NATURE IN FOCUS

BULLETIN OF THE EUROPEAN INFORMATION CENTRE FOR NATURE CONSERVATION

COUNCIL OF EUROPE

1973 No. 15

european information centre for nature conservation

NATURE IN FOCUS Number 15

'Nature in Focus' is published in English with summaries in German and French with summaries in Italian by the European Information Centre for Nature Conservation of the Council of Europe, 67006 Strasbourg Cedex, France.

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Printed by: Arti Grafiche già Veladini & C. Lugano, Switzerland.

Information concerning "Nature in Focus" or the European Information Centre for Nature Conservation may be obtained on application to the appropriate National Agency (see addresses inside back cover) or to the Centre itself.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Council of Europe.

Cover: Tortoises are becoming more and more scarce each year in some Mediterranean countries, due to the demands of the pet trade. Few statistics are available, but between 1967 and 1971 over 1 million tortoises were imported into the United Kingdom alone. (Source: René E. Honegger, Editor Red Data Book Vol. III - Amphibia/Reptilia, IUCN, Morges, Switzerland).

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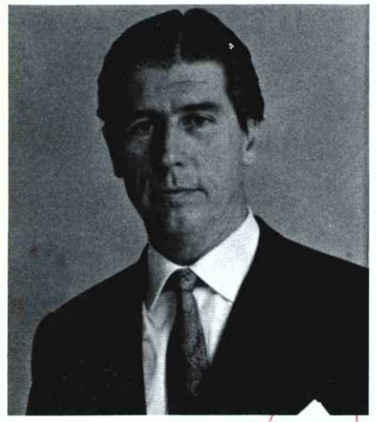

Lujo TONCIC-SORINJ
Secretary General of the Council of Europe and Acting Secretary to the European Ministerial Conference on the Environment

EDITORIAL

The first-ever European Ministerial Conference on the Environment — first mooted at the big Conference inaugurating European Conservation Year in 1970 — took place in Vienna from 28 to 30 March 1973, under the auspices of the Council of Europe and at the invitation of the Austrian Government. Representatives attended, not only from member States of the Council, but also from Finland, Spain, Greece, Liechtenstein, Portugal, Rumania and Yugoslavia, as well as from the main international organisations concerned.

Coming after the United Nations Conference on the Human Environment held at Stockholm, in June 1972, this Conference proved that the countries of Europe aim to contribute significantly to the implementation of the Action Plan adopted by the General Assembly of the United Nations for the preservation and rational planning of the biosphere. While it may indeed be necessary to implement a worldwide action plan involving the co-operation of all continents, it has been proved on several occasions that it is often easier to attack large-scale problems at regional level and so achieve tangible results — for example, thanks to binding intergovernmental agreements within the framework of regional organisations such as the Council of Europe.

From this point of view alone the decisions of this first regional Conference take on considerable importance. Hence it was both significant and very encouraging that the Ministers clearly indicated that they intended to meet at regular intervals, with the twin aims:
– first, of examining achievements in the fields covered by the Conference recommendations and
– secondly, of deciding on any new guidelines required in the field of the protection of the environment.

For this reason, a second Conference is planned for Brussels in 1975, at the invitation of the Belgian Government; the Swiss Government in its turn has invited the Ministers to meet in Switzerland for an eventual third Conference.

Among the positive achievements of the Conference may be mentioned the action programmes which the Ministers wish to undertake jointly in the Council of Europe in the following fields: management of the natural environment, protection of the natural heritage, education, information, training and co-operation in the legal sphere.

Another very promising development was the Ministers' recommendation to the Council of Europe, asking it to study the possibility of drawing up a legal instrument guaranteeing the protection of the rights of the individual in this field. This move shows that the Ministers are very aware of our citizens' concern that the laws should recognise and protect their very legitimate interest with regard to the quality of life.

It is thus quite clear that the Vienna Conference represents a turning-point in the battle for the conservation of the environment. A new level of political awareness of these problems has been reached; a new course has been plotted. The Council of Europe is more determined than ever that in this campaign, which affects the welfare of everyone, it will play its part to the full.

INFORMATION, ENVIRONMENT AND DEMOCRACY
The need to interpret new signals

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Ignorance is bliss

The general outlook in the highly industrialised countries in the 1950s and even in the early 1960s was dominated by an optimistic belief in the blessings that technical development and continued economic growth would bring about.

The explosive advances made during the first half of the twentieth century — especially in physics and chemistry — served as the basis of the unparalleled technological development.

Prospects pointed to a glorious future, but eventually the visions had to give way to more realistic appraisals as it became more and more evident that serious side effects, such as the pollution and contamination of air, land and water had not been included in the "progress" budget.

Gradually we learned that natural resources are not finite, that man is part of and dependent on a frail environment, in short that "everything is related to everything".

There were some who appreciated the dangers at an early stage, and warning voices were raised during the 1950s and early 1960s, but by and large they failed to make themselves heard. Not only did the information fail to reach the general public, but the decision-makers — politicians, administrators and experts — were unaware of the negative effects that modern technology could have on our environment.

The process of communicating the warnings of the few to the many has taken enormous effort and many years. Yet it has proceeded with surprising speed, mainly because of the seriousness of the problems and because private citizens have often — and correctly — perceived environmental dangers as personal threats.

The existing level of public awareness has been reached only at great expense in terms of damage, human suffering and even lost lives.

The public's attention has been directed to one environmental catastrophe after another. The Hiroshima bomb destroyed not only a city, but deformed the then unborn children of the future. The thalidomide children exposed the dangers of an uncritical attitude towards drugs and medicines. The mercury, cadmium and PCB catastrophes in Japan dramatically demonstrated that man is part of the food chain and suffers the effects of its contamination.

The examples are legion.

The crucial question is, how can society be provided with the quality and quantity of information that will allow an informed public to evaluate recent trends and developments and to exercise their democratic rights in expressing their views *before* potential catastrophes become realities?

The process of communication

Let us first take a look at how the communications process works. With few exceptions, everyone concerned is given a strictly-defined, conventional role to play: mass media, scientists, politicians and the public.

Scientists have traditionally communicated news of their findings via participation in conferences and publication in scientific journals. There has seemed to be no need or demand to convey the news to a wider audience, as the general public has seemed uninterested in research findings. One of the results of this is the often very great time lag between a basic research discovery and its practical application or an appreciation of its wider implications.

Only a few have made the effort to popularise science, and they sometimes have risked their careers by doing so, since it has not been quite "comme il faut" in the scientific world to appear too frequently in the mass media. Moreover, the popularised science that does reach the general public often has little relevance to existing societal realities, but is intended to "entertain" and "awe". Certain small-circulation magazines have done a creditable job of presenting science in a relevant and interesting manner, but they reach only a relatively small portion of the public.

In the present system, the message is passed from the experts to decision-makers (i.e. administrators and politicians and certain categories of experts) and journalists.

The prevailing attitude among scientists has been that they provide the data and politicians decide how to use it. But politicians often do not have the specialised educational background necessary to understand the far-reaching consequences of research results. Neither have journalists. They are in the hands of the scientist-expert. Who, according to an old tradition — which is now under attack from many quarters — must remain "objective".

With science and technology making an increased impact on society and influencing its present and future course, one can ask how well the public has been equipped — by means of the educational process and the public information system — to understand what is happening to them and their world.

The passivity of the public, even a well-informed public, is often taken for granted. But there are few channels open to ordinary citizens who wish to exercise their democratic rights to influence decisions. They can wait to cast their votes at election time or they can take the time and trouble to join citizens' groups. But generally they must hope that politicians are sensitive and receptive enough to discern the public will when decisions have to be made.

The english-french "Concorde"

Even if the degree of awareness differs from country to country, the world was able to agree on a number of important measures at the United Nations Conference on the Human Environment held in Stockholm one year ago — just about ten years after the environment question moved beyond a small circle of concerned experts to become a public issue.

The need for new values

It is now clear beyond doubt that there is a need for new values, new priorities, and that new life-styles must be developed for the western industrialised world. Mere awareness is not enough. Thoughts must coalesce into actions.

The new awareness manifests itself in many ways, e.g. through new laws. The US National Environment Policy Act requires "environmental impact statements", thus forcing full appraisal of eventual effects prior to large-scale assaults on the environment, and making it possible to bring restraint of action until the appraisal has been made.

In Sweden two new important laws are forthcoming. An act being prepared on hazardous products states that even a scientific suspicion of a hazard is sufficient to warrant measures being taken by the authorities. The other new law will give safety inspectors the legal right to stop work at a place of employment if they find the working environment to be of such a character that there is immediate and severe danger to the health and lives of the workers.

Citizens' groups, environment groups, local action groups, etc. offer more evidence of the new values that are permeating industrialised society. Some of the groups have exerted quiet pressure, others have caused political crises.

The world-famous Battle of the Elms that occurred in Stockholm two summers ago is a case in point. A decision by the city council to cut down a stand of over 100-year-old elm trees* to make room for a projected subway station met with strong reaction from local citizens' groups. The mass media took up the battle, and public opinion rallied to the cause. When thousands of people rushed to defend the elms from the teeth of the saws, many of

the politicians involved felt their mandates, given to them by due process of election, were being repudiated by a minority group of activists. However, as the days went by it became clear that the activists were receiving massive support from the citizens of Stockholm. It seems now that the elms are saved for all time, and plans for the subway have been altered.
The Battle of the Elms illustrates the difficulty involved in keeping the public continually informed and in keeping the democratic process working smoothly. As is the rule in Sweden, the projected plan in this case had been announced publicly and put on display for any citizen to see and comment upon... and this had been done years before the plan was to be put into action.

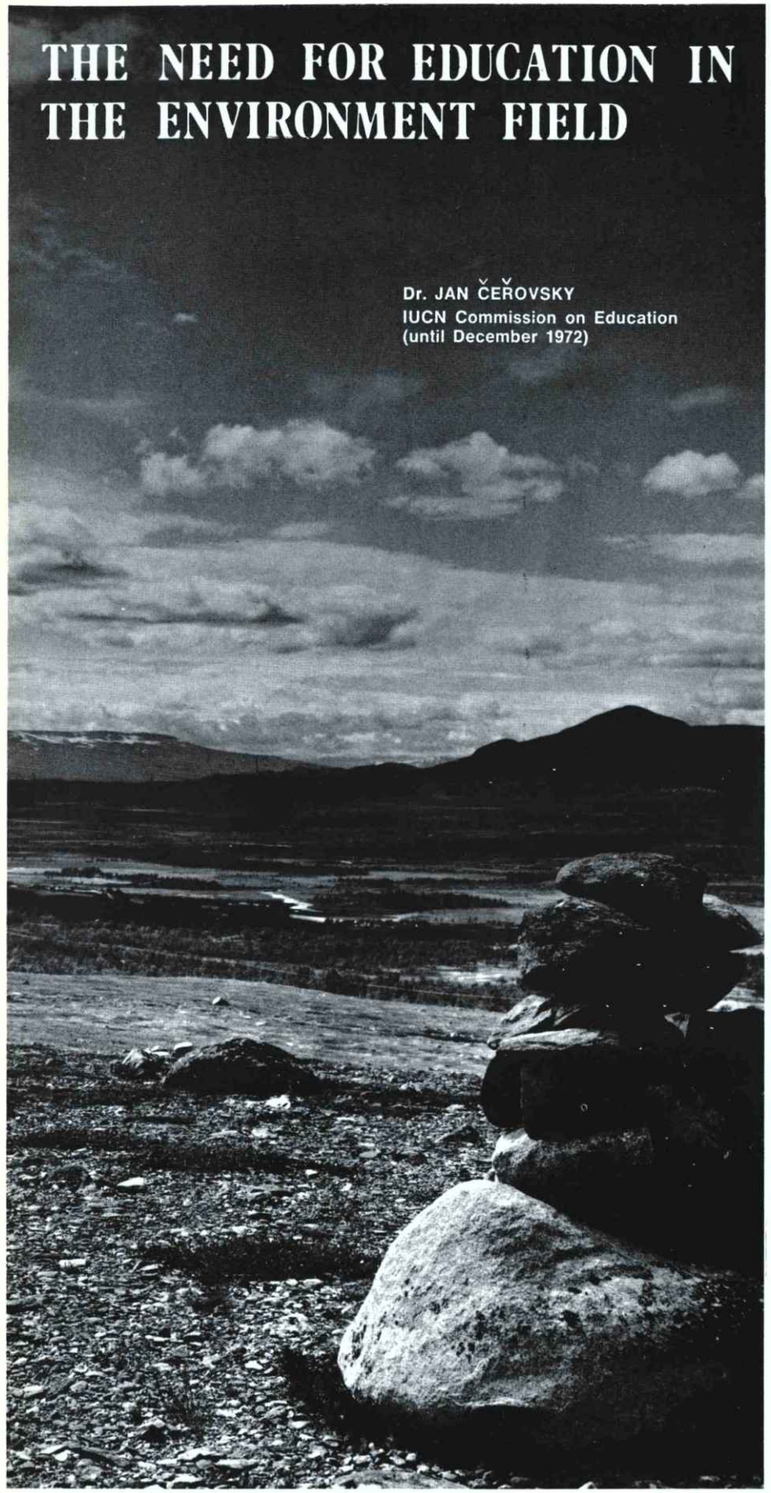
* see page 2

The need to interpret new signals

The elms story also illustrates the need for new channels between the public and the politicians, the need for new mechanisms by which public opinion can make itself felt.
There must be a better and quicker interpretation of new signals.
The new situation calls for greater consciousness and insight, for new forms of information, and for open dialogue between experts, politicians and the public.
If these requirements are to be met, the traditional, strictly-defined roles discussed earlier must be abandoned by all concerned with the information process.
The experts - scientists - technologists must be trained to consider the social implications of their work. They must be ready to explain, either by actively participating in community and political life or by actively interpreting their findings in different mass media for different publics.
Planners, exploiters ad manufacturers must be prepared to release information about negative or harmful effects of aspects of their projects or products.
Journalists, as we see them, must have a much better educational background. This would enable them to follow important trends and developments, to detect environmental dangers or threats, and to inform the public about these matters in time. Amazingly few people in the mass media have scientific or technical backgrounds, although the industrialised society is being shaped by developments in these areas.
Politicians and administrators must take into consideration the environmental consequences of their decisions, and their training should prepare them for this. Reliable, fast and efficient means should be found by which decision-makers can be informed about changes in citizen opinion.
As the ultimate responsibility rests with the populace, there is good cause to provide the average citizen with the kind of education in environmental and scientific matters that will enable him or her to understand and take an active part in the shaping of society.
The required communications process will demand dedication and hard work on the part of those engaged in supplying and interpreting information. Relevant projects must be followed from basic research to widespread application (even though this may be a question of many years), and they must be reported upon in a way that is easily understood by the general public. This is essential. Past years are full of examples of large-scale projects that, before their consequences were fully realised, became too large t. stop for reasons of prestige and ecc .omics.
The development of supersonic jetliners is an example of such a project. When the English-French Concorde was given the go-ahead in the beginning of the 1960s, such a project seemed a natural evolutionary step in aviation history.
Today the picture is quite different. The time saved by long-distance SST flights, an important motive for the developers, is weighed against the serious environmental risks associated with commercial SST flights in the stratosphere. The atmospheric chemist Paul Crutzen stated in an article in AMBIO that present knowledge of the chemical effects of SST flights in the stratosphere is insufficient, and that the project should be set aside until the necessary information has been obtained (AMBIO I, 2, 1972). In addition, the enormous and growing costs have raised the question of whether the supersonic jetliner is even economically feasible. In 1963 it was estimated the Concorde project would cost 180 million pounds and by 1972 the estimates had risen to 1,000 million pounds. An estimated 60,000 jobs in France and England are today dependent on the Concorde project.
The central question is, would the people and politicians of France and England have been in favour of the Concorde if they had been aware from the start of the environmental consequences and the huge costs involved?
Questions of this sort must be at the very heart of future information work. And this work will be instrumental in expanding environmental awareness, in creating the new life style that might enable us to turn the planet Earth over to future generations with more than a modicum of hope.

THE NEED FOR EDUCATION IN THE ENVIRONMENT FIELD

Dr. JAN ČEROVSKY
IUCN Commission on Education
(until December 1972)



Environmental conservation education: why?

In spite of big North American achievements in the field of conservation, the nature conservation movement's continuous efforts originated in Europe. The Germans, whose great countryman Alexander von Humboldt almost at the same moment as the famous Polish poet Adam Mickiewicz invented the term "nature monument" to create the leading slogan for the early days of conservation, pleaded for protection of vanishing natural features of the countryside since the beginning of the last century. Even before the Yellowstone National Park in the USA had been preserved "for the benefit and enjoyment of people", two virgin forests in South Bohemia (in contemporary Czechoslovakia) were put under strict protection (in 1838 and in 1858), and the French people declared the nature reserve of the Forest of Fontainebleau (in 1853).
However, "modern" environmental conservation, aiming at the maintenance of sound ecological balance throughout and even land reclamation, developed much later, around the middle of this century.
Nowadays, well-staffed governmental organisations, large institutes with prominent scientists, and voluntary organisations with thousands and millions of members all over Europe are fighting the battle for a productive, healthy and pleasant human environment, in which the life-supporting nature plays a role of vital importance.
But in whatever way far-sighted and capable specialists may pursue the solution of environmental problems, this battle can never be won unless proper, active and constructive environmental attitudes become an integral ingredient in both thinking and pragmatical acting among a large majority of the human population. To achieve this represents the basic objective of environmental (conservation) education, which — according to a widely accepted IUCN definition —
"... is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality."
There is very little natural virgin landscape left in Europe except in the

most northerly part, and even the sea shores and mountains are now under a heavy recreational pressure. Industrial conglomerations and human settlements, in which the inhabitants are losing any contact with the real nature, are spreading all over the continent. Some people are still trying to maintain this contact through seeking enjoyment in visiting natural and semi-natural areas in their leisure time, but they often neglect the care necessary for their immediate surroundings. Some have already lost almost all interest, and have accepted the denaturalised metropolitan areas of the affluent consumer society as their own environment.

A new partnership between man and nature is needed urgently. Not the purely sentimental, romantic affection of Jean-Jacques Rousseau and his fellows, but a realistic and yet affectionate attitude and approach of a wise manager and at the same time of an understanding friend of the natural environment.

It is obvious that the present technological power of man has no antagonistic counterpart in the natural environment. So man himself, in order to survive, has had to create such a counterpart himself. And to protect himself from the ecologically disastrous effects of technology, wise use and management in line with the principles of environmental conservation must be included in the process of economic development.

For this, man has to be educated. Education aiming "to create an awareness of the responsibility of individuals, as well as of society as a whole, for the conservation of the environment" — "should be an integral part of the complex of measures now being developed for the use and care of natural resources".

One of the best ways of stimulating interest in nature is the nature trail — such as this one in the "Chosta Forest" reserve near Sotchi, the famous Russian Black Sea spa.

Environmental conservation education: how?

The above quotations were taken from the conclusions of the first European Working Conference on Environmental Conservation Education, which met at Rüschlikon, near Zürich, Switzerland, in December 1971 under the Chairmanship of Dr. L. K. Shaposhnikov of Moscow, USSR, President of the IUCN Commission on Education. The International Union for Conservation of Nature and Natural Resources (IUCN) convened the gathering to clarify general concepts, to survey the present situation, and to point out the needs. Its specific recommendations for projects and programmes in environmental education related to primary and secondary levels, teacher training, higher education, and out-of-school education, provided guidelines for implementation by various education and conservation authorities and institutions. (The Final Report of the Conference can be obtained from IUCN, 1110 Morges, Switzerland).

The importance of environmental education has been recognised all over the world, and the need for it pointed out also by the 1972 United Nations Conference on the Human Environment at Stockholm. But recognition is still a long way from implementation. The pressing environmental problems require an immediate narrowing of this gap.

Following the recommendations of the 1968 UNESCO Biosphere Conference, we promote "an integrated as well as continuous and sustained programme of education and information about the environment". I believe that every comprehensive programme of environmental education should endeavour:

I To awaken interest;
II To provide information;
III To teach skills;
IV To give practice in decision-making;
V To formulate a code of behaviour;
VI To involve in action.

Comprehensive environmental education programmes must be based on scientific knowledge and must also be pursued in and between many disciplines. In particular they must include both ecological and sociological aspects.

Educational programmes in this field have to teach not only knowledge and understanding of the environment, but also what to do actively for its protection and improvement, pointing out both the ecological basis and the broad social implications of this issue. "Attitude" is the key word in defining the supreme objectives of environmental education.

The IUCN International Course on Teacher Training in Environmental Conservation and Education, as a follow-up to the Rüschlikon Conference, was held at the Drapers' Field Centre, Betws-y-coed, Wales, UK, in August 1972, and developed its work along three main lines:

I Teaching FROM the environment;
II Teaching ABOUT the environment;
III Teaching FOR the environment.

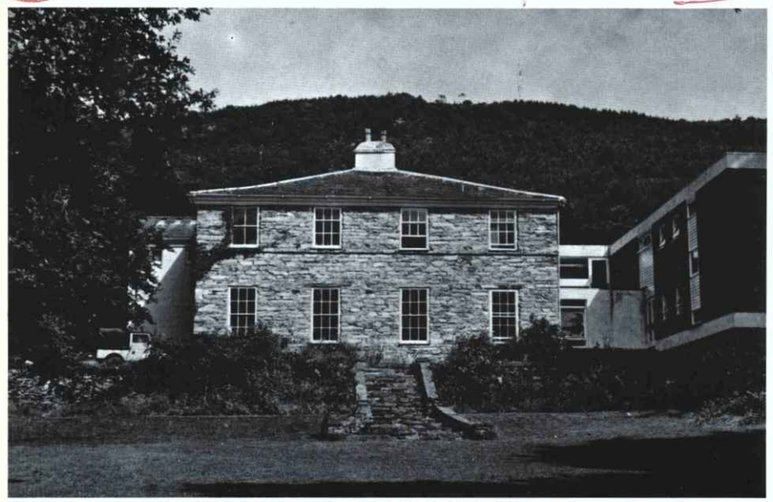
These, in my mind, are three basic approaches, three stages of environmental education.

The first one is a process of basic acquaintance, merely open-ended and without any preconceived syllabus. The second one is a more detailed, topic- and area- oriented study of the environment, its components, interrelations and functions. The third one is a challenge, what to do constructively for our environment, its — and through this also our — benefit and welfare.

Any complete programme of environmental education must include all three approaches to be really a complete one. An agreement between conservationists and educationalists must be achieved to this extent: the first often put too much emphasis on the third approach only and the latter are sometimes inclined to use the environment just as an educational tool.

Environmental education programmes have to be implemented at all levels and in all areas where people are trained and educated. The Rüschlikon Conference suggested the following activities:

" – appropriate education and instruction in school courses at all levels;
– education and training in environmental matters in institutes of higher education of all kinds;
– out-of-school involvement of young people and adults in practical environmental conservation activities;
– in-service education and training of teachers and others concerned with general and out-of-school education such as youth leaders;
– the training of professional people concerned with environmental affairs, such as statesmen and administrators, as well as planners, architects, engineers and technologists;
– the education of the public at large by the use of mass information media and other methods."

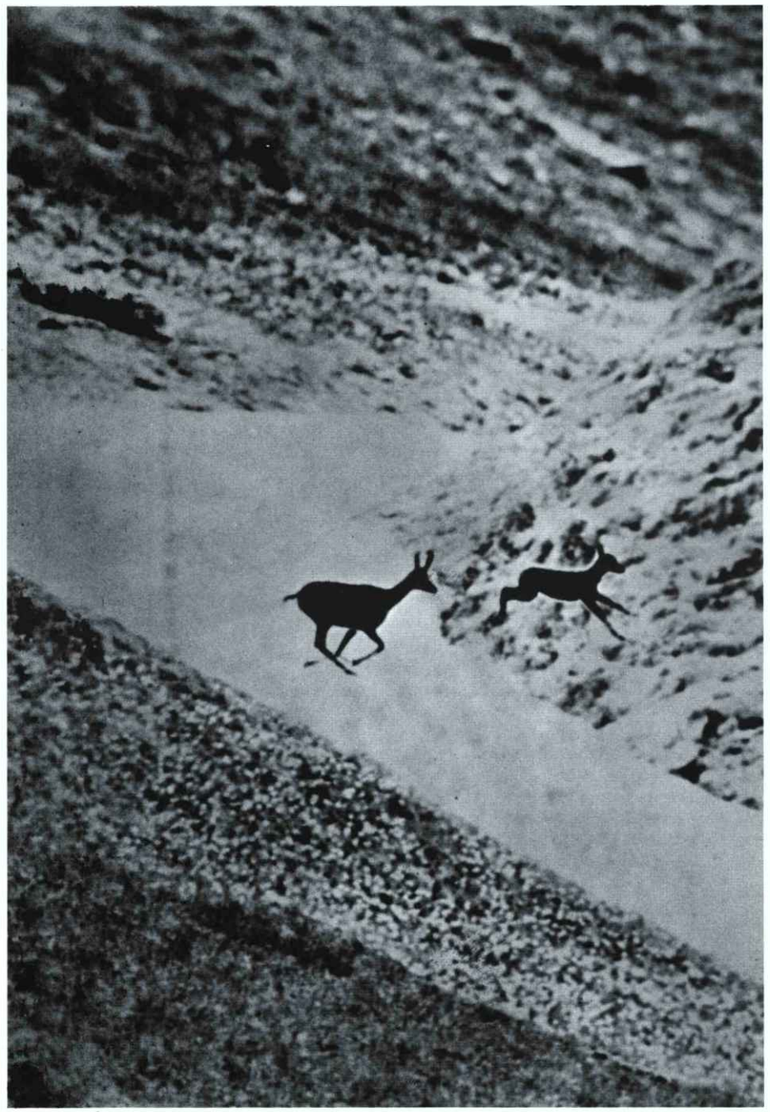


Centres such as the British "Draper's Field Centre" in Wales play an important and unique role in providing environmental education for everyone.

Environmental education also entails a global concept: all citizens must be taught that there is one unique, entire and universal biosphere which is a common interest of all mankind. However, environmental education must first of all be concerned with local situations, local environments and local problems. I believe that every environmentally-conscious citizen must have his "home environment", in which he feels rooted, which he loves, explores, understands, and improves, and which he is ready to to defend against every danger and deterioration. A sound global awareness can grow only out of such a background. Man made a revolution in his environment, now he must make a revolution in his attitude, and become environmentally-conscious if he really wants to survive in a many-sided satisfactory and satisfying environment.

THE PROBLEMS OF NATURE CONSERVATION AND THE MANAGEMEMENT OF THE NATURAL ENVIRONMENT IN SPAIN

Fernando Barrientos Fernandez,
Doctor Ingeniero de Montes, Madrid



Chamois with young.

If nature and the natural environment in Spain were to be defined in terms of its one most characteristic feature, we should undoubtedly stress its great variety.

Its orography and climate and the varied origins of its geological substratum are reflected in its highly contrasting geography. It is the second highest country in Europe after Switzerland, which reveals the mountainous nature of much of its territory, although admittedly the high altitude and considerable area of elevated plateau land *(meseta)* also contribute to this. In Spain we find the broad expanses and distant horizons of serene Castille, the rugged topography of the Cantabrian mountains or the Pyrenees, the smooth and gentle coastline of Galicia and the wild profile of the Costa Brava. Regions range from those with abundant and well-distributed rainfall (2,000 mm per year in certain areas of the North-west and South-west) to others in the South-east with a sub-desert climate (less than 100 mm), where a year's drought is no unusual occurrence or from the perpetual snows of the Pyrenees, Sierra Nevada, or El Teide, to the sub-tropical regions in Malaga or the Orotava valley.

Located partly in the regions of northern forests — humid Spain — and partly in the Mediterranean area — arid and semi-arid Spain — the peninsula boasts both types of flora and a remarkable number of endemic species.

At the crossroads between Europe and Africa it also has an outstanding wealth of fauna, consisting not only of its permanent native species, but also of migratory birds which spend specific periods of time there.

At one time its flora consisted almost entirely of dense forests. Apart from the presence of conifers in regions of high mountains or poor soil, differences in climate were reflected in deciduous forests (beech, oak and chestnut) in humid Spain and the presence of holm oaks, corks, turkey oaks and muricated oaks in arid and semi-arid Spain.

Scrub was confined to those regions which, due to their altitude, the salinity of their soil, or other ecological conditions were not favourable to the growth of forests, i.e. high mountain regions, certain coastal regions and the steppe-like regions of the interior. The fauna is perhaps best exemplified by the many species and large numbers of game which were proverbial in the past, as can still be seen from the Altamira cave drawings and the hunting paintings of more recent

Becoming rarer everywhere, birds of prey such as the Egyptian vulture (Neophron percnopterus), *find refuge in national parks and reserves.*

times which are exhibited in the Prado museum.

Against this varied background of Spanish nature we witness the gradual arrival of peoples of very different origins. The blending of heterogeneous groups with such a rich range of natural features was logically bound to be reflected in the exciting spectrum of Spain's national folklore.

Regrettably, over the centuries, man has wrought considerable and far-reaching damage on the Spanish environment. His activities, coupled with the effects of the destructive forces he controls, have to varying extents harmed the forests which used cover the whole country. In many areas trees were felled for farming. In others, it was merely man's destructive instinct which destroyed them, opening the way to other forms of plant life whose degeneration went *pari passu* with the pressure upon them — forests with little species diversity, more undergrowth, grassland or sometimes all that remained was the bare rock of the original substratum.

The deterioration of the flora was also detrimental to the fauna. Large game decreased in numbers or disappeared altogether in many mountain regions and other species which had formerly been abundant became rare or were threatened with extinction, e.g. the lammergeyer *(Gypaetus barbatus)*, the golden eagle *(Aquila chrysaetos)*, the lynx *(Lynx lynx)* and the Graelsia Isabella, etc. The list of factors detrimental to the environment over past years is endless, but the following seem to stand out particularly:

- its characteristic and delicate ecological balance, which is so easily upset but so difficult to reverse;
- over-use of pasture dating back to distant times and traditionally justified in the interests of national production, regardless of the harmful effects on mountain regions;
- systematic use of fire in many areas in the face of enemy advances;
- ship building for the Navy and for the great task of conquering and colonising America;
- the disentailing legislation of the nineteenth century leading to the enforced sale of large areas of forest belonging to the State, other public bodies and the Church, and the consequent over-exploitation and destruction of much of it;
- the nineteenth century growth of the rural population. which nearly doubled following the end of emigration after the independence of Latin American countries.

The most crucial phase in the gradual deterioration of the environment was reached in the second half of the nineteenth century. The wise measures taken in the age of Alfonso X (the "Learned") to limit the destruction of forests had been to little avail. It became clear that something had to be done, and this resulted in the creation of a special Mountain Service (Servicio Especial de Montes) which, some 120 years ago, began the difficult task of saving the remaining forests, replenishing them, rectifying vast scale problems, in short, reconciling the rational use of resources with proper conservation.

Nature in its present form is thus the consequence of a long past of destruction, a century of corrective measures, and finally, a vast but incomplete task of reclamation which has been in progress for the last thirty years. Over this period, 2.6 million hectares have been reafforested and 2 million hectares have been replanted with the highest quality trees. Six national parks covering a total of 85,000 hectares, 36 nature reserves and 8 national game reserves, covering approximately 1 ½ million hectares (in which there has been a spectacular increase in the number of the ten Spanish species of large game and a general recovery of all endemic fauna) have been established. The numbers of fish in rivers, lakes and reservoirs have been regulated by major repopulation campaigns.

This then is a broad outline of the general situation when the recent phenomenon of development was unleashed. It was to have an enormous impact on Nature and the natural environment, and seriously alter the series of factors conditioning them.

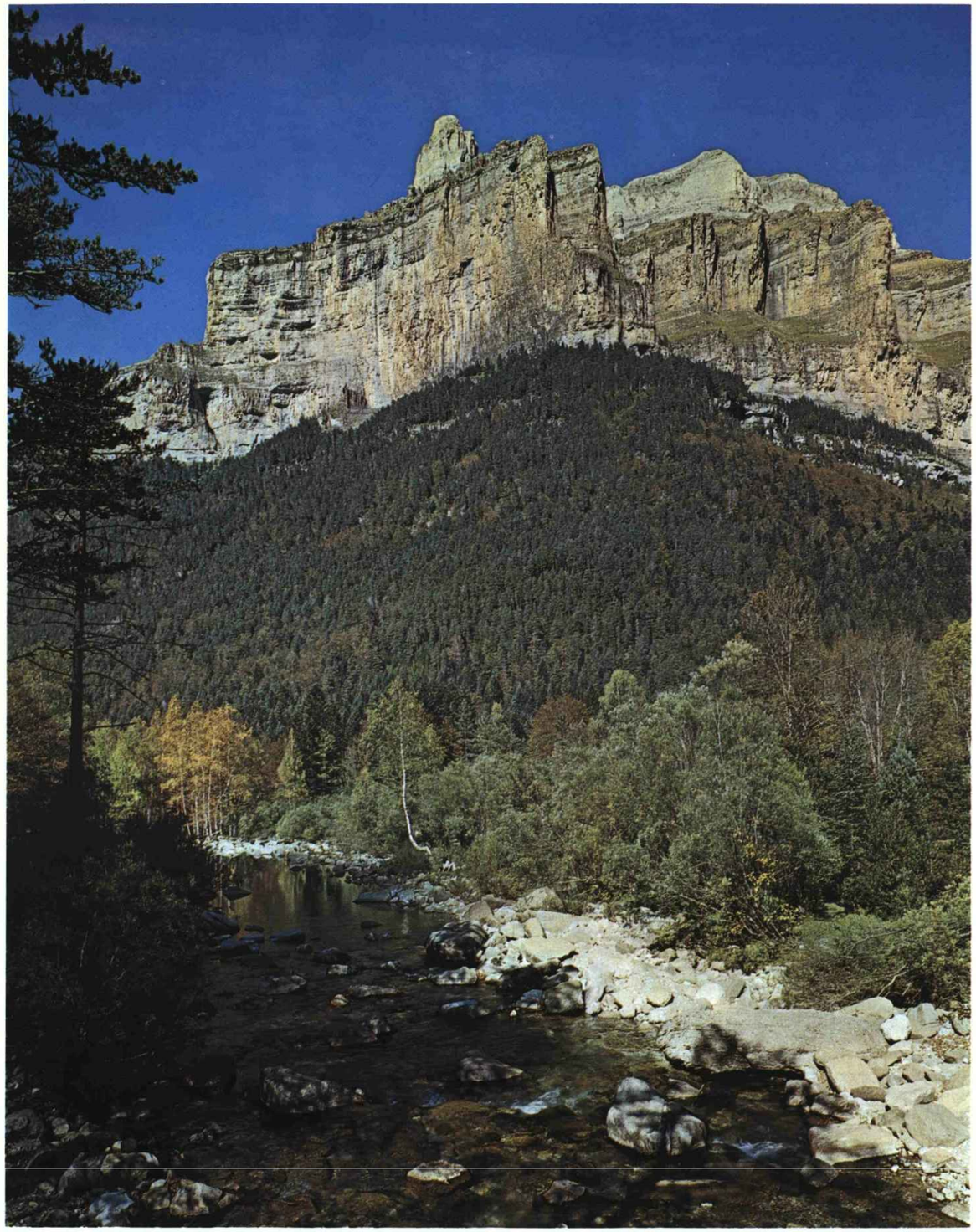
Industrial expansion, increased labour requirements in the service industries and the emigration of Spanish workers to various European countries have brought with them rapid depopulation of rural areas and considerable growth of urban centres. These internal migrations affect outlying agricultural areas where much marginal land is allowed to grow wild.

Conversely, the expansion of urban centres and all that this entails, the increased mobility of the population and the vast growth in the number of cars has resulted in greater urban space requirements. This pressure initially leads to a demand for new land for the growth of the centres. This in turn affects other neighbouring areas where space is sought for further expansion and for waste disposal. More land is also required for holiday housing development and ultimately it results in a huge increase in the number of visitors to natural sites seeking those benefits which the town cannot offer. The combined effects which are directly imputable to development highlight the need for planning open spaces and changing socio-economic conditions in rural areas to improve the standard of living. This requires new planning objectives to replace today the full employment of the past with maximum productivity per capita and consequent mechanisation. Extensive farming must become intensive, scattered villages must give way to centres with adequate public utility services, and disregard for nature must be countered by a new assessment of its assets and uses, revealing its great potential for a society which is rapidly afflicted by the ills of city life.

However, it should be stressed that initially man's invasion of natural sites is an extremely serious threat to the Spanish environment. The danger of fire in mountain areas, given the extreme conditions of a Mediterranean summer, are reflected in the annual destruction by fire of some thirty thousand hectares in recent times. The accumulation of waste matter, human presence, and deterioration of the landscape, are initial problems which will only be resolved by education on the environment at all levels, to promote knowledge and appreciation of nature. It would not be over-dramatic to say that the coming years will be extremely critical, due to the impacts of urban motorised man, who has no responsible conservationist regard for nature. This country, in spite of past damage to its natural resources, is still a paradise for botanists, entomologists, hunting and fishing enthusiasts, campers, climbers and skiers. The pressure of the towns could, in the near future, put nature at an even greater risk than it was from the destructive forces of the past.

Industrial expansion is another obvious source of damage to the natural environment. This is particularly so in places where the type of industry or large concentrations of factories are detrimental to the natural surroundings or cause severe air or water pollution. Although industrial development has not reached the level of some other countries, there are already bad enough cases located in certain areas, e.g. Bilbao, Barcelona and Madrid. Similarly, the number of polluted rivers is increasing, and harming the quality of the water, its fauna and the plant life along the banks.

Urban and industrial developments, which are serious sources of pollution, accentuate certain unfavourable aspects of Spain's environment. This is



The Ordesa National Park in the Spanish Pyrenees.

true of water supplies, given the irregular or inadequate levels of much of the river system, and also of available areas of forest to purify the atmosphere, owing to the extensive deforestation of the past. Consequently, the continual future advance of towns and industries implicit in the concept of development will not be properly balanced by abundant water and forest, as is the case in most industrialised countries.

Along with the effects already mentioned, there is a growing demand for raw materials. The present increase in the volume of wood in Spanish mountain regions is three times as great as the amount felled (this reveals a conservationist policy); but industry's demands are bound to gradually increase, although awareness of the importance of natural regions will no doubt counter this and work in the opposite direction. A judicious compromise between these aims should achieve a proper balance and reconcile production and protection requirements.

The present position with regard to fauna also seems positive since rapid restocking of both larger and smaller game is occuring with the extensive system of reserves, which also provides protection for other species and, generally speaking, all the ecological systems within them. As far as freshwater fishing is concerned, apart from a few polluted rivers, it has generally been possible to maintain a balance by replacing the fish caught by means of natural reproduction, combined with artificial restocking, careful planning and control of their numbers.

However, the spectacular growth in the number of hunting and fishing enthusiasts, coupled with economic growth, will mean ever-increasing pressure, although it is hoped to provide the appropriate organisation and methods to guarantee the maximum use of available resources compatible with their continued existence.

The use of chemical products in agriculture — fertilisers and biocides — has in general not yet assumed worrying proportions as a threat to the environment. However, serious cases have occured, e.g. in the Ebro delta, where aerial fumigation to control a disease in the rice-fields wrought considerable destruction among birds and fish. The alarm caused will no doubt serve to prevent repetition of similar occurrences.

Lastly, we must mention the development of the tourist trade which is another major factor which is having marked repercussions on the natural environment in Spain. There is no doubt that the Mediterranean is increasingly becoming Europe's leisure centre. On top of this area's difficult ecological conditions, there is now the serious impact of large concentrations of people during nature's most critical period (summer). The discovery of the many attractions concealed inland will mean that in the future new areas will be similarly affected by tourism requirements and the native population's demands for new open spaces. This meeting place for peoples from all lands in areas of outstanding — albeit delicately balanced — natural beauty can provide an excellent opportunity for developing a European spirit of nature conservation in our continent.

A rare encounter on both sides of the Pyrenees.

NATURE PROTECTION IN PORTUGAL

Prof. C. M. L. BAETA NEVES
President of the League for Nature Protection
and J. F. FLORES BUGALHO
Forestry and Water Officer
Secretary of the League for Nature Protection (Portugal)

Since the 13th century Portuguese legislation has constantly reflected an interest in the solution of problems which, nowadays, would come under the heading of nature protection. There are numerous documents relating to forest protection, or to animal species hunted to excess as game or as so-called "pests". Especially noteworthy are those published at the end of the 19th century, an era marked by a significant development in the study of the natural sciences which created a climate conducive to the birth of new ideas — ideas that had started to spring up throughout the rest of Europe as well. Measures for the control of soil erosion and for forest protection date from this period.

The subsequent period, spanning part of the first half of the 20th century, saw little effort made to apply practical measures to protect the fauna and flora so seriously threatened by practices traditional to the Mediterranean, such as the burning of pasture to encourage new growth, and excessive hunting.

In 1939 Francisco Flores, a forestry officer, in one of the first books in Portuguese to be devoted exclusively to nature protection, suggested remedial measures and made proposals for the creation of nature reserves and parks; the greater part of his book is

A typical representative of Iberian fauna, the Mongoose (Herpestes ichneumon widdringtonii).

still highly topical. A reforestation scheme was put forward at the same time, together with various plans for botanical reserves.
However, the public, as yet unaware of their importance, were not ready to accept the new ideas, and, as there seemed to be no immediate economic gain to be derived from nature protection, nothing, or virtually nothing was done.
In 1948 a poet, Sebastião da Gama, who lived at Arrábida, raised a cry of alarm on witnessing the destruction of mountain vegetation. This led a number of persons, who had been fighting lone battles in defence of conservation principles, to form a League for the Protection of Nature.
This League published several works on flora and fauna, and others urging the establishment of reserves in the Gerês, at Arrábida, Sagres and Monchique.
However, the members of the League, mainly biologists, forestry specialists and agronomists, were too few to sway public opinion overnight, and their activities, hampered by the lack of resources, were slow to take effect. With the publication of the new Act on hunting in 1967, protection was guaranteed for 164 species of birds and mammals, including the majority of the passerines and 20 birds of prey, the stone marten *(Martes foina),* the pardel lynx *(Lynx pardina),* the wild cat *(Felis silvestris)* and the mongoose *(Herpestes ichneumon winddringtonii),* as well as the red deer *(Cervus elaphus hispanicus)* and roe-deer *(Capreolus capreolus canus)* already under protection since 1939.
In 1968, the Hunting and Fishing Inspectorate of the General Directorate of Forestry set about organising a Department for Nature Protection.
But it was not till 1970, European Conservation Year, that the government really showed that it recognised the importance of the problem. That year saw the creation of the Gerês National Park*, covering an area of some 60,000 hectares in the extreme north-west of the country, for which plans had been laid, though admittedly on a smaller scale, some 34 years earlier. This was followed by the establishment of reserves at Cambarinho *(Rhododendron ponticum* spp. *baeticum),* Arrábida *(Mediterranean forest)* and Pinhal dos Medos (forest of *Pinus pinea* and *Juniperus phoenicea),* on the Salvagens Islands in the Madeira archipelago (nesting of sea birds, especially the *Calonectris diomedea),* in the Caldeira do Faial (lake in the crater of an extinct volcano) and the Pico mountain in the Azores.
The Government also set up a National Committee on the Environment in the Department of Science and Technology, whose activities, especially in pollution control, are beginning to make an impact. The 1962 Act on fishing made it compulsory for industries to submit their plans for approval to the Aquicultural Division of the General Directorate, which has already done valuable work in combating freshwater pollution.
Television, radio and the press are beginning to show an interest in the subject, and this, together with the

Protected by law and special reserves, the Pardel Lynx (Lynx pardina).

influence of books, magazines and foreign films, has aroused the public's attention.
The League for the Protection of Nature has increased its membership threefold in three years, although it has still only slightly over 500 members, which means that its resources remain meagre.
The Ministries of the Economy, the Navy, Public Works and Health have begun to plan certain of their activities to comply with nature conservation standards, and a number of private associations are following suit.
The Department for Nature Protection is studying the possibility of creating new nature reserves at: Paul de Boquilobo (marshland suitable for hibernating wildfowl, and a heronry during the nesting season); Pancas, Delta de Aveiro and the Faro marshes (classified under the "MAR Project"); Cabo da Roca, Sao Vincente and Sagres (of botanical interest, and a resting place for migratory birds). A reserve is to be created in the Desertas Islands in the near future and there are plans to create a national park on the island of Madeira in the same archipelago. It is hoped that all the birds of prey will soon be under protection, as well as other species threatened with extinction (including the great bustard *(Otis tarda)* for example).
All this justifies an optimistic view of the future, especially when recent results are compared with those of the past. However, amendments to the law must be strictly observed; the illegal destruction of protected species must cease and damage to nature reserves must not be tolerated. To achieve this, it is essential not only to improve co-ordination of the work of government departments but also to educate the public — a particularly slow and difficult task, as the experience of other countries with similar characteristics has shown.
Only by promoting the teaching of ecology at primary, secondary and university level, and by securing the collaboration of some of the international bodies concerned with nature conservation in training the necessary specialists we need, can we hope to find a solution to our problems.
If the activities of the different departments could be co-ordinated, education and teaching improved, legislation brought up to date and sufficient funds made available, we are convinced that nature conservation in Portugal would attain the standards that circumstances demand.

see opposite

Caught in the unrelenting jaws of a poacher's trap, this tiger can now only wait for death.

Such practices not only involve often stomach-turning procedures but may also mean the exploitation of a species to its near-extinction.

In an effort to control the trade in wild animals and plants, which is now threatening the existence of hundreds of species, 80 nations gathered in Washington recently to agree on the final text of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. But even though the Convention's list of endangered species shows the majority of them, including amphibia, reptiles, fish, birds as well as mammals and certain plants, to be indigenous to countries outside Europe and the United States, that does not absolve the latter of any concern or responsibility, in fact quite the contrary. Here it is encouraging to note that of the 23 nations who immediately signed the Convention at Washington, seven were European.

As an intermediary this Convention may form the basis of a better and more careful management of our increasingly rare natural resources. However, only a complete change of attitude at the receiving end of the scale, together with the offer of better alternatives in living conditions at the other, will help to put an end to poaching and illegal practices and significantly change the present state of affairs.

Instrumental in the birth of this Convention was IUCN which now, with WWF's assistance is campaigning to save the tiger from extinction — the number of tigers in India, their primary stronghold, has decreased from about 40,000 half a century ago to less than 1800 today.

THE TOURIST TRADE:
Stuffed crocodiles for sale

FUR AND LEATHER TRADE:
Confiscated skins

THE PET TRADE:
Bird Market, Calcutta

THE WOLVES OF THE WORLD

DOUGLAS H. PIMLOTT
Chairmain, Wolf Specialist Group
Survival Services Commission, IUCN

For centuries the wolf has been considered as a symbol of evil. But it is only now, after they have been exterminated over a large part of their original range, that their place in the world is beginning to be recognised. Conservationists everywhere are at last joining forces to learn how the forces driving the wolf to extinction can be counteracted. A programme to this end, sponsored by the International Union for the Conservation of Nature and Natural Resources (IUCN) and the World Wildlife Fund (WWF), will begin in Europe this summer. But before I write about the measures to be undertaken, let me first discuss wolves and their places in the world today.

Wolves are elusive, wary animals, occurring in very low numbers wherever found. They do, however, travel great distances in searching for their prey so that they sometimes appear far more numerous than is actually the case.

Over the centuries they have been effective killers of cattle, sheep, goats and reindeer, which, together with their elusive ways and frightening howls have made them objects of fear, hate and persecution throughout the world.

Their bad image has resulted partly from the belief that wolves are dangerous to man. Although a number of books have been written about wolves attacking people in Europe, it is now very difficult to determine how much is fact and how much is fiction. In Canada today, strange stories regularly circulate about people who have been attacked by wolves, but first-hand accounts invariably show much of the original story to be false or over-exaggerated.

The best insight into the behaviour of wolves toward humans comes from scientists who have worked and lived close to them. In his book, "A Naturalist in Alaska", Adolph Murie tells of how he removed three pups from one particular den and was unchallenged by the watchful parents nearby, even when he carried one pup away. My experience in studying wolves in Ontario, and more recently on Baffin Island, have been similar to Dr. Murie's. Even though I have worked and travelled unarmed in wolf country, often living close to them, I have never been threatened in any serious way. Perhaps even more powerful evidence is that, in spite of the fact that Algonquin Park in Ontario, Canada, has one of the highest wolf populations in the world, thousands of children canoe and camp in the wilderness section of the Park each year. There are no reports of any one of them having been attacked or even threatened by wolves.

Clearly, wolves present virtually no threat to humans and there can be no justification for killing them because they are dangerous. Thus conservationists can at least try to establish a positive image for the wolf on the basis of the evidence that exists.

However, it is not strange that men hated wolves for they were often serious competitors of simple agricultural societies. When men began to domesticate animals the wolves killed some of them and at times may have threatened the food supply of a family or of a community.

Thus the fear and hatred of the wolf in past and present agricultural societies is understandable. However, civilisation has progressed a great deal. We are now in a position to see some of the other side of the picture; to learn what kind of an animal the wolf really is; to learn how to protect our interest without exterminating an important animal; to learn how to respect the role that the wolf plays in the natural world.

It is my belief that if man can learn to respect the right of the wolf to continue to live in the world, we will have learned some important things which will contribute to the survival of our own species.

The wolf is certainly one of the most adaptable mammals to environmental conditions that the world has known. When the white man came to North America, the many forms, or subspecies, of *Canis lupus* existed from the northernmost parts of Canada's high arctic islands, over most of the United States and well south into Mexico. In Europe and Asia they showed a similar adaptability. They existed in the British Isles, throughout Europe, the Middle East, over large areas of India, China and of the Asiatic portion of the USSR.

For centuries, in spite of determined efforts to eradicate them, wolves demonstrated a remarkable capability to live close to people. One of the earliest records of extermination comes from the British Isles. There they had yielded to man by the mid-1700s. A very intensive effort, that included burning the forests over considerable areas, was required to bring about the demise of the species. In Western Europe, wolves have also been exterminated in the most densely populated countries but a few wolves still exist in Norway, Sweden, Finland, Italy, Spain, Portugal and in Eastern Europe. However, very little information of a specific nature is available on their present status in these areas. They still occur over large areas of the USSR where they have also been subjected to very intensive control methods since the end of the Second World War. Intensive studies on wolves are now being undertaken by the Central Laboratory for Nature Conservation to determine measures to minimise the damage done by wolves without exterminating the species. A scientist from the USSR recently advised me that 28,000 wolves were killed in 1961 and 17,000 in 1970. He stated that they were endangered in

Considered as highly intelligent, the wolf is a desirable subject for much scientific study and research.

the European but not in the Asian portion of the country.
Canada is the most important stronghold of wolves in the world. They still exist in normal numbers over 90 per cent of the country, an area in excess of 3,000,000 square miles although they have been extirpated in the most southerly parts of the country. The State of Alaska is the principal stronghold of wolves in the United States. They have, however, been exterminated in 44 of the 48 contiguous States and occupy only one per cent of the range which they occupied when the white man came to North America.

A lost voice in the vanishing wilderness? No! Dr. Pimlott has taught Canadians to listen to it and understand it during special wolf-howling excursions.

Public support for the wolf has developed very rapidly in Canada and the United States during the past 20 years. This has resulted in the discontinuation of bounty payments for the killing of wolves throughout Canada and Alaska. It is now also illegal to shoot wolves from aircraft or to chase them with snowmobiles. In the Canadian provinces when it is considered necessary to kill wolves, it is done by government employees in small areas or on a selective basis.
The interest in wolves in North America has been greatly increased by studies in the wild and in zoos. These have revealed that wolf societies and their predator/prey interrelationships are complex and delicately interwoven.
The first study of wolves in the wild was done by Dr. Adolph Murie in St. McKinley National Park in Alaska. From direct observations he learned that the pack is headed by a dominant male and a female. In captivity, at least, the relationships are hierarchical. Fighting within packs is extremely rare since once established, the lines of authority are recognised and persist for long periods.
The pups are cared for by both the male and the female and indeed are tended by other members of the pack when the dominant pair are absent from the den site. Recent studies on Isle Royale National Park in Lake Superior and in Algonquin Park, Ontario, show that populations of wolves are subject to some form of internal control. Even packs with abundant prey available to them, and afforded complete protection, do not increase beyond the level of 10-12 wolves per 100 square miles.
The question of whether or not wolves kill sick or weak animals has been the subject of much argument. It is now evident that selection does occur. It is probably of a non-deliberate nature simply resulting from the fact that some animals are easier to catch than others. At any rate the selection results in the killing of prey which are very young, old or infirm.
Very little research has been done on wolves in Europe. I believe, in fact, that it has been limited to what a few interested people have been able to do as a peripheral activity. Work of this nature has been conducted in Finland, Norway and Sweden and has resulted in some information being published on wolves. *Studies of the Wolf in Finland* by Dr. E. Pulliainen and *The Norwegian Population of Wolf* by Dr. S. Myerherget are the most detailed.
It does not appear that concern for the preservation of the wolf has developed to any appreciable extent in Europe and Asia. There is some evidence of changing attitudes in Scandinavian countries but public opinion may not develop soon enough to prevent the extirpation of wolves in Finland, Norway and Sweden.
As far as Europe and Asia are concerned, an interesting and potentially valuable initiative on wolves has been taken by the Survival Services Commission (SSC) of IUCN, which has established a Wolf Specialist Group. "To preserve wolves as a viable species in holarctic environments of the world in perpetuity for scientific, educational and economic purposes and to improve understanding and appreciation of wolves as important and useful elements of natural ecosystems, so that people gain enjoyment and satisfaction as a result of their presence in wild communities." Ecologists from sixteen countries, including the USSR, have agreed to become members of the Committee for this Group, which will first meet in September of this year in Stockholm during the tenth Congress of the International Union of Game Biologists.
Prior to the meeting I will be visiting most of the countries of Europe where wolves are still found. Some of the purposes of my visit are the following:

1) to work with members of the Wolf Specialist Group and to demonstrate some of the methods which are used in North America to study wolves,
2) to become well informed about wolves in different parts of the world so that I may provide effective leadership to the Wolf Specialist Group,
3) to gain an understanding of the problems caused by wolves so that the Wolf Group will be better equipped to solve these problems without exterminating the wolf,
4) to assist in the development of knowledge and understanding of the wolf among the people of Europe.

The funds for my work in Europe will be provided by the World Wildlife Fund at Morges and by the national appeals of the various countries which I will visit.
I am one who has a very strong conviction that it is wrong to eliminate animals, even those, like wolves, which seem to cause problems to human society. I do not suggest that the wolf should receive total protection, I do however argue that it should be possible to overcome problems in a manner which does not result in the extinction of a species. I am looking forward to my summer in Europe with intense interest because I hope that I may be able to make a small contribution to the goal of the Survival Services Commission:
"To preserve wolves ..... as important and useful elements of natural ecosystems, so that people gain enjoyment and satisfaction as a result of their presence in wild communities".

Environmental approaches in Norwaj

HELGA GITMARK,
Minister of Environment

Norway's Ministry of Environment was established in May 1972 following exhaustive studies and public reports concerning the state of Norway's natural resources and possible administrative reforms to deal more effectively with the increasing environmental problems. From these studies it became clear that the problems of physical planning, pollution control and protection of the natural environment were closely interrelated and that a new administrative agency was needed to plan for the use of land, air and water in long-term perspective and with proper regard for environmental consequences.

The Ministry was established, therefore, with responsibility for regional and urban planning, for the rational use of water and land resources, pollution control and noise abatement, problems of waste disposal, conservation of nature and recreation areas, coordination of research and international co-operation in the field of environment.

The Ministry has already, in the short time since its inception, started work on a national plan for the use of water resources, including registration of all effluent discharge sources; a national survey of air pollution; and an investigation of the varied problems of waste disposal. Studies have been initiated on the possibility of developing methods for re-using sludge from sewage treatment plants in agriculture. Traffic studies are also underway for studying the effects of noise from air and automobile traffic. In collaboration with Norwegian universities and other institutions, surveys of natural areas in need of protection are being prepared.

Administratively the Ministry is divided into four departments: physical planning, pollution control, conservation and open-air recreation, organisation and information.

The Planning Department has overall responsibility for physical planning on various levels. Originally part of the Ministry of Local Government and Labour, this department is the final authority for ratification of local plans which all municipalities in Norway are required to prepare following the Building Act of 1965. These plans are designed to provide a flexible framework for future physical development of the municipality concerned, with proper regard for environmental considerations. Regional and inter-county co-ordination of physical planning is an essential feature of the overall design and the Ministry is also vitally concerned with long-range goals and guidelines for regional policy and planning. This is a matter of special importance for Norway, where geographic, demografic and economic considerations dictate the necessity for relieving the growing pressure on the population centres of the southeast and for finding ways to strengthen the viability of local and regional areas without endangering the environment.

The Department of Pollution Control is responsible for planning for the use of Norway's air and water resources and for the preparation of legislation which will control pollution and noise and provide for the effective disposal of waste. It has administrative responsibility, together with its subordinate State Water Supply and Pollution Office and the Smoke Damage Council, for the pollution concession system to which all pollutant discharges are subject, whether from municipal sewage and waste systems or from industry.

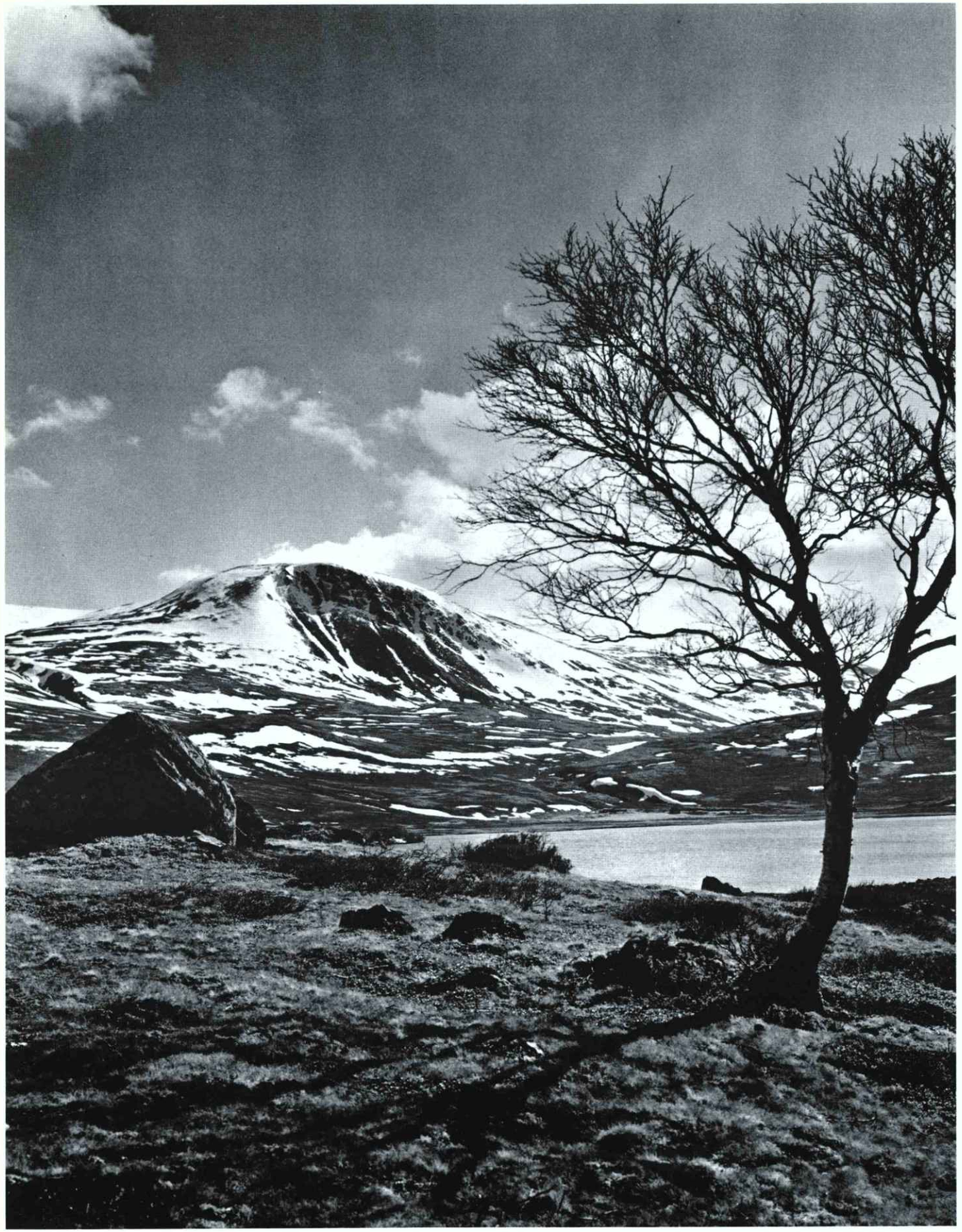
The concession system is based on existing legislation such as the Water Pollution Act of 1970 and the Neighbour's Act of 1961, but more comprehensive air and water pollution legislation is at present being prepared.

The Conservation and Open-Air Recreation Department administers the provisions of the Nature Conservation Act of 1970. This Act provides for the protection of natural areas, the establishment of national parks, marsh and forest reserves and bird sanctuaries. Additional legislation provides for the protection of coastal and mountain areas and guarantees free access to everyone in all non-built up areas, regardless of land ownership. Legislation concerning the use of motorised all-terrain vehicles, including snowmobiles, is also under preparation and will be aimed at further protecting the natural environment from damage due to uncontrolled use of these vehicles.

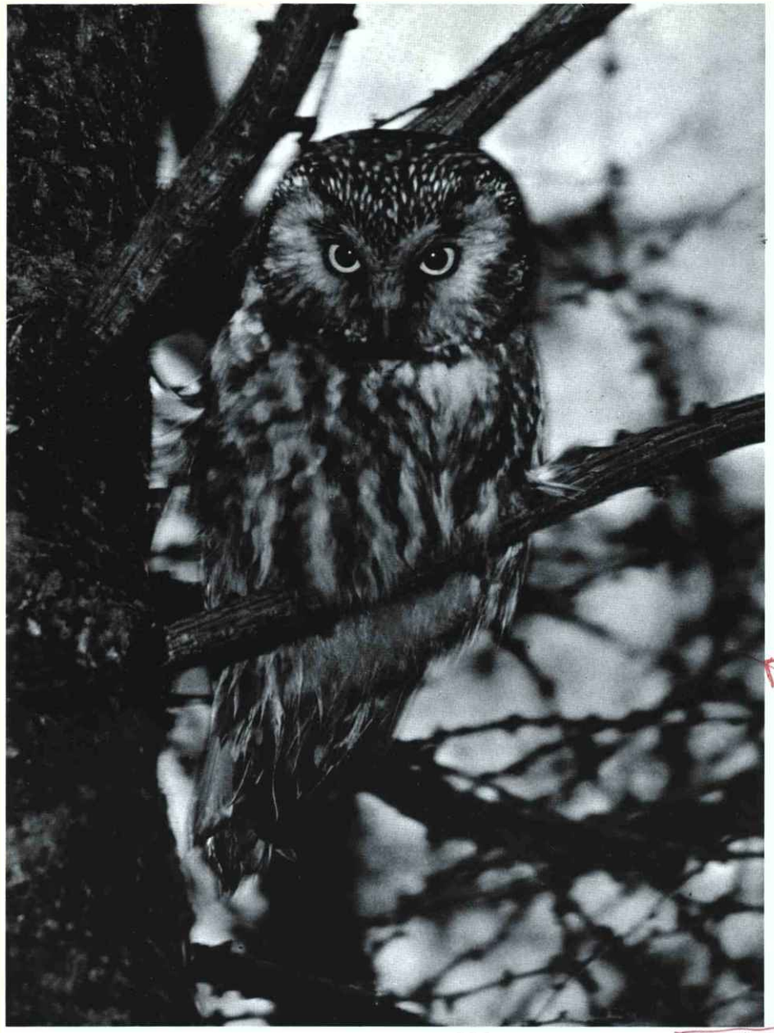
The primary responsibilities of the Organisation and Information Department are administrative development in general, information services, contacts with environmental research institutions and international co-operation. The recommendations from the UN Environment Conference in Stockholm in June 1972 form an important basis for Norwegian environmental policy nationally as well as in its work with international organisations, and Norway is contributing to the UN Environment Fund. The Norwegian Government also attaches considerable importance to the work of such regional bodies as the Council of Europe.

Of especial concern to Norway has been the problem of long-range transportation of air pollutants, particularly sulphur compounds, and the Norwegian Institute of Air Research is currently co-ordinating a project on this problem under the auspices of the OECD Sector Group on Air Management.

As a seafaring nation Norway has also been greatly concerned with the global problem of ocean pollution. In 1971



The fortunate visitor to Norway's national parks may well see the Glacier Crowfoot (Ranunculus glacialis), *the Musk Ox* (Ovibus moschatus) *and Tengmalm's Owl* (Aegolius funereus).



Norway hosted a conference in Oslo which led to the conclusion of the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft. Norway has also strongly supported the preparation of the more recent global dumping convention as well as preparations for the IMCO world conference on ocean pollution due to take place in the autumn of 1973.

Of similar concern has been the growing international involvement in the Polar regions and Norway has on several occasions emphasised the need for international co-operation to preserve the natural environment in the Arctic. In particular, Norway is working actively to promote the protection of Arctic wildlife on an international basis, in close co-operation with IUCN.

affecting the environment are taken without due regard for their long-range consequences. In this overall process the Ministry of Environment does not intend to function as the sole authority but rather to perform a co-ordinative function in the current and welcome trend towards decentralisation. Our hope is to strengthen the apparatus of county and municipal environmental authorities in such a way that most environmental problems can be settled locally. The Ministry will continue to exercise final control over major questions of planning, conservation and pollution but will also devote its attention to preparation of comprehensive environmental legislation and at the same time, we hope, will participate in concrete international actions which can lead to progress in the urgent task of safeguarding the environment.

It would be wrong to assume that the Ministry of Environment is the sole agency in Norway with responsibility for environmental problems. In fact, many different ministries and other state and private agencies have differing measures of responsibility here, both nationally and locally. There is, however, an increasing degree of co-operation between the various agencies. An inter-Ministry committee, chaired by the Ministry of Environment, has been set up for the purpose of co-ordinating the use of the nation's natural resources.

For the future we are actively planning for, and hope to see realised, a new and deeper national understanding of the need for rational management of natural resources where economic and ecological factors are carefully balanced and where no decisions

...NEWS...NEWS...NEWS...NEWS...

FROM STRASBOURG

CONCLUSIONS OF THE EUROPEAN MINISTERIAL CONFERENCE ON THE ENVIRONMENT

Vienna, 28-30 March 1973

On the original initiative of the Council of Europe, Environment Ministers and senior officials from 23 European countries *, meeting in Vienna from 28-30 March at the invitation of the Government of the Republic of Austria, called on the Council of Europe to define the rights of the individual citizen to a protected and improved environment and also his own responsibilities.

At the same time, the European Ministers, who were meeting for the first time since the UN Action Plan was agreed in Stockholm last June, resolved on joint action to implement the Plan, in particular within the Council of Europe.

Four specific resolutions, summarised below, have been addressed by the Conference to the Committee of Ministers of the Council of Europe for implementation within the framework of the Council's Intergovernmental Work Programme for the natural environment.

The Ministers met at the Hofburg in Vienna under the chairmanship of the Austrian Minister for Health and the Environment, Frau Ingrid Leodolter. Observers attended from major international organisations concerned: Commission of the European Communities; UN Economic Commission for Europe; Food and Agriculture Organisation; World Health Organisation; UNESCO; UN Environment Programme; OECD; International Union for the Conservation of Nature and Natural Resources, etc.

During the Conference a Colloquy was held between Council of Europe Ministers and parliamentarians from the Council's Consultative Assembly, at which Ministers replied to parliamentary questions.

Resolutions of the Conference

Three of the Resolutions recommended to the Council of Europe concern the management of the natural environment within an overall regional planning system; the conservation of wildlife and areas of scientific interest; information and education of the public and training.

— In **Resolution No. 1,** on the natural environment, the Ministers agreed to promote the observation of certain principles in taking important decisions affecting the environment, such as taking into account the long-term ecological consequences, evaluating the social, environmental and economic consequences of important activities, and extending participation in the process of decision-making to those directly affected. In this light, the Committee of Ministers is recommended to consider the inclusion within the Council of Europe Work Programme of several activities relating to exchange of information, the preservation of protected areas, preparation of various studies and ecological documentation and the creation of a joint association of European officials responsible for national parks and nature reserves.

— The Ministers' agreement to take measures at national level to safeguard the wild flora and fauna and their habitats is laid down in **Resolution No. 2.** Again the Committee of Ministers is recommended to consider the expansion of the following action in the Council of Europe's Work Programme: exchange of information, with, for instance, definition of the general principles for the conservation of terrestrial and aquatic habitats, the establishment of a European network of reserves, preparation of lists of endangered plants, animals and natural areas in Europe and research work and studies to facilitate implementation of these measures.

Governments of Council of Europe member States are recommended in **Resolution No. 3** to consider the creation and co-ordination of national information services which are to cooperate closely with the European Information Centre for Nature Conservation of the Council of Europe. The Resolution recommends the Committee of Ministers to entrust the Council of Europe with the organisation of an exchange of ideas and experience between States on their programmes for the education of citizens where the natural environment is concerned and of dissemination of information on such activities and publication of common problems. The Council of Europe should promote further training of specialists and leaders, free co-operation of youth organisations and multi-disciplinary programmes of school and post-school instruction.

— **Resolution No. 4** finally recommends the Committee of Ministers to convene, at the invitation of the respective Governments, a second European Conference on the Environment in 1975 in Brussels and a third one at a later date in Switzerland.

* 16 Council member countries: Austria, Belgium, Cyprus, Denmark, France, Federal Republic of Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Sweden, Switzerland, Turkey, United Kingdom,
plus observers from: Finland, Greece, Liechtenstein, Portugal, Rumania, Spain, Yugoslavia.

NOTES

WETLANDS IN DANGER

In the North of The Netherlands the famous wildfowl area, the Dollard, may well lose much of its unique natural value if plans to change the whole area are put under way. The Dollard is one of the main migration and wintering areas for water fowl. Of the e.g. total North-West European population of Avocets (30,000-25,000 birds), around 25,000 use this area in late summer and autumn. The approximately 370 ha.-large Grabenstätter Moor on the eastern part of Lake Chiem in Bavaria may be threatened by a new motorway. This hitherto protected area serves as a breeding ground for about 250 species of birds.

NATURE CONSERVATION IN SARDINIA

Bernardo ROSSI DORIA
Italia Nostra

From 2 to 5 February, the "Italia Nostra" Association, in conjunction with the Italian World Wildlife Fund, held a Congress at Cagliari to discuss the problems of nature conservation in Sardinia.

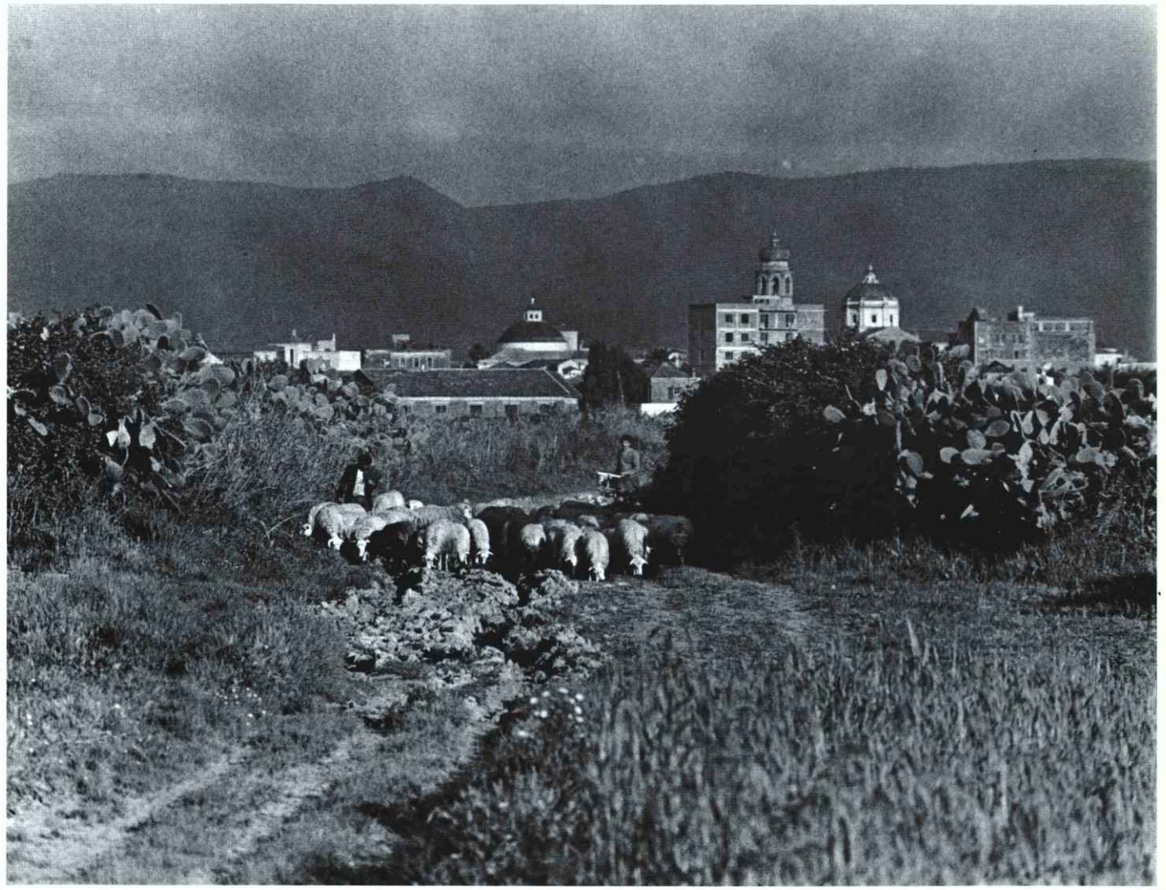
The island of Sardinia is, today, one of the finest natural heritages in the Mediterranean Basin. It has forests of cork oak and holm oak still intact, coastlines for the most part still unspoilt, exceptional granite rock formation, wild tracts of marshland, and an abundance of remarkable fauna.

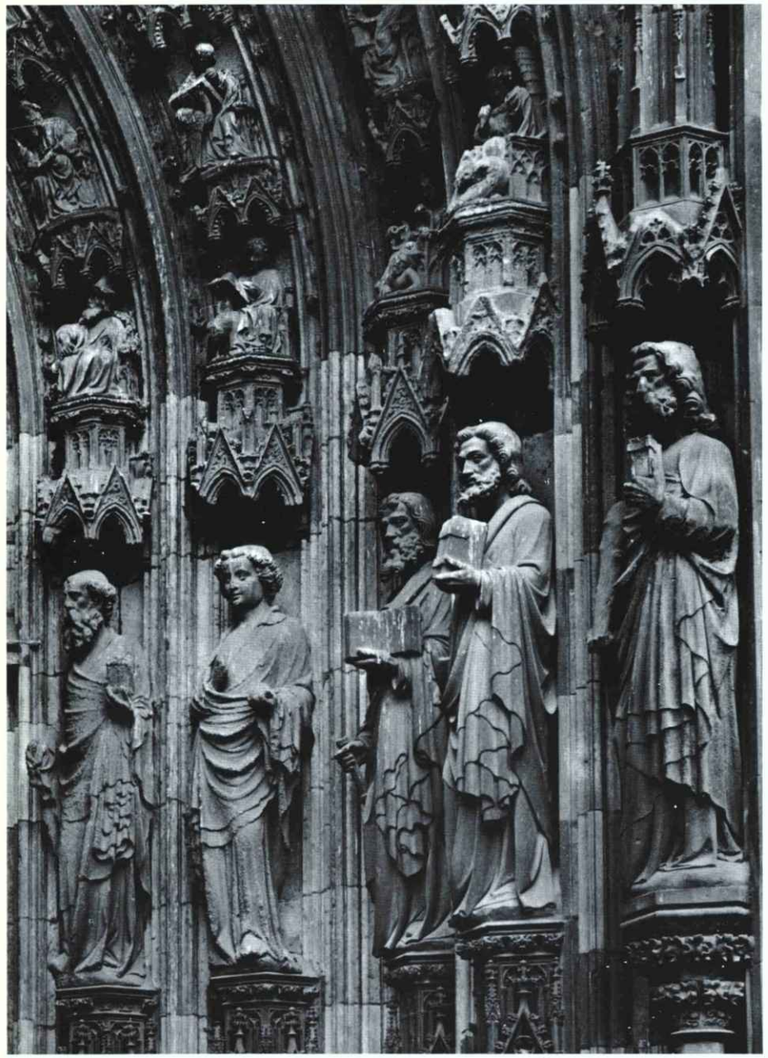
Rare birds and animals such as the griffon vulture *(Gyps fulvus),* the black vulture *(Aegypius monaetius),* and the bearded vulture or lammergeyer *(Gypaëtus barbatus),* the golden eagle *(Aquila chrysaetos)* and Bonelli's eagle *(Hieraatus fasciatus),* the mouflon, Corsican deer and monk seal, Audouin's gull *(Larus audouinii),* the flamingo *(Phoenicopterus ruber)* and the purple gallinule *(Porphyrio porphyrio)* are still to be found there.

However, owing to a mistaken idea of "progress", this — the most beautiful island in the Mediterranean — is fast heading toward irremediable deterioration of its natural heritage: large industrial plants are polluting coastal waters irreversibly, each year fires destroy thousands of hectares of forest, coasts are being ravaged and the landscape completely disfigured by the building of houses and tourist facilities, the rarer animals are dwindling in number as a result of poaching; there are fewer than 500 surviving mouflon in the Gennargentu mountain range, whereas previously flocks of them roamed throughout the island; there are now no more than 100 pairs of griffon vultures, while the monk seal (only 7 remaining) and the lammergeyers are threatened with imminent extinction.

The aim of the "Sardegna da salvare" Congress was to discuss the crucial situation of the island's natural heritage with the inhabitants of Sardinia, and to demonstrate how planning, calculated to enhance the island's natural assets by creating nature reserves and national parks, could both safeguard nature and ensure a balanced development in the interests of the population.

Tourism, at present stationary, would also benefit from this development, as the attraction of a natural heritage enhanced by careful management would give it a new impetus.





THE CRUMBLING OF COLOGNE CATHEDRAL

While restoration of West Germany's Cologne Cathedral, severely damaged by bombs during the Second World War, is still continuing, a far greater threat to the existence of this world-famous building is to be found in the weather and the air itself. According to Dr. Wolff, the cathedral's "new" architect, the major source of the problem is the recent sharp increase in sulphur dioxide pollution resulting from industrial expansion around Cologne. The sulphur dioxide is easily absorbed by the cathedral stone, and forms the erosive sulphuric acid under the action of rain or the humid Rhine Valley air. While protecting the stone surface is possible, the problem remains that sulphur dioxide already absorbed deep into the walls can still do enormous harm. A possible solution is to replace the weakened stone structures with a basalt lava stone that resists industrial pollution. However, Dr. Wolff calculates that unless the south façade is restored by the year 2000, the cathedral will just crumble away. At the present rate, restoration will not be complete until 2090 unless a really substantial increase is made in the funds allocated for this purpose.

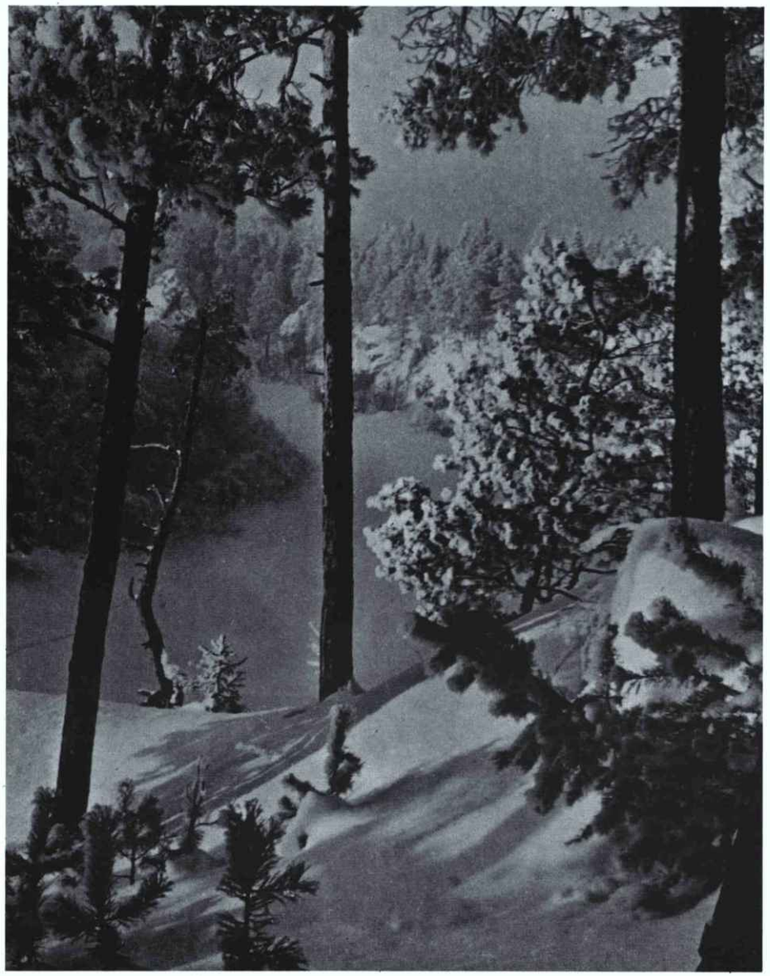
A LESSON TO BE LEARNED FROM THE INCAS?

Nature conservation was accorded a high respect by the Incas, whose ancient civilisation existed between the 12th and 16th centuries, with an empire extending through the areas of present Peru, Ecuador and Bolivia. Arable land was conserved and extended by the construction of settlements on rocky or infertile territories and the cultivation of mountain slopes. The Incas also valued the vast guano deposits, of which the rational and lasting exploitation formed an object of special care. Seabirds were protected by severe laws, which included the death penalty for certain offences such as the stealing of eggs. All birds of particular importance were protected by law throughout the year. The protection of wild life was also enforced by harsh regulations. Hunting was only permitted every four years, i.e. on a sustainable yield basis, and then only the deer and some common species of llama were killed for meat and pelt. The species *Lama guanicoe* and *Lama vicugna* were caught only for their wool. After being caught they were sheared, then released into the wild with a view to profiting similarly in the future.

Although the measures taken by the Incas for the conservation of natural resources are perhaps rather drastic by modern day standards, their concern for the protection of nature and the environment is certainly exemplary.

(Chronmy Przyrode Ojczsta [Poland])

NATURE CONSERVATION IN RUSSIA



The USSR is devoting more and more attention to the conservation and care of its natural environment. After many decades of intensive industrial development, the highest levels in the Soviet Union have become aware that its natural resources must be protected and properly managed if they are to remain for the appreciation and benefit of future generations. They also realise that success depends on good information and publicity systems in the broadest sense by all authorities (Ministry of Culture, Health and Environment etc.), improvement in education of the young, and broadcasting the situation through every available channel through brochures, books, films, television and radio.

NATURE IN FOCUS LOOKS AT BOOKS

RESPONSIBILITIES OF LOCAL AUTHORITIES FOR WATER POLLUTION CONTROL

This study, edited by Mr. Harder, Rapporteur (Danish delegation) as part of the work of the Committee on Co-operation in Municipal and Regional Matters, contains an analysis of the replies to a questionnaire drawn up by that Committee. The replies, which were sent in by the following countries: Belgium, Denmark, France, Federal Republic of Germany, Ireland, Italy, Luxembourg, The Netherlands, Norway, Sweden, Turkey, United Kingdom, reveal that the legal provisions governing the responsibilities of local authorities vary considerably from one country to another and do not therefore easily lend themselves to comparison.

As a general rule — except in countries with a federal structure — legislation on water protection is prepared by the central governments. Nevertheless, most countries have specific guidelines on water pollution control in the context of town planning, for which the local authorities are responsible.

Mr. Harder's analysis is confined to an examination of the extent to which local authorities are responsible for the campaign against water pollution and of the resources available to them. Consequently, it does not deal with national legislations as such.

As regards division of responsibility, the study distinguishes three categories:

(i) town planning in connection with the siting of industrial activities which are threatening to contaminate water resources;

(ii) police regulations to prohibit discharge and drainage likely to pollute watercourses or ground water, as well as preventive or restrictive measures;

(iii) special technical equipment designed to prevent or reduce water pollution.

The enquiry gives the overall impression that local authorities are more or less equipped to deal effectively with domestic effluent disposal. Serious complications arise with the purification of industrial effluent, which by its quantity and make-up, is beyond their capabilities.

Viewed as an administrative problem, water pollution is an example of the conflict between two interests: the economy and nature conservation.

By definition, local authorities are too intimately involved in the interests of the users — on election day it is the latter who vote; this means that regional organisations, such as river authorities, would be better equipped to satisfy the major requirements of water pollution control.

RESPONSIBILITIES OF LOCAL AUTHORITIES FOR WATER POLLUTION CONTROL.
Studies Series.
Local and Regional Authorities in Europe. Study No. 3.
Council of Europe, 1972.
Available in English and in French.

PALEARCTIC MIGRATION

A good publication of high scientific standard, both easy and pleasant to consult, this substantial work is the product of extensive bibliographical research (over 1,000 documents examined, 700 of them listed) and wide knowledge of Africa and European birdlife.

The first part deals with migration in general, showing the influence of climate, luminosity, temperature etc. on birds' movements and their energy consumption (this latter point deserves special attention since, as the author points out and explains, birds' metabolism in their wintering places falls to less than half its nesting season level).

The second part reviews 187 species nesting in Europe and wintering south of the Sahara. Their migratory paths and wintering areas are described precisely and illustrated with synoptic maps.

The book is based mainly on European ringing data but shows clearly that more and more work is being done in this field in several African countries.

THE PALEARCTIC AFRICAN BIRD MIGRATION SYSTEMS.
R. E. Moreau
Academic Press, London and New York 1972.
384 pages. Price £ 7.80. Text in English.

WORLD NATIONAL PARKS

No-one would nowadays dream of questioning the scientific, aesthetic, cultural and social value of national parks, and other protected areas, nature parks, integral and directed nature reserves which act as veritable catalysts in our industrial civilisation. Readers will accordingly be fascinated by the publication by Jean-Harroy and his co-authors, "World National Parks". The first part outlines the general principles of national parks, their history, going on to give relevant information on the various parks, continent by continent. This provides a fairly clear idea of the situation and especially the way national parks are used in different countries.

The second part looks at national parks in terms of the supreme importance of their role as zones affording protection to species threatened with extinction, living laboratories for biological and ecological research, and lastly as places where human beings can relax and enjoy themselves and indeed rediscover their true nature.

In conclusion, the authors put forward a series of guiding principles for those responsible for the organisation and planning of national parks, in which economic considerations are not overlooked.

What role will national parks play in the year 2000? This is the last question which William Everhart, Director of the National Parks' Service in the U.S.A. attempts to answer.

WORLD NATIONAL PARKS: progress and opportunities. Compiled under Jean-Paul Harroy, edited by Richard Van Osten.
French text translated into English by John Riddell and C.S. Teur.
Hayez, Brussels, 1972. 392 pages.

NATURAL RESOURCES AND PUBLIC RELATIONS

The science of getting the conservationist message to the European public is scarcely older than the European Conservation Conference of 1970. In the United States it is likewise still in its infancy. Douglas L. Gilbert, a well-known U.S. conservationist, has laid down in his book some useful guidelines for public relations in the field of natural resource management. Starting with the premise that good public relations are a phenomenon necessary to the success of any programme, the author traces the history of nature conservation from the Magna Carta — whereby, among other things, the King was to hold wildlife "in trust" for his people — right up to the first half of our century when "conservation" was usually equated with "protection" rather than "rational management", to the present era of more sophisticated control of the natural environment.

So far so good, but since today's swift increase in population, man's exploitation of natural resources and his pursuit of leisure are matched by a corresponding misuse of resources and by wide-scale pollution, there is a compelling need to educate the public in "management" (a term consciously preferred to "conservation") of the natural environment.

It is quite clear that declarations of principle and even legislation do not suffice to meet this challenge.

Thus, by drawing on the American experience, Mr. Gilbert persuades us that modern society must, if it is to survive, educate a cadre of specialists in natural resource management, and more especially in the human communications sector of management. As of 1971 only ten U.S. universities offered courses in the public relations of environmental control. In Europe the figure is probably still more modest.

This timely publication treats in turn the psychological and sociological aspects of public relations in nature conservation, the role of the public and the instruments of public education, the choice and use of communications media and in particular the technique of personal appearance before the public.

The text is generously illustrated with photographs, cartoons and diagrams and is concluded with a series of exemplary case studies, several appendices, a good index and a reading list of U.S. conservationist material.

Mr. Gilbert's message is beamed specifically at Americans but deserves to have repercussions in other parts of the world, notably in Europe where there is, at the very least, a crying demand for the creation of information and education departments in conservation agencies, whether these be governmental or private.

NATURAL RESOURCES AND PUBLIC RELATIONS.
Douglas L. Gilbert, Wildlife Society, Washington D. C., 1971, 320 pages. Price: $ 6.50.
Text in English.

ZUSAMMENFASSUNGEN

INFORMATION, UMWELT UND DEMOKRATIE: DAS BEDÜRFNIS, NEUE SIGNALE ZU DEUTEN — S 2

E. Dyring, J. von Ekenberger und U. Magnusson

Die Verfasser legen dar, wie der gegenwärtige Stand öffentlichen Bewusstseins, nämlich, dass die natürlichen Reichtümer nicht unbegrenzt sind, mit grossem Aufwand in Form von Schäden, menschlichen Leiden, ja sogar Verlust des Lebens erreicht werden konnte. Der gegenwärtige Kommunikationsprozess wird erörtert, im Hinblick auf die streng definierte herkömmliche Rolle, die den Massenmedien, Wissenschaftlern, Politikern und der Öffentlichkeit zugeteilt ist. Die Verfasser heben die Notwendigkeit neuer Werte und Prioritäten hervor und betonen, dass sowohl entsprechendes Bewusstsein, als auch Handeln wesentlich sind. Der Fall des « Ulmenkriegs » in Schweden, wo eine Gruppe von über hundertjährigen Bäumen davor bewahrt wurden, dem Bau einer Unterführung weichen zu müssen, ist bezeichnend; er verdeutlicht gleichzeitig die Notwendigkeit neuer Kanäle zwischen der Öffentlichkeit und den Politikeren, neuer Mechanismen zur Artikulation der öffentchen Meinung zur Bildung einer breiteren Bewusstseinslage und neuer Informationsmöglichkeiten. Um diesen Forderungen zu entsprechen, müssen die erwähnten traditionellen und streng umrissenen Rollen aufgegeben werden. So müssen etwa die Experten, Wissenschaftler, Technologen lernen, die besonderen sozialen Auswirkungen ihrer Arbeit einzukalkulieren. Politiker und Verwaltungsbeamte müssen die Folgen ihrer Entscheidungen auf die Umwelt in Betracht ziehen und eine angemessene Ausbildung hierin erhalten. Zuverlässige und rasch wirksame Mittel müssen gefunden werden, mit deren Hilfe Entscheidungsträger über Veränderungen der Meinung der Bürger informiert werden können, da die letzte Verantwortung bei den Massen liegt, die ebenso ausreichend informiert und instruiert werden muss, damit sie in der Lage ist, Verständnis aufzubringen und aktiv an der Gestaltung teilzunehmen.

NOTWENDIGKEIT EINER ERZIEHUNG IN UMWELTFRAGEN S 5

**Dr. Jan Cerovsky,
IUCN Comission on Education
(bis Dezember 1972)**

Mit Umweltschutz beschäftigen sich die entsprechenden öffentlichen und privaten Einrichtungen. Ihre Tätigkeit kann nur Erfolg zeigen, wenn ihre Ziele und Bemühungen von der breiten Öffentlichkeit unterstützt werden. Umwelterziehung muss in allen Bereichen und auf allen Ebenen der Ausbildung und Erziehung praktiziert werden, um jedermann mit seiner Verantwortung gegenüber der Umwelt vertraut zu machen, so dass die Menschen dementsprechend auch handeln. Verständliche Programme für die Umwelterziehung müssen eingeführt werden, die auf wissenschaftlichen Erkenntnissen basieren, die interdisziplinär aufgebaut sind und sowohl ökologische wie soziologische Aspekte enthalten.

PROBLEME DER NATURERHALTUNG UND UMWELTSCHUTZ IN SPANIEN S 8

**Fernando Barrientos Fernandez,
Doctor Ingeniero de Montes,
Madrid**

Geographische, ökologische und historische Faktoren haben der Natur in Spanien Schäden zugefügt. Schutzmassnahmen, die vor mehr als einem Jahrhundert begonnen und in jüngster Zeit intensiviert wurden, haben sich auf Spaniens natürliche Landschaft, vor allem auf seine Gebirge, günstig ausgewirkt. Jedoch hat die Entwicklung im letzten Jahrzehnt eine Reihe neuer Probleme für Natur und Umwelt mit sich gebracht. Binnenwanderungen, Bewegungen der städtischen Bevölkerung, industrielle Expansion, neuer Bedarf an Raum und das gewaltige Anwachsen des Tourismus stellen ernste Gefahren für die Natur dar. Ihre Wiederherstellung erfordert dringend Massnahmen im Rahmen eines nationalen Umweltschutzprogramms.

NATURSCHUTZ IN PORTUGAL S 13

**Prof. C. M. L. Baeta Neves und
J. F. Flores Bugalho**

Schon seit Ende des 19. Jahrhunderts wurden Massnahmen zur Überwachung der Bodenerosion und zum Schutze der Wälder ergriffen, doch wurde in der Praxis wenig zum Schutz der Tier- und Pflanzenwelt unternommen, obwohl diese wie allenthalben in den Mittelmeerländern durch allzu rücksichtslose Jagd und Abbrennen von Weideland bedroht wurde. Zwar wurde ein Naturschutzbund gegründet, doch wirkte sich dessen Tätigkeit infolge geringer Mitgliedzahlen und beschränkter Geldmittel nur zögernd aus. Das neue Jagdgesetz stellte 1967 indessen 164 Vogel- und Säugetierarten unter Schutz; 1968 wurde eine Naturschutzbehörde errichtet. Erst 1970 jedoch, im Europäischen Naturschutzjahr, zeigte sich, dass sich die Regierung des Problems voll bewusst geworden war. In diesem Jahr wurde der Naturschutzpark von Geres geschaffen; bald darauf wurden weitere Gebiete unter Schutz gestellt. Die Regierung setzte ferner im Rahmen des Ministeriums für Wissenschaft und Technik einen staatlichen Naturschutzausschuss ein, dessen Arbeit, vor allem im Bereich der Kontrolle der Umweltverschmutzung, sich langsam auszuwirken beginnt. Auch Presse, Fernsehen und Rundfunk nahmen sich des Problems an und weckten das Interesse der Öffentlichkeit.
Das Wirtschafts-, Marine-, Arbeits- und Gesundheitsministerium haben damit begonnen, bei ihren Planungen auf die Belange des Umweltschutzes Rücksicht zu nehmen. Verschiedene private Unternehmen folgen diesem Beispiel. Sämtliche Raubvögel und sonstige vom Aussterben bedrohte Gattungen sollten bald offiziell unter Schutz gestellt werden. Es ist zu hoffen, dass durch stärkere Koordinierung, bessere Aufklärung und Erziehung, Anpassung der Gesetzgebung und Bereitstellung der erforderlichen Geldmittel der Naturschutz in Portugal in der wüschenswerten Weise ausgebaut werden kann.

DIE WÖLFE DIESER ERDE — S 18

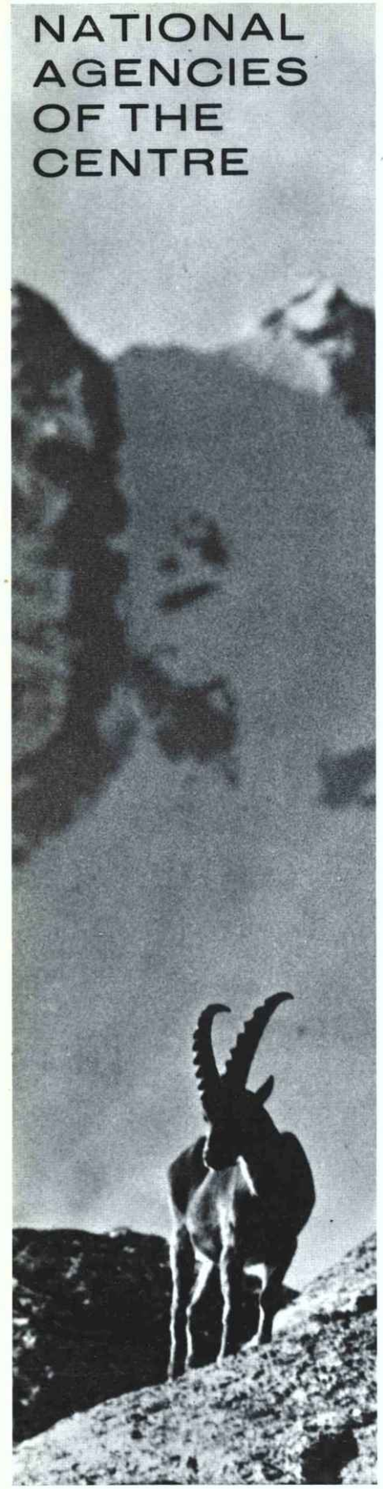
**Douglas H. Pimlott, Chairman,
Wolf Specialist Group,
Survival Services Commission, IUCN**

Die schwer greifbaren Gewohnheiten der Wölfe, ihr Geschick beim Töten von Vieh und anderen Tieren, und der Glaube an ihre Gefährlichkeit für den Menschen, haben diese zum Gegenstand von Furcht, Hass und Verfolgung gemacht. Obwohl ersteres in agrarischen Gesellschaften verständlich ist, besteht kein Anlass, letzteres zu unterstützen. Der Wolf ist eine höchst anpassungsfähige Spezies, und trotz nachhaltiger Versuche, ihn auszurotten, bewies er eine beachtliche Lebens- und Überlebensfähigkeit in menschlicher Umgebung. In Westeuropa wurden die Wölfe in den am dichtesten besiedelten Ländern ausgerottet, aber einige finden sich noch in Norwegen, Schweden, Finnland, Italien, Spanien, Portugal, Osteuropa und über weite Gebiete sowohl Russlands als auch Kanadas (als Hauptstützpunkt) und im Staat Alaska.
Während man sich in Kanada und den Vereinigten Staaten für die Wölfe einsetzt, gestützt auf Studien in der Wildnis und in Zoos, sind in Europa und Asien wenig Anzeichen einer Sorge um ihre Erhaltung oder einer Erforschung dieser Frage vorhanden.
Die Survival Services Commission der IUCN (International Union for the Conservation of Nature and Natural Resources) hat indessen eine Spezialgruppe für Wölfe ins Leben gerufen, nicht nur um den Wolf zu schützen, sondern auch um Verständnis für dieses Tier als Bestandteil des ökologischen Systems zu wecken. Die aus Ökologen von 16 Ländern, darunter die UdSSR, bestehende Gruppe wird im September 1973 in Stockholm zum ersten Mal zusammenkommen. Inzwischen wird in diesem Sommer das von IUCN und dem World Wildlife Fund aufgestellte Programm zu diesem Thema in Europa anlaufen.

UMWELTSCHUTZ IN NORWEGEN S 22

**Helga Gitmark,
Ministerium für Umweltschutz**

Der Artikel beschreibt die Gründe für die Errichtung des norwegischen Umweltministeriums, die administrativen Strukturen des Ministeriums, die bisher in Angriff genommenen Probleme und die zukünftige Umweltplanung. Das Ministerium setzt sich aus 4 Abteilungen zusammen:
— Planung
— Kontrolle der Umweltverschmutzung
— Naturschutz und Organisation
— Information.
Die letzte Abteilung ist auch verantwortlich für nationale Kontakte und internationale Zusammenarbeit.
Auf internationaler Ebene hat Norwegen bisher im Bereich der langfristigen Luftverschmutzung, der Meeresverschmutzung und des Schutzes der Arktis Initiativen ergriffen. Norwegen arbeitet auf dem Gebiet der Umweltfragen in mehreren internationalen Organisationen mit.
Auf nationaler Ebene hat das Ministerium Arbeiten über Wasserversorgung und Luftverschmutzung, über Fragen der Abfallbeseitigung und der Lärmverminderung begonnen; weiterhin sind Gebiete ausgewählt werden, die einen dauernden Schutz benötigen. Es beschäftigt sich auch mit der nationalen Koordinierung aller lokalen und regionalen Stadt- und Landplanungen.



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