etats Parties à quatre-vingt-onze. Huit biens naturels ont été ajoutés à la liste et les fonds disponibles pour l'assistance ont augmenté de 50%.

Growing support

The World Heritage Convention will soon overtake CITES (now with 92 participating countries) as the most subscribed-to international conservation convention. Representation from the Asian region is still slow in coming but prospects for six new signatories in the near future are promising.

With World Heritage dues payments now coming in on time (particularly the substantial \$239,000 voluntary contribution from the USA) and savings from 1985, the amount of technical assistance for training and field projects has risen to over \$500,000. There is, however, a shortage of assistance requests, and those eligible for technical support under the Convention are encouraged to send in project proposals. Funds were approved this year for natural World Heritage sites in Peru, Tanzania, Malawi and the Seychelles.

The Convention is working

Member countries themselves are devoting greater resources to management of their respective World Heritage properties. Some examples:

- The Australian Commonwealth Government has made a \$2 million transfer payment to New South Wales to improve the integrity of the newly inscribed rainforest site in that State. Australia has also indicated that it proposes to double the size of the Kakadu property. During a visit to the park the Prime Minister indicated that future mining activities would be disallowed.
- The Tunisian Government has issued tenders for construction of a sluice that will remove the threat of drought in Ichkeul National Park.
- The government of the UK intends to upgrade the legal status of the Giant's Causeway to a National Nature Reserve to reflect its designation as a World Heritage site. The Secretary of State for Scotland has also announced that special controls will apply to construction activities at the military installation on the island of St Kilda in recognition of its newly acquired status as a World Heritage Site.
- The Republic of Slovenia in Yugoslavia is devoting considerable effort and funds to ensure water quality improvements to the river that flows through the Skocjan Caves. Earlier this year plans for a dam in the Tara River Canyon in the Durmitor National

Park were dropped after interventions made on the basis of its World Heritage status.

- The Prime Minister of India has given instructions to cancel a planned dam which would have seriously affected the Manas Wildlife Sanctuary, which was inscribed on the list in 1985.
- The Province of Alberta in Canada is giving priority attention to management at the Dinosaur World Heritage site with the completion of a new management plan and allocation of funds for a new visitor centre which will interpret its World Heritage resources.

These are some examples that cumulatively illustrate a variety of achievements and improvements in conservation status of listed World Heritage properties for which the Convention can take some credit.

Monitoring

The World Heritage Committee is increasingly devoting attention to the condition of properties that have already been placed on the list. Many of these are under threat and indeed three natural sites are on the List of World Heritage in Danger (Doudj National Park, Ngorongoro Conservation Area and, this year, Garamba National Park). IUCN has the responsibility for monitoring and status reports were given on 17 sites. Sites where there were serious problems with integrity included the Selous Game Reserve, Tanzania (loss of 30,000 elephants and 90 per cent of rhino population due to poaching), Iguazu National Park, Argentina (excision of land for commercial development), and Mana Pools National Park, Zimbabwe (heavy poaching of rhino).

With a monitoring system in place, once an area is inscribed on the list it becomes open to greater scrutiny from the world community. In many cases, interventions have been effective. For example, in response to a previous report on threats due to ski area development in Pirin National Park, the Bulgarian delegation noted that limits on future expansion would be imposed.

Additions to the list

On behalf of the World Heritage Committee, IUCN evaluated nine natural site nominations in 1986. Eight were eventually inscribed at the 10th Meeting of the



St. Kilda (387) United Kingdom



Skocjan Caves (390) Yugoslavia



Fiordland National Park (376) New Zealand

Committee in November in Paris. The latest additions to the list, which now totals 69 natural properties, are:

Australian East Coast Temperate and Subtropical Rainforest Parks. Six separate islands of rainforests are scattered along the coastal escarpment of New South Wales. Within these clusters, which extend over 350 km from north to south, are 16 different parks and reserves. A mosaic of vegetation types, from cool temperate to wet subtropical forest, provide an important evolutionary connection between the Indomalayan and Gondwanaland forest elements.

Iguazu National Park, Brazil. This park is adjacent to the Iguazu National Park of Argentina with which it shares one of the world's largest and most impressive waterfalls. There is also an area of undisturbed subtropical rainforest providing habitat for nine threatened species including the broad-nosed caiman.

Fiordland National Park, New Zealand. Glaciers, high mountains, a spectacular coastline and 14 fiords combine to make this one of the world's most outstanding scenic areas. Clothed in beech and podocarp forests, the park is also home to a number of rare and endemic species such as the takahe, a flightless rail.

Westlands/Mt Cook National Park, New Zealand. Here is one of the rare locations where a transect of environments from sea coast to forest to icefields to dry interior plateau can be found within one protected area unit. The parks contain excellent examples of the full range of

glacial features and the highest mountains in the south-west Pacific.

Garajonay National Park, Spain. As the last major area of natural laurel forest in the Mediterranean region, Garajonay has the distinction of being the first World Heritage site inscribed due to recognition of the importance of an area for its plants. The ancient relic forests of the park are considered a model evolutionary laboratory and are home to 34 endemic floral species.

St Kilda, UK. These islands occur in the Atlantic 75 km off the north-west coast of Scotland. The four main islands and their attendant sea stacks rise abruptly from the sea and provide a spectacular home for as many as 1 million sea birds including the world's largest gannetry.

The Giant's Causeway, UK. The Causeway Coast of North Ireland is known for its display of geological formations which has been a classic study locality for geologists since the seventeenth century. Its columnar basalt structures and polygonal jointing of the basalt lavas are considered unrivalled.

Skocjan Caves, Yugoslavia. The most natural display of exceptional cave features in the karst region of north west Yugoslavia are found at Skocjan. The dimensions of the subterranean canyon are remarkable, as are the numerous stalactites and stalagmites found in the underground caverns. The area is a class study locality for karst features and the geological terms "doline" and "karst" were defined here.

Changing the world of training

James Thorsell

Although there has been a rapid spread of recognition worldwide of the purpose and function of protected areas of various sorts over the past 25 years, it is only comparatively recently that their management has become recognized as a profession demanding knowledge of a wide range of skills from many disciplines. To meet the growing need in tropical countries for field staff able to satisfy the demand, six regional training institutions have been established. The paper describes their respective characteristics and histories.

Aunque se ha extendido el reconocimiento mundial del motivo y la función de diversas áreas protegidas durante los últimos 25 años, hasta hace relativamente poco se ha reconocido que su administración es una profesión que demanda conocimientos de una diversidad de disciplinas. Se han establecido seis institutos regionales de entrenamiento para satisfacer la creciente demanda por personal de campo en países tropicales. Este artículo describe sus características e historias respectivas.

L'on ne peut nier que, dans les 25 ans écoulés, l'intérêt et la fonction des diverses aires protégées aient été de mieux en mieux compris dans le monde entier. Cependant, il y a relativement peu de temps que l'on reconnaît que la profession d'administrateur d'aire protégée exige une compétence solide dans de très nombreuses disciplines. Les pays tropicaux ayant de plus en plus besoin de personnel capable d'assumer ces fonctions sur le terrain, six centres de formation régionaux ont été créés. Le text décrit leurs caractéristiques et histoires respectives.

In the past it was usually considered adequate to select a biologist or forester or someone from the military forces and place them in the position of warden or ranger.

Today park management has become a recognized profession in its own right demanding a knowledge of a wide range of skills from many disciplines. A number of institutions worldwide have been established to provide training, offering qualifications which range from technical college diplomas to postgraduate degrees.

In the tropics, where the need for field staff is particularly acute, six regional schools have been set up to develop human capacity for managing protected areas. These schools do not replace the need for overseas university education for selected senior staff, but they are essential for producing the middle-range personnel who are most important in implementing conservation action at the field level.

All are regional centres: that is, they are open to students from more than one country. All are also practical schools.

Their importance is reflected in the fact that over 60 tropical countries depend on these six schools to provide the professional manpower needed to operate their protected areas on a day-to-day basis.

College of African Wildlife Management, Mweka, Tanzania

This is the pioneering training institution on the African continent. Since it opened in 1963, the college has graduated 1,000 certificate and diploma students from 16 countries in anglophone Africa. Today virtually every protected area in these countries is administered by a Mweka graduate. Many have gone on to become park service directors or instructors at other training institutions.

The college is located on Mt Kilimanjaro within a few hours' travel of field study sites in the savanna grasslands

of Serengeti, the montane forests of Mt Meru, and the coral reefs of the Indian Ocean. Students spend one-third of their time on field exercises during the two-year programme. The school is residential. Tuition fees are US\$5,000 per year, a difficult amount to raise for many African wildlife organizations.

Over the years the Tanzanian college has been subsidised by the host government and has received support from a wide range of international and bilateral donors. The most recent major supporter has been the Danish International Development Agency which has provided equipment, instructors and new buildings.

Ecole pour la formation de spécialistes de la faune, Garoua, Cameroon

Garoua is the sister college of Mweka, designed to cater to francophone African countries. The school opened in 1970 and has since produced over 400 diploma graduates from 20 African countries. The curriculum is very similar to that of Mweka though more oriented to the predominantly forested environments of western Africa.

Field exercises are carried out in the nearby Waza National Park. FAO (the Food and Agriculture Organization of the United Nations) and the French and Dutch Governments have provided much support in developing this training centre.

Wildlife Institute of India, Dehra Dun

This is a relatively new institute, established in 1982 as part of the response to the rapid growth in the number of protected areas in India and recognition of the value of wildlife in that country. Located in the foothills of the Himalayas, the institute's programme is also open for use by wildlife and park officers from all the south Asian countries. The government of India has invested over US\$1 million in setting up the school. FAO and UNDP (the United Nations Development Programme) have contributed another US\$1 million.

Executive Officer, IUCN Commission on National Parks and Protected Areas, 1196 Gland, Switzerland



Bariloche Training Centre in Argentina (photo, J. Thorsell/ WWF)



Mweka students on a field trip (photo, J. Thorsell/WWF)

In addition to the main campus, the institute is also setting up field study centres in key wildlife areas. A number of different courses are offered, from 4 months to 2 years in length. The institute promises to become a leading centre for training park and wildlife managers from the continental region.

School of Environmental Conservation Management, Bogor, Indonesia

This school was started in 1979 with the generous assistance of the Dutch Government. A total of 200 graduates from nine countries have attended, though most students are from Indonesia. The school's curriculum is oriented towards the humid tropical forest environments of southeast Asia but special short courses in marine parks and coastal conservation are also given.

With a total area of 11.2 million ha under protection (3½ times the size of the Netherlands), Indonesia has a great need for properly trained field personnel. It is estimated that 3,000 additional field staff are already required. The Bogor school has begun to meet this need but will require reinforcing for several more years before a sufficient cadre of staff is available.

Centro de Instrucción de Guardaparques, Bariloche, Argentina

This school, operated by the National Park authorities, is designed especially for Argentinian nationals who wish to become guards or wardens. But it is also appropriate for students from other countries in Latin America. It has been attended by students from Paraguay, Uruguay, Peru, Panama and elsewhere.

The programme began in 1968 and normally trains 20–25 students per year in practical techniques of conservation. It is a 1 year course with a 3 month apprenticeship programme in a selected park. There is

some recent concern that the school may be closed due to financial difficulties which would be a serious setback to training efforts in this part of the world.

Centro Agronomico Tropical de Investigación Enseñanza (CATIE), Turrialba, Costa Rica (The Tropical Agricultural Research and Training Centre)

Within this centre is a very active Department of Renewable Natural Resources which conducts a wide range of training courses on wildland and protected area management. Ten countries in the region use the facilities at CATIE which also sponsors travelling seminars and workshops in each of the member countries.

The centre has been instrumental in establishing, planning, and training staff to manage the extensive system of protected areas established in Central American and Caribbean countries in the past 10 years. It has received substantial outside support and is a major base for conservation activities in the region.

Conclusion

A well-trained, motivated and committed staff is the very basis of the operation of any country's protected area system. As IUCN Director General Kenton R. Miller, has stated: "In the final analysis, the ability of a country to implement a national park programme in any practical way will depend upon whether it can obtain and employ men and women capable of selecting goals, designing plans to meet those goals, and then implementing the plans to actually achieve those goals."

The above schools are all contributing crucially to training parks and wildlife personnel for developing countries. All are in need of external support in the form of educational supplies, field equipment, scholarship support, and visiting instructors.

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Practical work and field studies play a major part in the programme at Mweka, Africa's pioneer training institution (photo, J. Thorsell/WWF)

A demonstration project for integrating park conservation with rural development at Khao Yai National Park, Thailand

R. J. Dobias

National parks and wildlife sanctuaries in Thailand are under increasing pressure from local villagers who rely on them for subsistence products. In cooperation with the Royal Thai Forest Department and the National Environment Board, a "rural development for conservation" project was implemented in an economically depressed village with a long history of park abuse. Through the creation of a village "Environmental Protection Society", the principles of sustainable development are brought into village life in the ways described in order to provide a significant increase in living standards and enhanced protection of parks and sanctuaries without the need for consumptive use of their resources.

Los Parques Nacionales y refugios silvestres en Tailandia, están bajo creciente presión por los habitantes locales, quienes dependen de ellos para productos de subsistencia. En cooperación con el Real Departamento Forestal Tailandés y la Junta Nacional para el Medio Ambiente, se llevó a cabo un proyecto de desarrollo rural para la conservación, en un pueblo económicamente oprimido, con una larga historia en el abuso de parques. Mediante la formación del grupo "Sociedad para la Protección del Medio Ambiente", los principios para el desarrollo sostenido son traídos a la vida del pueblo, de la forma descrita, con el fin de proveer un aumento significativo en el nivel de vida y realizar la protección de los parques y refugios, sin la necesidad de usar destructivamente sus recursos.

Les villageois locaux qui comptent sur eux pour les produits de subsistence exercent une pression croissante sur les Parcs Nationaux et les sanctuaires de la nature de la Thaïlande. En coopération avec le "Royal Thai Forest Department" et le "National Environment Board", un projet de développement rural pour la conservation était mis en oeuvre dans un village économiquement abattu avec une longue histoire d'abus des parcs. Par la création d'une "Environmental Protection Society" pour les villages, on a introduit les principes du développement durable à la vie villageoise dans les façons décrites ci-dessous pour améliorer d'une manière significative les niveaux de vie et rehausser la protection des parcs et des sanctuaires sans la nécessité d'usage destructif de leurs ressources.

Ten percent of Thailand's land area has been set aside as national parks and as wildlife sanctuaries. Unfortunately, the majority are under pressure from local villagers, many of whom rely on protected area resources to supplement their meagre incomes. Until recently, no protected area possessed long-range plans to effectively deal with important management issues such as poaching and encroachment.

Under a WWF/IUCN project, financial and technical support was provided for demonstration programmes at Khao Yai National Park which would address these critical concerns. The three major programmes included a prototype management plan, integration of park conservation and rural development, and elephant research. These programmes were formulated with the expectation that lessons learned at Khao Yai Park would eventually be applied to Thailand's entire protected area system.

Recognizing that many poor villagers have a genuine need to use park resources to maintain their subsistence lifestyle, but also aware that continued park exploitation will eventually nullify long-term benefits that these villagers and others gain from the park, a programme was initiated to integrate rural development with park conservation. In cooperation with Royal Thai Forest Department and the National Environment Board, two private Thai organizations—the Population and Community Development Association (PDA) and Wildlife Fund Thailand (WFT)—formulated and are now implementing a "rural development for conservation" programme in

an economically-depressed village with a long history of park abuse. The programme revolves around a village "Environmental Protection Society" which functions as a conservation and education centre, a credit cooperative, and a collective business enterprise. PDA and WFT are establishing self-help projects such as primary health care and family planning, instructions on proper agricultural methods to increase crop yields, cooperative stores, expansion of marketing outlets, and income diversification. Lectures on conservation topics are given to villagers, and a "hands-on" conservation programme has been established at the local school. Also included is a wilderness trekking programme in which villagers receive substantial economic benefits by hosting tourists and leading them on extended hikes through the park.

An important feature of the rural development for conservation programme is that it offers an alternative to buffer zones and other schemes which allow extractive use of protected areas. Buffer zones are delineated, state-owned lands encompassing a national park or wildlife sanctuary where conservation is the primary objective but where local people are allowed to harvest natural products on a sustainable basis. Buffer zones are created to provide rural poor with tangible benefits from protected areas, such as wild meat, medicinal plants, rattan and other products traditionally harvested by local people. This concept has never been practised in Thailand, and it is highly debatable, perhaps improbable, whether it could be properly implemented given the present level of law enforcement and resource management capabilities. The potential for abuse of this system is high. The rural development for conservation approach,

Project Coordinator, 53/14 501 15, Lad Prao Road, Bangkok 10900, Thailand.

if successfully expanded, will provide for a significant increase in the living standards of rural communities and enhanced protection of parks and sanctuaries without the need for consumptive use of resources in the protected area.

Another key aspect of the programme is that it should provide for increased village and government support of park objectives. Although the programme is not being directly implemented by park officials, it is a park-initiated project and should be understood as such so that local

people and government officials are aware that park objectives are addressing the needs of local people. PDA and WFT will continue the rural development for conservation programme, eventually relinquishing total programme administration to the villagers.

The Demonstration Project was initiated as part of an Elephant Conservation and Protected Area Management Project of the Royal Thai Forest Department supported by WWF and IUCN.

Coastal zone management planning and marine protected areas

Rodney V. Salm

The proper management of coastal area requires the establishment of protected areas as an integral component of resource use policies and planning to ensure that tracts of sensitive or valuable coastal environment are not neglected. A Coastal Zone Management Plan (CZMP) has been completed in the Sultanate of Oman. This article outlines how the CZMP was developed in the context of the circumstances prevailing there.

La administración correcta de las áreas costeras requiere el establecimiento de áreas protegidas como un componente integral de las normas y de la planificación del uso de los recursos, para asegurar que no se descuidan áreas sensitivas o valiosas del medio ambiente costero. Se ha concluido un Plan de Manejo para la Zona Costera (PMZC) en el Sultanato de Omán. Este artículo bosqueja como fué formulado el PMZC en el contexto de las circunstancias allí existentes.

Pour assurer la gestion appropriée des régions côtières, il importe de prévoir l'établissement d'aires protégées dans le cadre même des politiques et de la planification de l'aménagement des ressources naturelles. C'est le seul moyen de garantir que des sections importantes du milieu côtier ne soient pas négligées. Un plan de gestion de la zone côtière vient d'être mis au point dans le sultanat d'Oman. Le text décrit la rédaction du plan dans le cotexte particulier de la région.

A Coastal Zone Management Plan (CZMP) has been completed by the IUCN CZM Project in the Sultanate of Oman in collaboration with James Dobbin Associates (IUCN, 1986). The CZMP covers 200 km of mainland coast spanning the capital, Muscat, and a number of offshore islands. Establishment of protected areas in the broader context of CZM planning has been recommended as an effective technique for the management of upstream and other interactive activities and processes (Salm and Clark, 1984), which has yet to be fully exploited.

A goal of the CZMP is to establish protected areas as an integral component of land-use policies and planning. Thus, it avoids the more traditional view of protected areas as independent units to be lobbied for and decreed before incorporated in land-use plans. Instead, the CZMP uses land-use planning as the vehicle, with its policies and plans and protected areas as tools, to facilitate the protection and management of tracts of sensitive or valuable coastal environment.

Land-use policies are used to achieve *de facto* protection for a range of sensitive and scenic environments (including beaches, dunes, wetlands, estuaries, coastal cliffs and mountains, and headlands). The generally

underexploited means of protecting critical habitats and scenic areas has one main advantage: it enables broad environmental protection without the need to define, legislate and manage numerous small and scattered "cookie-cutter" reserves (i.e., discrete reserves cut out of large areas of intensive development or resource use).

As a first step, the area was studied in great detail to identify the wildlife, cultural, social and economic resource distribution and use in the coastal strip and nearshore seas. This was followed by a review of land-use plans and policies, and other sectoral development plans, to assess how these might affect the resources and related activities and how they might be used to safeguard them. The findings and recommendations of this CZMP fed directly into another IUCN project which was to design a system of nature conservation areas for all Oman.

There is no existing single institution currently capable of assuming the daunting task of addressing all CZM issues simultaneously, nor is there the time to establish such a complex institution. A plan was required which would enable the many urgent issues to be addressed with the minimum of delay. A simple plan was therefore devised which drew on existing infrastructure, policies, plans and management frameworks. Thus, the goal of the plan was to isolate management actions and to assign them to the agencies with the existing mandate for their execution. This was to enable a load sharing, rather than all-or-nothing, approach to the CZM problems.

Leader, IUCN Coastal Zone Management Project, c/o Department of Tourism, Ministry of Commerce and Industry, PO Box 550, Muscat, Sultanate of Oman

There are three action components of the plan:

- (1) Establishment of *planning policies* which would provide a broad brush approach to guide development in the coastal zone, and hopefully to avert the emergence of new issues.
- (2) Establishment of *protected areas* to enable intensive management of specific sites of particular value, including: three National Nature Reserves which are designed primarily for the conservation management of wildlife and other natural resources; three National Scenic Reserves which are designed primarily to safeguard aesthetic resources, but which have small strictly protected zones within them to protect important wildlife areas, habitats and archaeological sites; seven National Recreation Areas; seven Managed Recreation Areas; and four Wilderness Recreation Areas which are designed to protect prime recreation areas for the public through varying levels of control over adjacent lands, and which provide different types of utilities and services.
- (3) Isolation of *issue-specific actions* (James Dobbin Associates, 1983) which defined specific remedial actions for the numerous management issues in the coastal zone, and assigned these to a responsible agency. In this way, the burden of comprehensive CZM was spread among several existing agencies, each of which could proceed one issue at a time. This issue-by-issue approach has proved practical here.

The CZMP contains zone and boundary maps and summary planning and management guidelines for all six

proposed national reserves. A separate detailed conservation management plan was prepared by the IUCN CZM Project for the proposed Daymaniyat Islands National Nature Reserve (Salm, 1986).

The CZMP has been accepted by the Ministry of Commerce and Industry, which sponsored the project. It will be officially launched in a presentation to all the implicated Ministries, which is scheduled for early December.

Meanwhile, the Ministry of Commerce and Industry has started to implement the CZMP as part of phase 2 of the CZM project. Other components of phase 2 of the CZM project include management of the Daymaniyat Islands National Nature Reserve, the preparation of a second detailed CZMP for an adjacent 20 km of coastline, and a general overview plan with summary management guidelines for a further 600 km of remote coast. Phase 2 is again being executed as an IUCN project.

References

- IUCN 1986. *Oman Coastal Zone Management Plan: Greater Capital Area*. Gland: IUCN Coastal Zone Management Project.
- James Dobbin Associates Incorporated, 1983. *Channel Islands National Marine Sanctuary Management Plan*. Washington DC: Sanctuary Programs Division, US Department of Commerce.
- Salm, R. V. 1986. *The proposed Daymaniyat Islands National Nature Reserve Management Plan*. Gland: IUCN Coastal Zone Management Project.
- Salm, R. V. and Clark, J. 1984. *Marine and Coastal Protected Areas: A Guide for Planners and Managers*. Gland: IUCN.

Publications

Ecosystem Theory and Application

Edited by Nicholas Polunin

Published by John Wiley and Sons Ltd, Boffins Lane, Chichester, Sussex PO19 1UD, UK. Price £49.95 or US \$85.25.

This book uses the term "ecosystem" as a means of describing the biota which live together as a social unit and also the inorganic and dead parts of the system. Topics covered include arctic, desert, marine and tropical ecosystems, their dynamics and structure, economics, evolution and ecological phenomena.

Islands in the Bush: a Natural History of the Kora National Reserve, Kenya

By Malcolm Coe

Published by George Philip, London, 1985. Price £14.95.

Kora is not one of Kenya's better-known reserves nor is it a particularly significant one in the context of the Afrotropical Realm. Malcolm Coe, however, manages to find diversity and wonder in this rather drab patch of *Commiphora* scrub. The result is a book that is both "Kora friendly" and instructive. *Islands in the Bush* is a popular account of a Royal Geographical Society research expedition

to Kora in 1983. Coe collates the major research findings on everything from minute midges to catfish and acacias and delivers it in a most entertaining style. The illustrations are well done. Richard Leakey provides a particularly penetrating introduction by drawing out the significance of such natural resource inventories and studies. The only irritants are some misspellings of people and place names, and the "old boys on safari" tone to the text.

India's Wildlife and Wildlife Reserves

By B. Seshadri

Published by Sterling Publishers, New Delhi, India. Price: Rps120.

Seshadri's second book has the avowed intention of providing a guide to the more important of India's wildlife sanctuaries. Along the way it has expanded to include a summary of the status of the major animals that inhabit the sub-continent. Thus the present book is divided into two halves: the wildlife and the reserves. The idea is excellent and there is much useful information tucked away in these 216 pages that will be of benefit to the would-be watcher of Indian wildlife. Indeed, one can get a "feel" of India and much is eminently readable.

Managing Protected Areas in the Tropics

Compiled by John and Kathy Mackinnon, Graham Child and Jim Thorsell

Published by IUCN, this is the second output from the workshops held at the World Congress on National Parks held in Bali in 1982. A broad introduction to the multidisciplinary field of protected area management containing sections on the biogeographical basis of selection of sites, basic legal and policy requirements, public use and relations with local peoples, resource management guidelines and means of assistance. It includes case studies from throughout the tropics and aims to be a basic source book for middle and senior level managers in the world's 1,750 tropical reserves. Available from the Publication Services Unit, IUCN Conservation Monitoring Centre, 219c Huntingdon Road, Cambridge CB3 0DL, UK. Price: US \$25, £17.50.

Our World's Heritage

The National Geographic Society plans to publish this book in the autumn of 1987. The 300-page illustrated volume will cover a variety of cultural and natural sites, selected primarily from the list assembled by the

World Heritage Convention. The project staff of the National Geographical Society has asked for the assistance of UNESCO, ICOMOS, IUCN and other international organizations in preparing the book. Enquiries and suggestions should be sent to National Geographic Society (attention of Jennifer Ackerman), Washington DC 20036, USA.

Wildlife Conservation Evaluation

Edited by M. B. Usher

Published by Chapman and Hall, London, 1986. Price £30, (*hardback*); £14.95 (*paperback*).

The title of this book may be misleading for it concerns the evaluation of land and species for conservation and not the evaluation of the effectiveness of wildlife conservation measures. Nevertheless, it is an interesting and useful contribution to the literature on selecting areas for conservation. The first part introduces the process of evaluating areas for conservation, the assessment of representativeness, and the implications of succession and non-climax communities for evaluation. Part Two reviews the approaches to evaluation in five different geographical areas, including Great Britain, the United States, Netherlands, and tropical lands. Part three provides examples of the evaluation of specific habitats and group organisms, ranging from forests to agricultural environments, and birds to invertebrates. The final part includes two articles on conservation evaluation in practice, and the design of nature reserves. Some of the contents will be of particular interest to persons dealing with parks and reserves. For example, there is discussion of a popularity poll of criteria used in wildlife conservation evaluation, which indicated diversity, naturalness and area as the criteria used most often in 17 evaluation studies. The article on tropical lands urges a distinct approach to evaluating such areas, and emphasizes the need to define conservation objectives clearly, while recognizing that "conservation of wildlife in the tropics will depend on compatibility with other, mostly short-term economic goals". One article criticises "subjective, often non-explicit procedures" and argues, with an Australian example, for "alternative, explicit quantitative methods". Another article, on Britain, notes that "greater standardization of evaluation procedure is a desirable goal, but is limited by an inherent element of subjectivity in the values themselves"

and that "selection decisions over numbers of important sites are related as much to political and resource factors as to underlying scientific principles". The article on the design of nature reserves is especially interesting for its criticism of many accepted guidelines for reserve design. Using information on species in the Cyclades islands, the relevance of island biogeography theory to reserve design is challenged. It is concluded that IUCN's recommendation "that refuge design criteria and management practices must accord with the equilibrium theory of island biogeography" is "preposterous". Furthermore, it is argued that recommendations favouring a single large reserve rather than several smaller ones, and round rather than linear reserves do not derive from the theory and that "data in the literature support neither assertion".

Accordingly, the variety of evaluation methods and arguments presented may be stimulating to researchers but confusing to reserve planners searching for the best scientific approach. It does suggest, however, that while we might wish for a universal approach to conservation evaluation, different countries and agencies will continue to develop their own methods, partly according to their interpretation of current scientific theories, and partly in response to different ecological and political circumstance. In fact, while the authors include both reserve planners and researchers, they are predominantly from Britain and the United States, hence their articles may not reflect the full range of evaluation methods in use even today.

The book includes a single list of some 600 references. They are from a wide, though incomplete, range of sources, and might better have been classified or arranged at the end of each article. The book is well designed, with many clear maps and diagrams, but with few photographs and some typographical errors. The editor notes in the Preface that "a book on conservation will never please everybody," but this book will surely be of interest to persons involved with nature reserves and parks.

JOHN MARSH

Trent University, Canada

FAO

A new bulletin in Spanish, *Flora, Fauna y Areas Silvestres*, is being published quarterly by the FAO Regional Office for Latin America and the Caribbean as an activity within the FAO/UNEP Project on Wildland Management and

the Latin America Network for Technical Cooperation on National Parks, Protected Areas and Wild Flora and Fauna. For further information contact: Kyran Thelean, Regional Forestry Officer, FAO Regional Office for Latin America and the Caribbean, Casilla 10095, Santiago, Chile.

Registry of Latin America specialists and institutions

A computerized registry of institutions and specialists concerned with national parks and wildlife has been initiated by the Latin America Network for Technical Cooperation on National Parks, Protected Areas and Wild Flora and Fauna. For further information and requests for inclusion contact: Kyran Thelen, Regional Forestry Officer, FAO Regional Office for Latin America and the Caribbean, Casilla 10095, Santiago, Chile.

A new journal of wildlife and wildlands research and management in the Neotropics

Vida Silvestre Neotropical is a new journal for publication of high-quality articles on wildlife and wildland research and management in the Neotropics. This new publication responds to a need for an outlet to disseminate the new technical information being rapidly generated in the field. The journal focuses on the conservation of endangered plant and animal species and their habitats, sustainable use management, control of pest species, maintenance of biological diversity, indigenous use of wildlife, methods for designing protected area systems, among others. *Vida Silvestre Neotropical* is published biannually by World Wildlife Fund. Feature articles, notes and announcements are published in the language in which they are submitted: Spanish, Portuguese or English. Requests for information about subscriptions and guidelines for submitting manuscripts should be addressed to: Curtis Freese, Co-Editor, *Vida Silvestre Neotropical*, World Wildlife Fund, 1255 23rd Street, N.W., Washington DC 20037, USA.

IUCN

IUCN issues specialized publications on matters concerning the conservation of the world's living natural resources. Information is available from IUCN's Publications Services Unit, Conservation Monitoring Centre, 219(c) Huntingdon Road, Cambridge CB3 0DL, UK.

Advice to contributors

Contribution of manuscripts to PARKS

Authors are usually professional people engaged in management of, or in the many disciplines associated with, parks and protected areas. Authors may be invited to write on subjects selected by the editor, but those who wish to submit for consideration articles based on their own experience are encouraged to do so in consultation with the editor.

At present, manuscripts can be accepted only in English or Spanish, and will be published in the original language.

Suitability for publication is determined by many factors; including factual and technical content, timeliness and potential value to an international readership.

Letters to the editor are invited. These may refer to the subject matter of articles, introduce new ideas, or comment on topics of general interest. They may be published at the editor's discretion.

The editor would be pleased to be placed on the mailing list of magazines published by national park organizations with a view to reprinting appropriate articles in PARKS to enable them to reach an international readership.

General: Two copies of the manuscript should be submitted on paper of uniform size. Pages should be numbered consecutively. Each manuscript should be headed by a title, the author's full name, and the full postal address. Author's biodata should accompany the manuscript. Footnotes should not normally be used, but where considered to be essential they should be kept as brief as possible.

Nomenclature: Where the scientific name of a plant or animal follows the first mention of its common English or vernacular name, the scientific name should be underlined and enclosed within brackets. Common names should not be given initial capital letters unless they incorporate proper names, or, where confusion could otherwise result.

Names: Except where the anglicized version is well-established, for example "Rome" or "Moscow", the locally and presently used spelling or its accepted English transliteration should be used. In this, the National Geographic Society maps (US) or Times Atlas may generally be followed. The initials of organizations, for example, IUCN, UNESCO and ICSU, and abbreviations for countries, such as USSR, USA, DDR, and UK, require no full stops.

Units: The metric system should be used. Where, for any reason, figures based on other systems are quoted, the metric equivalents should always follow in brackets. The abbreviated forms—cm, kg, ha and so on—should not be followed by a full stop except at the end of a sentence. In dates, the full name of the month should be used.

Illustrations: Photographic prints should be glossy and should be identified by the author's name and caption reference lightly written in soft pencil on the back. Captions should be provided typed on a separate sheet, clearly identified. Tables should be included in the main body of the manuscript. Line drawings, maps or diagrams should be professionally prepared with black ink on white paper. Photos, drawings and other materials intended for reproduction should be mailed flat with protective stiffener or enclosed in a mailing tube. They should never be folded.

References: References should be cited in the text by naming the authors (or with *et al.* replacing all the names after the first if there are more than two) followed by the year of publication, for example:

(Smith, 1971); or (Smith & Jones, 1971); or (Smith *et al.*, 1971).

The reference list at the end of the text should be arranged in alphabetical order of authors surnames, in the following form:

- (1) for a scientific periodical:
Gee, E. P. 1956. Report on the status of the Kashmir stag, October 1966 *J. Bombay Nat. Hist. Soc.* 62(3): 379–393.
- (2) for a single author book:
Schaller, G. B. 1967. *The deer and the tiger*. Chicago & London: University of Chicago Press.
- (3) for a chapter from an edited book:
Packard, R. L. 1967. Octodontoid, Bathyergoid and Ctenodactyloid rodents. In *Recent Mammals of the World*, S. Anderson and J. Knox-Jones, eds. New York: Ronald Press. pp. 273–290.

Abbreviations of scientific journals should follow *The World List of Scientific Periodicals*. If this is not available the name of the journal should be given in full.

Proofs: Printers proofs will not normally be submitted for checking by authors as short time and often infrequent or interrupted mails make this practice unacceptable. Proofs will be read by the editors.

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