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IUCN Viewpoint

Conservation and use of wild animals

The International Union for Conservation of Nature and Natural Resources is concerned with the conservation of wild animal life, and has been involved since its establishment in promoting action for this purpose. A guiding principle has been the belief that sensible protection and conservation of wild animals and their habitats is consistent with the scientific, educational, social and economic goals all countries seek.

IUCN believes it is important to man's long-term well-being to maintain the full array of natural diversity in animal species throughout the world. Even the smallest or least-known species may play vital roles in the functioning of the life systems of the planet. Conservation of species necessarily requires conservation of their habitats – and of the ecosystems of which they form a part. Towards this goal IUCN, in cooperation with other organizations and with governments, has consistently promoted the establishment of a world-wide system of national parks and reserves.

IUCN has taken an active role in the preparation of several international conventions and has regularly provided the scientific background for national measures for wildlife protection. It strives to prevent wild animals from being seriously reduced in numbers, or the gene stocks lost, by habitat destruction or over-exploitation. It believes that conservation of separate populations and subspecies is required in order to maintain the full variety of wild animals for future generations. IUCN supports scientific studies of wild animals and their habitats so that conservation programmes for individual species may be based on a knowledge of their biology and ecological requirements.

Many wild species, however, occur in reasonable abundance in wide-spread habitats. Subject to appropriate ethical standards, these may be hunted, fished or trapped for food, commerce or recreation. Such exploitation need always be kept in balance with the reproductive capacity of the species involved, and must not exceed the maximum yield sustainable by the populations concerned, or disrupt the ecosystems to which they belong. Because such exploitation creates a selective pressure on these species, the harvest must be controlled to prevent populations from being dangerously reduced, and needs to be accompanied by management to increase carrying capacity of habitats and the productivity of the species.

Management of wildlife usually involves both habitat protection and control of numbers. Wild animals sometimes come into conflict with other valuable uses of land, and may therefore be classified locally as 'pest' or 'harmful' animals. Reasonable reductions of the numbers of these species in the areas of conflict may be justifiable. Such reductions, however, must always be carried out with proper safeguards to protect other species and to allow the target species to survive in its full genetic variety and reproduce in its natural habitat. The survival of a species is considered by IUCN to be of the utmost importance.

In accordance with the foregoing statements, and in keeping with humane standards, IUCN recognizes that wild animals are commonly used for food, recreation and commercial purposes, and that with some species, reductions of over-abundant populations may be essential to habitat protection. It recognizes that such use or reduction may enhance the long-term survival of the species in areas where economic returns are considered more important than aesthetic or recreational values or where wild animal life is considered of secondary importance to other uses of land or natural resources.

Where species or subspecies are seriously reduced in numbers IUCN urges the strictest protection against *all* exploitation. Where there is doubt, IUCN encourages the declaration of moratoria on harvest and use. It will undertake or cooperate in studies designed to provide a scientific basis for management and improvement of their habitats and increase in their numbers. IUCN is prepared to offer its full support to such protection and management.

International Convention

Conservation of the World Heritage

Proposals for the conservation of the World Heritage were crystallized in a new draft International Convention prepared by a meeting of experts convened by Unesco in Paris from 4 to 22 April 1972.

The concept of the World Heritage was put forward by conservationists several years ago and it was suggested that some form of international cooperation should be created to provide for the safeguarding of natural areas and cultural monuments and sites of outstanding interest and value to mankind.

The Unesco meeting was the culmination of two streams of action. One, started some years ago by Unesco, was to arrange for an appropriate system of international protection of monuments and sites of universal value and interest that form an integral part of the cultural heritage of mankind. The other, taken up two years ago by IUCN, placed greater emphasis on the conservation of natural areas of universal value and interest; it was endorsed by the Preparatory Committee for the UN Conference on the Human Environment (Stockholm, June 1972) and an associated Intergovernmental Working Group on Conservation which met in New York in September 1971.

Following discussions between Unesco and the Secretariat of the Stockholm Conference, it was decided that a single convention covering both the cultural heritage and the natural heritage should be developed on the basis of the draft which had been prepared by Unesco, but taking into account the draft which had been prepared by the Stockholm conference Secretariat and IUCN after the meeting of the Intergovernmental Working Group on Conservation.

The new draft that has resulted from the Unesco meeting of experts provides for the conservation of the cultural and natural World Heritage. The cultural heritage will be the monuments, groups of buildings, and sites that are regarded as of universal value to mankind, and

similarly the natural heritage will be those natural formations, sites, and areas that are regarded as of universal value to mankind. States adhering to the Convention will nominate monuments, sites, and areas within their territory and the selection will be in the hands of an Inter-governmental Committee elected by the representatives of the contracting States.

The International Committee will include, as non-voting members, representatives of IUCN (concerned with the natural heritage) and of International Council of Monuments and Sites (ICOMOS) and the International Centre for the Study of the Preservation and Restoration of Cultural Property (both concerned with the cultural heritage). Unesco, collaborating with these three bodies, will provide the Secretariat for the International Committee.

The Convention envisages a restricted list of monuments, sites, and areas representing the cultural and natural World Heritage. Provision is made for the granting of assistance to States which request help in protecting and conserving that part of the World Heritage that lies in their territory. A fund will be established under the Convention to enable such assistance to be granted by the International Committee.

States adhering to the Convention undertake to respect the World Heritage and to refrain from action that might damage it.

The draft Convention will now be sent to the Stockholm Conference for endorsement and will be considered by the General Conference of Unesco at its next session, scheduled for November 1972.

The opening up of Brazil

The rapid and large-scale opening of the Amazon Basin of Brazil is of great concern to IUCN because it will necessarily involve major transformations of the Amazonian landscape and the consequent disappearance of wild areas. But much more than to IUCN, this transformation is of concern to the world because of the immense repercussions it may have on the global environment through its effects on the water regime, climatic conditions, soils and productivity of this vast region.

The entire subject of such massive regional development is politically explosive in an era when developing countries are aspiring to "develop" their "untapped" resources. For Brazil and the Brazilian government, the opening of the Amazon is viewed widely as a vital step to meet the rising aspirations of its growing population with their growing expectations of a "better life".

The controversy regarding how productive this opening will be for the short-term interests of Brazil is raging in Brazil itself as well as world-wide. It has brought angry reactions, particularly from some Brazilians who view any expressions of concern from the rest of the world as an interference in what this country considers its strict national interest. But is it?

A recent number of the well-known publication 'Realidade' of October 1971 gives many details of the steps being taken and the reactions these have generated in Brazil. The subject of major transformations of tropical forest areas has been picked up by Unesco, where the first project of the Programme on Man and the Biosphere is entitled "Ecological effects of increasing human activities on tropical and subtropical forest ecosystems". The special panel - on which IUCN is represented - will consider possible ways of dealing with this problem with reference to the fundamental and applied research that must be carried out. At present, there is extremely little supporting scientific data to show that permanent settlements can be established in humid tropical areas where soils and high rainfall work against the replacement of tropical ecosystems by simplified man-made ecosystems of reasonable stability, capable of producing food and other products for greater densities of populations. It is,

of course difficult for a country like Brazil to wait until such data come in. Even if the data are encouraging it might be very difficult to direct agriculture and other forms of land-use in ways that will be compatible with the conservation of the natural resources.

IUCN has felt that this concern is a basic one. As a nongovernmental organization it has chosen to address the President of Brazil directly. In a letter signed by the highest officers of the World Wildlife Fund and IUCN - Prince Bernhard of the Netherlands (President of the World Wildlife Fund) and Mr. Harold J. Coolidge (President of IUCN) - it has pointed out the need for careful consideration of the environmental problems involved with Amazonian development. Such consideration could produce, as one result, the establishment of an extensive system of national parks and protected areas in this extremely important region, for the benefit of not only Brazil but of all the World.

Conservation Notes

Permanent Svalbard reserves urged by IUCN, World Wildlife

High-arctic ecosystems, such as occur in Svalbard (Spitzbergen), are of special importance both to science and to mankind in general. The number of plant and animal species in these ecosystems is small, and the total biomass is low. A considerable proportion of the species are highly specialized; their worst enemy appears to be man. The ecosystems are peculiarly vulnerable to human-induced deterioration and destruction. Many species are highly specialized and adapted to cold, and are extremely sensitive to environmental changes. Tundra can be damaged, perhaps irreversibly, by human interference on a scale that would have little effect on temperate ecosystems.

In recent years the Norwegian Government has taken important steps to conserve the unique, undisturbed and fragile ecosystems in the archipelago. IUCN was especially pleased to note that, as from 23 April 1971, Kong Karls Land with its adjacent territorial waters was established as a nature reserve on a provisional basis for three years. Provisional measures were also taken to control the impact of increased human interference in Svalbard from 28 May 1971.

Nevertheless, IUCN is concerned at the increasing trend of activities in Svalbard caused by the development of projects relating to oil exploitation. At present there are oil claims on nearly all the geologically important areas in these islands. No positive results have yet been established but further drilling operations will be conducted. One island where oil exploration has been proceeding is Edgeøya which, together with the Barents Sea, has been identified by Norwegian and foreign scientists as one of the most important areas for polar bears and reindeer in Svalbard and, indeed, in the Arctic as a whole.

IUCN and WWF have therefore intervened with the Government of Norway urging them to make permanent the present temporary nature reserve in Kong Karls Land. The two organizations have also suggested that the Government of Norway uses its powers under Article 2 of the Svalbard Treaty of 1921 to establish reserves and protected areas to form a network of protected, representative ecological systems throughout the Svalbard archipelago and surrounding waters.

UK restricts skin trade

The UK Department of Trade and Industry on 27 March issued orders banning the import of tiger, snow leopard and clouded leopard skins. In addition, regulations on the import of all species of leopard and cheetah skins will be strengthened. These restrictions were introduced in the interests of conserving the species concerned.

Mexico creates a refuge for gray whale

On 12 February this year, a refuge for the gray whale, *Eschrichtius gibbosus* was officially created by the President of the United States of Mexico. The refuge consists of a shallow lagoon in the south of the Sabastian Vizcaino Bay, on the Pacific side of Baja California, where gravid females collect in large numbers to give birth to their young. The lagoon becomes a veritable nursery for young whales.

Migrations of the gray whale take place at regular intervals: the eastern stock comes from the north to enter the refuge area between December and February and to depart again in March and April. Summer feeding grounds are in the Bering and Chukchi Seas. The migration route is one of the longest to be undertaken by a whale species, being about 5,000 miles. The western stock, which migrates along the coast of China and Japan, is practically extinct.

By the 1930s, populations had been reduced almost to extinction by whaling interests, from a level of some 30,000 in the 1850s. However, they were totally protected and recovery was relatively rapid; from an estimated 250 in 1946/47, the gray whales had increased to about 6,000 in 1959/60. At present, they are only hunted by Japan which appears to have virtually wiped out the stock of the western form.

Unique Tasmanian area may be lost to science

Lake Pedder lies in the South-West National Park of Tasmania, an area which until recently was uninhabited and mostly unvisited by man. It is, however, threatened with inundation as a storage impoundment if the implementation of the middle Gordon hydro-electric power scheme is carried through in its present form.

The lake is a unique national feature of high scenic and scientific value; it is oligotrophic, shallow, with a maximum depth of about 3 m, and covers an area of a little less than 10 km². It lies on quartzitic gravels and is surrounded by acid sedgeland. In the summer the falling water level exposes wide beaches on which grow and flower a number of endemic species of plants of special interest to science. Among those apparently restricted to Lake Pedder are new species of *Centrolepis* and *Milligania*. On the surrounding moorlands a new genus of crustacean containing two species were discovered in 1970. This genus, *Allanaspides*, belongs to the Syncarida, and both species bear a prominent organ, apparently unique in the animal kingdom, of unknown function and significance. So far, the area has been almost completely unexplored scientifically and it promises to hold material of great importance to our understanding of similar biotopes. For these reasons, Lake Pedder is regarded as being of special importance to international science and it has been chosen for inclusion in the important Wetlands Project AQUA. This covers sites of great international importance for research and education, and the countries owning such sites are asked to accept national responsibility for them.

The authors of Project Aqua (Luther, H. & Rzóska, J. 1971. Project Aqua: a source book of inland waters proposed for conservation. I.B.P. Handbook No. 21. Oxford: Blackwell) comment with regard to Lake Pedder that "Its impending destruction to provide power production for about half a century must be regarded as the greatest ecological tragedy since European settlement of Tasmania".

IUCN has therefore made an intervention with the Governments of the Commonwealth of Australia and the State of Tasmania appealing to them to take whatever action is possible to preserve Lake Pedder because of its unique scientific importance. It pointed out that a change in the layout of part of the power scheme, which would safeguard the Lake, is understood to be feasible.

Programme Activities

Environmental Law Papers near publication

During 1971 a number of projects were carried out at the IUCN Environmental Law Centre, at Bonn, which will result in publications appearing in the coming months. The first of these is concerned with a study of a specific legal device, the US Conservation Easement or Scenic Easement. Technically, an easement is a legal right vested in one person in relation to the land of another.

An interesting use of easement, from the conservation point of view, is the grant by a private landowner of a *scenic easement*, either to a government or to another private individual. The landowner, in effect, agrees not to use his land in such ways as to detract from its scenic beauty.

In the current project, a document has been drafted which outlines the need for conservation easements in the USA, the principle of the easement device, and the variety of conservation easements; it also includes a study of the Massachusetts Conservation Restriction Act. In his conclusion the author points out that it is hoped that this description of the American Conservation Easement will stimulate others to look at their own systems of land use control and ask themselves whether there is a need for a similar approach.

The author is Mr David D. Gregory who is at present studying for an LL.M. Degree at Harvard University Law School. He was helped in his work on the project by Alain Diot, who wrote the French appendix and by Hans-Jurgen Dietrich, who contributed the German appendix.

Mr Gregory has also been working on a project to study the evolution of Standing to Sue in the USA. Traditionally, courts have ruled that private persons did not have standing to sue, i.e., were not competent to file suits to prevent or recover for destruction to the environment, unless certain rather rigid criteria could be met. These criteria usually involved a requirement that the plaintiff had a direct personal and often proprietary, as opposed to public, interest at stake.

One technique for liberalizing standing to sue has been to expand the definition of economic damage for which the plaintiff may seek a remedy. Alternatively, some courts have significantly broadened the meaning of phrases, such as "aggrieved parties", which appear in statutory provisions specifying who has the right to seek judicial review of administrative action.

Legal activity and thought in the USA has refined and analyzed the concept to a much greater degree than in most other countries, and it is considered that the policy issues underlying the legal technique are of interest to all nations.

This project is designed as a continuing one, and position papers on the law of standing to sue related to environmental problems in other countries will be published at intervals. The first, on the German situation, has already been prepared by Professor Rehbinder of the University of Bielefeld, and will be published shortly.

Biome field stations

IUCN is at present revising and bringing up to date the IBP/CT Working List of Ecological Field Stations which are engaged in long-term biome studies. It is hoped to be able to publish the list at a later date. It has been decided to concentrate initially on those stations situated in developing countries; but there will be exceptions, for instance in the tundra. The Executive Officer, Commission on Ecology, would appreciate receiving suggestions on stations to be included and requires the following information: the name and address of the station and its parent organization; the biome it is studying; and the scale, scope and duration of its research programme.

IUCN environmental law information system to be demonstrated at Stockholm Conference

A model of a system of computer indexing of environmental law information developed by IUCN in collaboration with IBM will be demonstrated at the United National Conference on the Human Environment, at Stockholm, on 7-9 June.

IUCN has accumulated at its Environmental Law Centre in Bonn, which is under the general supervision of Mr. W. Burhenne, chairman of IUCN's Committee on Environmental Law, an extensive and perhaps the largest collection of environmental law documents from all over the world. The material at Bonn now totals more than 15,000 documents, including bilateral and multilateral conventions, and national legislation at various levels of organization, federal, state and local. It has become increasingly difficult to obtain information for research and enquiry purposes from among this mass of material, particularly as it is in a variety of languages, and a computerized indexing system for these legal documents has therefore been developed. A 3000-word thesaurus of concept headings, or keywords, has been built up and the legislation from a number of countries including Argentina, Canada (Federal), Czechoslovakia, France, Peru, Philippines, New Zealand, United Kingdom, the United States (Federal), has been coded for computer retrieval.

The keyword concept gives the IUCN approach its international utility, for the keywords can be translated into various languages. Although for the purpose of the demonstration only the English language thesaurus has been printed, thesauri for the French, German and Spanish languages have been compiled.

The demonstration will involve the establishment of an IBM keyboard terminal, at the Stockholm Conference hall, connected by telephone lines to an IBM computer. Queries posed by delegates will be typed on the keyboard by an IUCN operator and the answer will be rapidly displayed on a television screen.

A further demonstration of the system will be given at the Second International Parliamentary Conference on the Environment in Vienna on 26 and 27 June.

Cloud forest reserve in Guatemala

A 1,000 acre private reserve of virgin cloud forest is being established in Guatemala for the protection of the quetzal, *Pharomacrus mocinno* and the horned guan, *Oreophaps derbianus*. A number of land-owners are forming an association which will own the reserve and be responsible for managing it. A member of the IUCN Survival Service Commission, Dr. Anne LaBastille, undertook to survey the administrative and ecological aspects of the establishment of the reserve in March/April this year and recommended the precise boundaries of the reserve, located on Volcan Atitlan in south-western Guatemala.

It is intended that the reserve be used solely for scientific or educational purposes and it will not be open to public access. During her visit to Guatemala, which immediately followed her work in Panama described in IUCN Bulletin 3 (3): 12, Dr. La Bastille spoke with Government officials about the new reserve and encouraged them to establish further, public reserve areas in Guatemala.

The initial work on the establishment of the reserve has been funded by the Cleveland County Bird Club and the World Wildlife Fund. A small fund is being set up in Guatemala, to which the landowners will contribute and which will assure the maintenance of the reserve and the continued employment of the wardens.

This IUCN/WWF project forms part of the series "conservation of tropical forests in Latin America" and is conducted in collaboration with the International Council for Bird Preservation.

Conferences and Meetings

Survival Service Commission

The Survival Service Commission of IUCN held its 39th Meeting at St. Helier, Jersey, April 29-30, 1972. The meeting was timed to coincide with the Conference on Breeding of Endangered Species, organized by the Fauna Preservation Society and Jersey Wildfowl Preservation Trust, in Jersey, May 1-3, to enable Commission members to attend both meetings.

The SSC discussed Commission policy matters, reviewed its programme in regard to new and continuing projects, and considered statements on the current status of a number of threatened species, the conservation of which required immediate attention. A draft position paper on captive breeding of threatened species (to be published in the June Bulletin) was amended and approved. Hunting clubs are to be requested to impose a ban among their membership on the hunting of Red Data Book species. The policy statement on whale conservation in 1972 (see IUCN Bulletin 2 (21), Oct./Dec. 1971) was re-affirmed and it was agreed to initiate further action to prompt whaling nations who had not already joined the International Whaling Commission to do so.

Two wetlands meetings set

The Polish and Czechoslovak IBP working groups on wetlands, which have been cooperating in the framework of both the IBP and the traditional cooperation between the Polish and Czechoslovak Academies of Sciences, will convene an international technical meeting of the IBP wetland group, that would deal with all aspects of the international IBP synthesis of results of wetland research. This meeting will have a dual purpose:

- a) Topic news, i.e. presentation of summaries of results of national or regional IBP research in wetlands. Presentation of preliminary partial syntheses of certain aspects of wetland ecology.
- b) Discussion on the way of synthesizing these results in an "IBP Results" volume. Appointment of authors of individual chapters and of the editorial board of the whole book, decision on the procedure to be followed in the synthesis operation, etc.

The meeting will be held in Poland, at Mikotajki, 12-18 June 1972.

A Symposium on the hydrology of marsh-ridden areas will be held 17-24 July 1972 at Minsk, Byelorussian SSR. About 100 experts are expected to attend the symposium, which is convened by UNESCO and organized in cooperation with the government and with the support of the International Association of Scientific Hydrology.

Symposium on 'Uniting Nations for BioSurvival'

The US National Wildlife Federation will hold an international symposium on 'Uniting Nations for BioSurvival' in Stockholm, Sweden, on 10-12 June 1972. The Symposium will run at the same time as the United Nations Conference on the Human Environment, and will attempt to augment and supplement decisions forthcoming from that meeting.

Many of the topics to be discussed are closely related to, or identical with IUCN's interests, and several speakers are prominent in affairs of the Union. The Symposium will be open to the public, and there will be no registration fee. Further information can be obtained from the offices of the National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036.

Book Reviews

Unless otherwise indicated, book reviews in the Bulletin are prepared by Professor Tom Harrisson.

Caldwell, Lynton K. (1972). *In defense of earth: International Protection of the Biosphere*. Indiana University Press, Bloomington/London. 295 pp. Price \$ 8.50.

Professor Caldwell has produced a timely book which needs to be regarded carefully by those attending the United Nations Conference on the Human Environment at Stockholm, and in particular by those who are concerned with the institutional structures within the United Nations that may develop from the Conference.

The book reviews the existing national and international organizations involved in protecting the human environment, considers their shortcomings, and proposes some necessary changes that need to be made if the international effort to safeguard the biosphere from the combined assaults of population growth, pollution and degradation of biotic resources is to succeed. Specific proposals advanced for UN consideration are:

- (1) an Environmental Council, modeled perhaps on the Security Council;
- (2) an agency, perhaps associated with the International Court of Justice, for prevention and settlement of environmental disputes;
- (3) a centre for scientific advice and research;
- (4) a global environmental monitoring network;
- (5) an international regime for the oceans;
- (6) a world environment fund.

Obviously not all of these will be accepted by the representatives of governments meeting in Stockholm; however Caldwell has established some badly needed objectives toward which the United Nations need move if their environmental task is to be accomplished. The book further advances a ten point programme for improving environmental protection by national governments.
Ray Dasmann

Scheffer, Victor B. (1970). *The Year of the Whale*, 212 pp., \$6.95 (US) and *The Year of the Seal*, 208 pp., \$7.95 (US). New York. Charles Scribner; also, Souvenir Press, London, at £2. Both illustrated by Leonard Everett Fisher (elegant woodcuts).

These interesting, deeply conservation-oriented books, are written in what the publishers describe as "richly cadenced prose." That is, in the heavier, more florid American tradition which goes back to Howells and Emerson. But the style is sufficiently controlled not to repel readers on the Morges side of the Atlantic. It combines literary colour with factual information, based on the author's long service (1937-69) as a biologist with the U.S. Fish and Wildlife Service.

Both volumes follow the same pattern: each chapter covers one month in a year's cycle of a selected hero - the "Little Calf" born, a ton in weight, to a sperm whale in September, off the Mexican Pacific Coast; and a baby Alaskan fur seal (*Callorhinus ursinus*) from Momma, "The Golden Seal" in the Bering Sea one July. Each personalized pair, mother and child, are followed through a year - the whale, of course, wholly at sea; the seal mostly so, for the Alaskan species is the most pelagic of pinnipeds, spending the greater part of its time remote from land or ice, with up to eight months feeding and sleeping on the open Pacific, flippers never once dry in winter.

Amidst the flowing prose there is a lot of good scientific stuff in both books. The descriptions of human hunting and exploration methods are particularly clear, cool and only incidentally horrifying (with deadly effect). The whale book, indeed, deserved to win a 1970 medal for the best American book on natural history. The production throughout is good, the layout pleasant, though one feels the lack of a map in the Whale (the Seal map is fine).

Prozesky, O.P.M. (1970). *A Field Guide to the Birds of Southern Africa*. London, Collins, 350 pp., 32 colour and 8 black and white plates, £2.50.

Fitzsimons, V.F.M. (1970). *A Field Guide to the Snakes of Southern Africa*. London, Collins, 221 pp., 12 colour plates, £2.10.

Dr. Prozesky writes from the Transvaal Museum with authority. His presentation is well up to the highest standard we now expect from these publishers in this series. The illustrations, by Dick Findlay, cover 411 species, and are unusual, in that the colouring tends to be rather pale, partly because of the strong use of line to show feather patterns. But on the whole this effect is pleasing, rather a relief, a slightly different approach to that familiar in most bird books.

A companion volume on Snakes is from the same stable, the Transvaal Museum, where the author is Director. This is a particularly well prepared popular study in a field where the general literature of three continents has long been grossly inadequate, despite the clear potential. Almost everyone wants to know about snakes. In this book, they will be locally satisfied.

Bustard, Robert (1970). *Australian Lizards*. Sydney, Collins, 162 pp., 80 plates (mostly black and white), text figures (price not stated).

The reptiles of the Australian region are already owing a good deal to the energy of Dr. Bob Bustard (age 33), who has devoted himself academically and politically to studying and publicizing their needs. This short, comprehensive, handbook concludes with a powerful section on conservation and research (pp. 132-141).

Grzimek, Bernhard (1970). *Among Animals of Africa*. London, Collins. 368 pp., 52 plates (mostly colour). £2.50.

Everything that Professor Grzimek, zealous for conservation, writes is extraordinary. It comes through well, too, in translation from the German by J. Maxwell Brownjohn. This vigorous, versatile, readable book is no exception to the Frankfurt rule. Everything is tackled in flying strides, with personal energy and convinced expertise. The emphasis is on mammals and East Africa, despite the title.

Most amusing and not least illuminating are the experiments with inflatable dummy lions, rhinos and elephants. One is left wondering, however, the limits to which the rights and privileges of proud animals have yet to be further reduced in the interests of human curiosity or photography - the latter here superbly practised. We have entered a new phase in the National Parks of Africa especially: "messing about" with the fauna. The next step might even be to re-spray the colours of selected species, re-arrange the odours on others, dress up the giraffes with bowler hats and spats. Among the Dayaks of Borneo, there are two cardinal sins, which lead to the immediate petrification of the whole community: one is the incest, the other is laughing at or ridiculing animals. Professor Grzimek is too serious to laugh for this. But one is left with the uneasy feeling that if he went to Borneo he might end up a rock.

Quam, Louis O. (Ed.) (1971). *Research in the Antarctic*. Washington, D.C., American Association for the Advancement of Science; 784 pp., 2 maps and 44 tables. \$24.95.

This volume presents primarily the results of research by the United States Antarctic Research Program (USARP), and is an outgrowth, but not a complete record of the Antarctic Research Symposium held in Dallas, Texas, in December 1968, at the 135th Annual Meeting of the American Association for the Advancement of Science (AAAS). The 46 contributors are respected scholars and researchers associated with USARP, and the work contains 39 chapters.

USARP was established in the spring of 1958 to continue the Antarctic Program of the International Geophysical Year (IGY) beyond its end in December 1958. In May of that year the United States invited the governments of the other 11 countries participating in IGY activities in Antarctica to consider a treaty which would provide for freedom of scientific investigation in the Antarctic by citizens, organizations and governments of all countries. The cause of science in Antarctica was given new impetus in 1961 when the Antarctic Treaty was ratified by all 12 of the IGY 'Antarctic Nations': Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, the Republic of South Africa, the United Kingdom, the United States, and the USSR. Four nations - Czechoslovakia, Denmark, the Netherlands and Poland - have since acceded to the Treaty.

Perhaps the most significant measures to be approved since the Treaty has come into force are those dealing with conservation of living resources. These measures establish uniform practices to limit harmful interference to plant and animal life and to give special protection to ecological systems in selected areas of Antarctica against the careless inroads of human activities. Regulations have been implemented to prevent the introduction of exotic animals, plants and diseases. Very recently steps have been taken to protect seals on the drifting pack ice surrounding Antarctica and to ensure that the relatively undisturbed environmental conditions of Antarctica are preserved for the benefit of mankind. It must be emphasized that this is probably the first time in history that such steps have been taken before it is too late.

The present volume is divided into seven sections. The first deals with a review of antarctic research programmes, international agreements and arrangements, and includes a reprint of the reports of James Eights who conducted (1829-31) some of the earliest scientific studies of the area. Particularly interesting in this section are the histories of the Scientific Committee on Antarctic Research (SCAR) and the Antarctic Treaty.

The second section reports recent biological findings. Here, included in a chapter by Joel W. Hedgpeth (*Perspectives of Benthic Ecology in Antarctica*) is a specially fascinating subchapter on ecological speculations, which even extends to a discussion of the current Crown-of-Thorns starfish (*Acanthaster*) controversy. The chapter on the ecology of lower plants in Antarctica by E. D. Rudolph is particularly timely in view of the concern aroused by the current tundra destruction in northern circumpolar lands.

Succeeding sections of the book deal with glaciology, climatology and meteorology (particularly the interaction of Antarctica and the middle latitudes), magnetosphere and ionosphere research, ocean dynamics, and the theory of continental drift.

All in all, it is a valuable reference volume for the scientist who works, or has an interest, in the Antarctic; it will be welcome to the antarctic novice, for the papers are very readable; and it also shows the conservationist why it is so important that these relatively undisturbed ecosystems should remain in this state, and what steps have been and are being taken to ensure that the Antarctic remains a continent for science.
Joseph Lucas

Luther, H. and Rozska, J. (1971). *Project AQUA, a source book of inland waters proposed for conservation*. Oxford and Edinburgh, Blackwell, 239 pp. Price £2.00. (This is IBP Handbook No. 21, and IUCN Occasional Paper No. 2.)

At the final assembly of the XIV Congress of the Societas Internationalis Limnologiae (SIL) in Salzburg, Austria on 2 September 1959, the following recommendation was proposed by Dr E. B. Worthington and unanimously accepted: "SIL should prepare a list of lakes and rivers whose preservation and protection is particularly desirable, and ask the United Nations Organizations to recognize them."

In May 1961, IUCN's Commission on Ecology, at a meeting in Zurich, decided to participate in the preparation of such a list, for which the name Project Aqua was coined. This linked aquatic and conservation interests. Finally in 1964 when the International Biological Programme was established, it was agreed that one of the first tasks of its Freshwater Productivity Section should be to take part in the compilation of Project Aqua.

A preliminary list was published in 1969, and the present volume is as definitive as it is possible to be at the present time. It is not final because as long as human activities encroach on nature, and limnology continues to develop, there will be additions to, and deletions from, the list.

It is a reference book; a source book of information on more than 600 inland water-bodies throughout the world which are judged to be worthy of conservation. Some are classical research sites, some are spectacular or are of special importance because of geographical or biological attributes, some are as yet little known and have not had the heavy hand of man laid on them. Besides not being final, the list is by no means complete, for some countries receive no mention. Even the lists for countries that are included may not really be comparable because in some the aquatic biomes have been studied intensively and over a long period, whereas in others the list may have come from a brief and superficial study made by visiting scientists. The compilers hope that the present publication will stimulate much more work, and that a revised edition will be necessary in due course.

Ideally, each site is classified according to a plan adopted by the IUCN General Assembly at Lucerne in 1966. This provides for habitats that are in a natural state, or which have been substantially altered or entirely created by man. Further subdivision includes classical sites; those which are important for past, present or future research; and sites which may be subject to rapid change. An additional category is of sites proposed by local authorities, but without full documentation.

The information on individual water bodies falls under some or all of the following headings: name; situation; latitude and longitude; altitude; area; depth; origin; limnological status; special scientific interest; degree of research including major references to literature; conservation status; degree of national recognition; present usage; threats; and other information.

Although Project Aqua was compiled primarily for conservation purposes it clearly has uses elsewhere. For example, the inclusion of references makes it a useful source of limnological information. Perhaps more importantly, it suggests that some water bodies so far untouched by human interference could be used as datum sites for monitoring changes in the environment. It is also a contribution to the International Hydrological Decade which is turning its attention to the quality of water as well as to quantity.

In addition to the lists there is a series of aerial photographs of classical lakes or waters of special interests; and outline maps give an indication of the locations of sites. An index is also included. There are a fair number of misprints, none of which will cause confusion, but it seems strange for a book published in 1971 to use the archaic name *Antarctis* for the continent normally known as Antarctica.
Joseph Lucas

Caldwell, Lynton K. (1970). *Environment: A Challenge for Modern Society*. New York, American Museum of Natural History; 192 pp., \$7.95.

Gregory, Roy (1971). *The Price of Amenity: Five Studies of Conservation in Government*. London, Macmillan; 320 pp., 4 black and white maps, £8.00.

Since the political-scientific approach is not often deployed into this field, these sorties are both welcomed. Dr. Caldwell is Professor of Political Sciences at Indiana University, U.S.A.; Dr. Gregory, Senior Lecturer in Politics at the University of Reading, U.K. Their products are similar, also, in being solid text, though the English study has four unimaginative maps matching the author's reliance on the more obvious texts, newspaper and political sources, rather than field observation or general intuition. His American counterpart, on the other hand, is a great generalizer and theoretician, and "intellectual leader" on his continent.

Environment is well written and mostly rather well thought out. Chapter 3, "Environmental Quality: an integrative concept", is a particularly helpful effort to face up to the need for moving past resource controversies fought on a case-to-case basis into the fundamental issues (p. 63). But in places this Professor falls into the trap he so well defines: namely that "the concept of environment is particularly susceptible to the tricks that language plays upon thought" (p. 75). In particular, Dr. Caldwell readily accepts the American and general western assumption, now increasingly in doubt from the young, of unceasing human "progress". Here his Chapter 6, "Shaping the environment of civilized societies", is open to deeper debate. For instance, his key definition of civilization as "the process of achieving civility and civility" (p. 140). Where in the world, today, can we see any developing trend towards or even stabilization of such mutual communal and inter-communal consideration — basic, of course, among many other life-forms? The trend may well be in the opposite direction?

The Reading University author adopts almost the contrary method. He is concerned with case-history exclusively, at times with fascinating success. Generalizations based on these are pushed into a short end chapter (pp 296–307). Five sagas of resource conflict between enlightened public opinion and seemingly less enlightened public utility need, all recent and in England, are traced out from initiation to varying result: ironstone mining in North Oxfordshire, a big power station in Nottingham, a new reservoir in wild Upper Teesdale, bringing ashore Shell's share of North Sea gas, and the erection of a large gas-holder in a pleasant Buckinghamshire town. This last is a brilliant piece of quiet yet subtly selective reporting analysis; 50 pages which manage to read like Simenon, with a touch of P.G. Wodehouse. All five cases make clear the actual nature of aesthetic and economic valued disagreements inside one small (and supposedly civilized) country. The problems remain profound and largely unsolved by any agreed set of principles derived either from research, or pure theory, or any consensus of civilized thinking. That is one of the great conservation dilemmas of the present time. These two books illuminate that dilemma, in different lights.

Sikes, Sylvia K. (1971). *The Natural History of the African Elephant*. London, Weidenfeld and Nicolson; 398 pp., 8 colour, 115 black and white plates. £10.00.

Carrington, Richard. *The Mediterranean*. London, Weidenfeld and Nicolson; 288 pp., many illustrations (including colour). £3.75.

Dr. Sikes' book, which is largely centred on taxonomy and physiology, has a sensible final section on hunting and conserving the elephant (pp. 302–330). It is one of the many expert yet readable volumes in *The World Naturalist* series long edited by the late Richard Carrington — and, presumably, alas, the last.

The Mediterranean, from the same publishing stable, was completed just before Carrington's premature death, aged 50, in September 1971. It, too, thoughtfully devotes the closing pages of his last work to the future of that beleaguered, much polluted, increasingly over-humanized sea (pp. 267–277) after a text which gives the whole range of fauna and flora, ethnology and antiquity, geography and art history, in the manner now familiar to the very many readers of his earlier and definitive *A Guide to Earth History* (1950), his big coffee-table book on *Great National Parks of the World* (1967; prepared at Morges), his own *Elephants* (1968) and many others. Carrington was without benefit of a formal education in science, yet came to edit and even to advise many Fellows of the Royal Society in Britain, top American zoologists and palaeontologists, and so on. His death will be sadly felt in all these circles, not least by your reviewer, a friend and colleague of many years.

Carrington's book is good value for money, but Sikes' seems highly priced at a tenner, even in these days of fading sterling. The elephant bibliography must have contributed to costs since it runs to an impressive 52 pages (pp. 335–388), including the Bible (Job, 40: 15–24). This is a misleading, and indeed an annoying section, since the author has repeated every reference in full for every one of her thirteen chapters sequentially; so, the same title may re-occur frequently (e.g. nearly 60 by Dr. Sikes herself, cited in every chapter except No. 10; or several, separate full references to the aforesaid *Elephants* by R. Carrington).

Struiever, Stuart (1971). *Prehistoric Agriculture*. Garden City, New York: American Museum of Natural History; 734 pp., US \$9.95.

Thirty-three contributions, reprinted from scientific journals and books, headed by England's late Professor Gordon Childe on "The Neolithic Revolution" (1951); otherwise emphatically American, sometimes rather dull. The editor is described as a professor at Northwestern University who has "published or delivered nearly 40 papers on his discoveries" in Illinois archaeology. For the rest, contributors are not even identified by discipline, credentials or university. In the absence of illustrations, a few pages of their portraits might have added a lighter touch to this heavy load of learning, which is of considerable marginal importance to the conservationist.

Here we find, fully documented, the origins both of the thinking and of the actions which led humanity away from roaming predation-consumption to the start of the green de-revolution, reshaping the earth's richer ecosystems to suit his own growing needs. A thorough understanding of these processes cannot but help us to recognize, localize and clarify modern problems which derive directly from that part of man which began to re-orientate incentives in the Palaeolithic and is still semi-manipulating the pre-settled consequences toward the so-called twenty-first century — if he makes it to there?

There is an immense multilingual bibliography (pp. 649–709) and a moderate index (pp. 711–733).

Bakker, Elna S. (1971). *An Island Called California*. London and Los Angeles, University of California Press, 358 pp., 20 plates, 24 text figures, 3 maps. £4.75; \$10.00 (US).

Mrs Bakker, naturalist and lecturer, takes us on an information-crammed if somewhat pedestrian transect of the State of California. This is not a journey anyone would care to make in just that way; nor, in a sense, could they do it if they tried. For she packs the text with streams of birds, plants, mammals, crowded in long sentences to fill the eco-literary niches. Fair enough, as the pleasantly made volume is subtitled "an ecological introduction to its Natural Community". As a guide for the layman, and one signpost into the jungle of western American conservation, it has its considerable uses, if one can hurdle sentences with sentiments like this: "Most of the small pebbles scattered on a sandy beach testify to the grinding action of the waves." (p. 11).

Zeehandelaar, Frederik J. (1971). *Zeebongo: the wacky wild animal business*. Englewood Cliffs, New Jersey, Prentice-Hall; 176 pp., many photographic plates (unnumbered). \$5.95 (US).

The title echoes the cable address of the well-known and vigorous Dutch-American dealer who here tells (to Paul Sarnoff), in racy terms, his tale of a chequered career. The highly personalized text is full of insights, some probably unintentional, on the wild way this business is conducted. In some lands it must be almost the last, virtually uncontrolled, exercise of international capitalism.

This nicely made book is therefore a contribution to the otherwise astonishingly meagre literature of what remains largely a secret, unseen yet massive world trade, in which about as many animal resources are wasted as are "realized" at the consumer end.

The whole subject deserves independent research attention, from this point of view. In South Asia and South America it is becoming urgent. Meanwhile *Zeebongo* gives lots of first clues, of which almost the most terrifying pops out in the chapter recounting, wackily enough, "A life in the day of Z" (sic):

"In order for me to exist as one of the world's busiest wild animal dealers I must be turned on or tuned in almost 18 hours a day, 7 days a week. It would, of course, help matters if the people whom I dealt with knew more about the animal specimens we buy and sell. Strangely enough, about 90% of the people involved in one stage or another of the wild animal business know very little about animals." (p. 107)

It is time conservation, laboratory, zoo and other concerned interests tuned in on this expandingly lethal ignorance.

Mech, David L. (1970). *The Wolf: the ecology and behavior of an endangered species*. New York, American Museum of Natural History; 384 pp., 53 figures (mostly photographs in the text). \$9.95 (US).

Jungius, Hartmut (1970). *The Biology and Behaviour of the Reed Buck (*Redunca arundinum*)*. Hamburg and Berlin, Verlag Paul Parey; 106 pp., 32 figures (mostly line drawings). DM 34.00.

Two specialist studies, the first a very comprehensive monograph, with a sensible foreword by Professor Ian McTaggart Cowan; the second limited primarily to a field study for one year (1967–8) in the Kruger National Park, as a paperback in the useful German series, *Mammalia Depicta* (in English).

Wherever modern man has populated new regions in the northern hemisphere, one of his first actions has been to try and wipe out the wolf. As Dr. Mech (of Minneapolis) sees it, in an admirably balanced final chapter on the future of the wolf (pp. 334–348), "Its future does not look bright", though "there is still time to rescue the species from its plight." He shows the wolf's crucial role in controlling deer and other game, to the extent that areas where wolves are now exterminated often give a lower annual hunter harvest per area unit (p. 337). The book is well indexed and referenced, while the photographs, mostly half-page in the text, are well-selected, usually well-captioned and of exceptional quality.

The reed buck lives largely on hydrophytic grasses and riverine weeds, is therefore one of the least demanding grazers and barely competes with other African herbivores. Its water requirements are demanding, however, and it rarely moves away from watering holes. This situation and the threatening position due to habitat destruction are usefully detailed, with fresh evidence, by Dr. Jungius in this neat booklet, though some of the photographic illustrations are poorly reproduced.

Other books received

Ornithological Society of New Zealand (1970). *Annotated checklist of the birds of New Zealand, including the birds of the Ross Dependency*. Prepared by the Checklist Committee. A.H. and A.W. Reed, Wellington. 96 pp.

Marshall, Robert (1970). *Alaska Wilderness. Exploring the Central Brooks Range*. Second edition. University of California Press, London. 173 pp. 30 figs. 6 maps.

Gray, T. R. G. and Williams, S. T. (1971). *Soil micro-organisms*. University Reviews in Botany, 2. Oliver and Boyd, Edinburgh. 240 pp. 579 references.

Riviere, William A. (1971). *Backcountry camping*. Doubleday & Company, Garden City, N.Y. 320 pp.
A practical guide to back-packing and back-woods camping in the USA. Recommended equipment and techniques for enjoying wilderness areas. Illustrated.

Erz, Wolfgang (1970). *Nature Conservation and Landscape Management in the Federal Republic of Germany* — Dates, Facts and Figures. Published by the Association of German Commissioners for Nature Conservation and Landscape Management, 53 Bonn-Bad Godesberg, Heerstrasse 110, 24 pp., available in German, French and English versions.

Won, Pyong-Oh and Gore, M. E. J. (1969). *Annotated checklist of the birds of Korea*. Published by the Forest Research Institute, Seoul, Korea, April 1969. 178 pp.

Stracey, P. D. (1967). *Reade, elephant hunter*. Robert Hale, London. 173 pp. 17 pls.

Molinier, Roger, et Vignes, Pierre (1971). *Ecologie et Biocénétique*. Les êtres vivants, leurs milieux, leurs communautés. L'environnement. Delachaux et Niestlé, Neuchâtel et Paris. 457 pp. 64 figs. 50 pls.