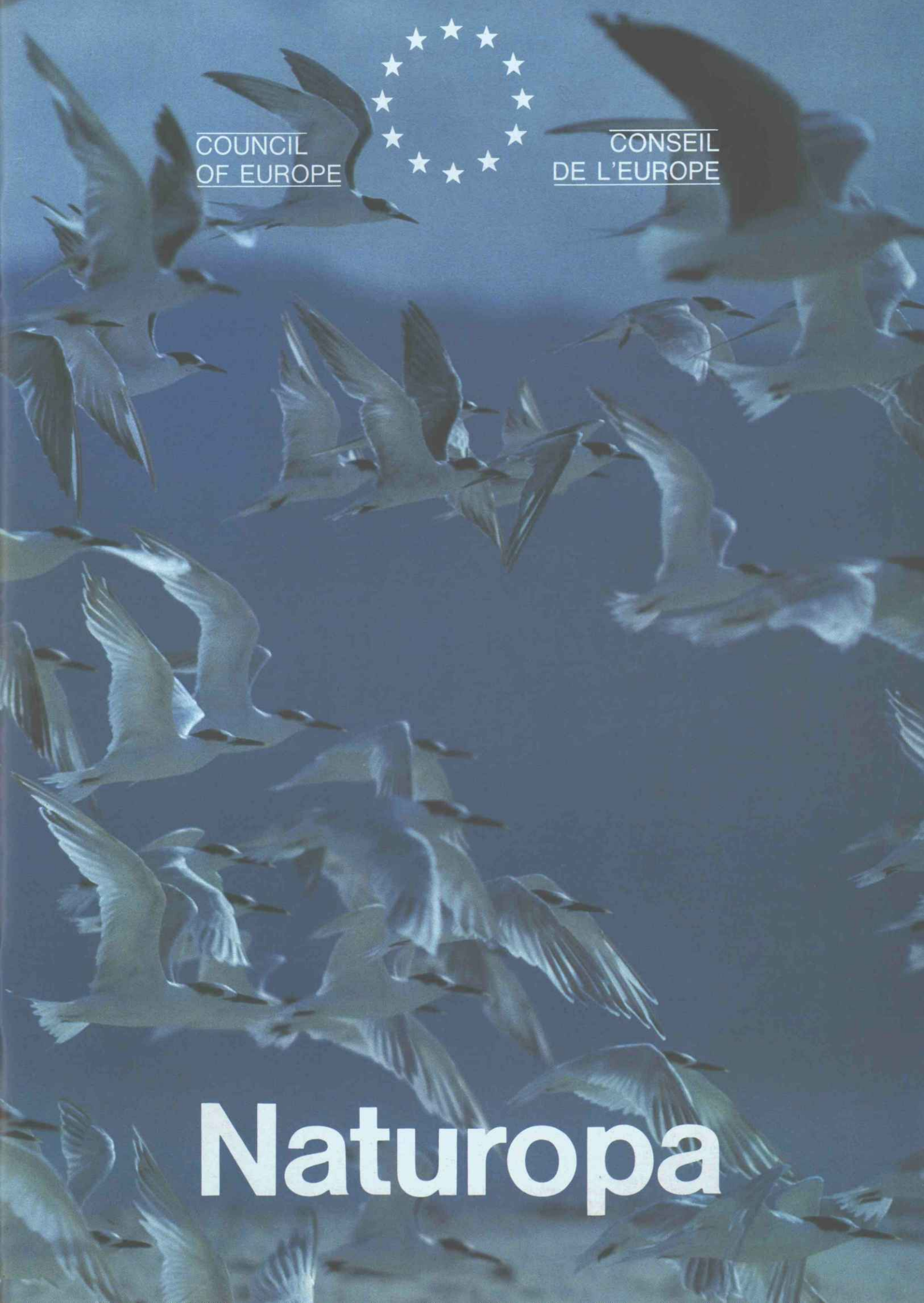

COUNCIL
OF EUROPE
CONSEIL
DE L'EUROPE
Naturopa

european information centre for nature conservation

This symbol for the Council of Europe's nature conservation activities also illustrates the Centre's campaign on the conservation of wildlife and natural habitats which was launched in 1979 and which will continue throughout 1980.

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

Editor responsible: Hayo H. Hoekstra

Editor: Patricia Bugnot

Adviser for this number: International Union for Conservation of Nature and Natural Resources

Lay-out and design: Roland Schwoegler

Printed by: Koelblindruck, Baden-Baden
Repros: Becker, Karlsruhe
(Federal Republic of Germany)

All the illustrations in this special issue have been provided by Mr Charles A. Vaucher, Présinge, Switzerland.

Front cover: *Sterna sandvicensis*

Naturopa

No. 34/35 – 1980

Nature must live!

This special issue of *Naturopa* is devoted to the 4th Campaign of the European Information Centre for Nature Conservation: the protection of wildlife and natural habitats. It is up to every one of us not to forget his responsibility towards the natural environment, the earth and its miraculous life-forms, whatever other crises may afflict us. Nature must live! You will find this message again, in another form, in the next issue: nature in our cities.

H.H.H.

Canis lupus

An ideal forum

José Pires Cutileiro

Ambassador extraordinary and plenipotentiary
Permanent Representative of Portugal to the
Council of Europe
Chairman-in-Office of the Ministers' Deputies

European history from the eighteenth century to the end of the Second World War was largely an East-West affair, with the Powers stretched over the same horizontal band and a periphery of Northern and Southern states more or less dependent on them and on the relations among them. Only the Ottoman Empire fell outside this picture.

Difference in harmony

The Council of Europe, born after the Second World War and the political division of the old continent that followed, finds itself recapturing the North-South dimension of Western Europe. A dimension not quite as before. No northbound Roman legions inflict civilisation on the barbarians and the Duke (currently the Duchess) of Alba has Flemish subjects no more. The once strong arm of European power has even been called by some its "soft belly".

Be that as it may, the South is very much present on the European scene. With the accession of Portugal and Spain, its relative weight within the Council of Europe has increased. A basic likeness in political systems cannot hide a variety of cultural traditions and histories and different levels of fulfilment of broadly similar social and economic aspirations. On a world scale Western Europe is rich, but some Western Europeans are richer than others; these "others" tend to live in the South.

Anyone familiar with the work of the Council is aware of this division. It may sometimes have irritating effects if it slows down the pace of production of international legal instruments to which the Council is dedicated. More often, however, it acts as a challenge rather than a hindrance. And because of the working methods of the Council — the expert committees and steering committees with all member states duly represented — the challenge finds its proper specialised formulation in each of the fields of our programme of activities. Environment is one such field.

It would therefore be presumptuous of the Chairman of the Ministers' Deputies to embark on any detailed discussion of environmental matters. But as a one-time guest contributor to *Naturopa* he may be allowed a few general remarks.

Economic development

"Let us protect nature" is an easier proposition to make in the highly industrialised countries of Europe than in the less industrialised ones. For one thing, many desirable amenities of life have already been achieved in the former, often at great cost to nature, but in times when Nature had few champions and Progress many. Blake did call the mills dark and satanic, but his was a rare voice. There is another reason: the industrial revolution sprang from the capital accumulation of the agricultural one. Most of the less industrialised regions of Europe have a poor, often hostile nature. Yields are meagre, disasters frequent, large stretches of land unusable with current technology. In such regions people tend to have a strictly utilitarian attitude towards nature, and a short-term one at that. They exploit it and they defend themselves from it. This, in my view, is quite rational behaviour and it cannot easily be changed by exhortations based on long-range theoretical predictions and on ethical preoccupations with the survival of mankind — let alone of any other threatened species.

But change it must. In a Platonic Republic or a Brave New World, enlightened leaders would be able to coerce their subjects into the proper, albeit unbearable, courses of action leading to the conservation and regeneration of nature for the enjoyment of all in a bright distant future. Within our democratic framework the authorities of the regions (or countries) concerned have to do otherwise.

In those parts of Europe the conservation of nature has to go hand in hand with further development. The integration of both is difficult; the complexity of some of the specific cases almost intractable, the administrative machinery for information-gathering more cumbersome and the principles behind decision-making less clear-cut than in the fully industrialised countries, the co-operation of the public harder to secure beyond small groups of enthusiastic activists who may easily be seen by others as unpopular zealots. Progress is, however, being made. Awareness of the urgency and importance of the problems and of the care needed to obtain the best possible solutions for them is increasing and finding its expression in legislation and practice.

A new dimension for European co-operation

European co-operation is of the utmost importance. If I am allowed to simplify and speak of North and South, the experience of the North and its possibility of supplying help and advice are an invaluable support to the cause of nature protection in the South. It must, however, be understood that, painful as they may be to watch, some mistakes from which lessons have been learned in the North will nonetheless be repeated in the South, and some courses of action that in pure conservation theory are far from desirable will most probably have to taken there. What can be done, what must be done, both nationally and through international co-operation, is not only to find the best ways to mitigate the damage when nothing else is possible but also to devise, with patience and imagination, the ways in which conservation and development can be combined in those countries or regions where both are critically needed.

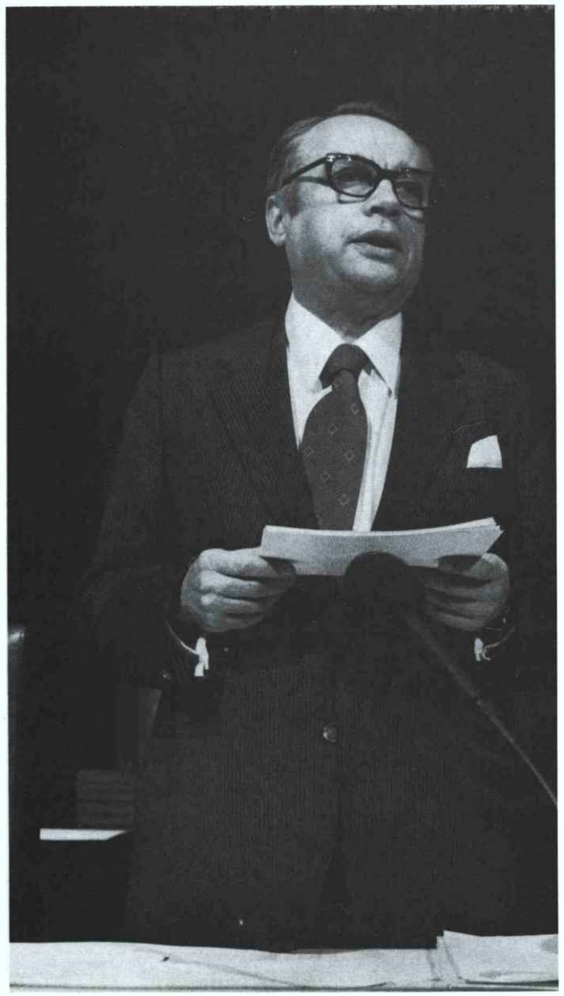
The Council of Europe, by the geographical distribution of its membership, is an ideal forum for the discussion of these problems and for the creation of a multilateral understanding of them, as its many activities already carried out or still in progress within this field clearly show. There are, however, very obvious limits to what the Council as such can do. It can suggest, propose, recommend; it cannot implement or enforce. The main tasks belong thus to the different national authorities and co-operation among them — inside and outside the framework of the Council — is essential if nature conservation is to gain the strength and acceptability it rightly deserves in the different member countries.

One of the things governments might do is to take a new look at the place of environment among the activities of the Council of Europe. With such well-reputed publications as *Naturopa* and increasing public awareness one would expect this field to be a growing one. And yet from 1969 to 1979, while the budget of the Council for all activities increased by 297 %, the budget for "nature conservation" increased by only 200 %. These represent in real terms increases of 175 % and 88 %. Environmentalists will not find this satisfactory progress. It is up to them to try to convince their respective governments of the need to change this state of affairs.

J.P.C.

Europe's conscience

Franz Karasek
Secretary General of the Council of Europe



Since man lost his direct contact with nature, he seems to have forgotten that, however varied and bounteous nature is, it is not inexhaustible.

It needs courage to face up to the situation with which the population explosion on five continents, the ever-increasing demand for raw materials, recent developments in tourism and the energy crisis now confront us: nature and its reserves must be used sparingly if man is to continue to benefit from them.

The Council of Europe as a pioneer

The Council of Europe was the first intergovernmental organisation to recognise the prime importance of a nature conservation programme. Although other international organisations are now active in this sphere, the Council of Europe is regarded today as the organisation which acts *par excellence* as the guardian of Europe's natural environment. It is not always easy to make it clear why certain animals, plants or landscapes, which obviously have nothing to offer us, must be protected, especially when this often involves very considerable expenditure. This is a question of moral and ethical values, on which the Council of Europe bases its recommendation that its member states should pass legislation to protect nature on our continent.

The Council of Europe's most effective measure in this sphere was the initiation and organisation of European Conservation Year 1970, the memory of which is still very much alive ten years later. Thanks to the special efforts made to arouse public awareness, many Europeans are today conscious of their responsibility for their natural environment.

To inform the Europeans

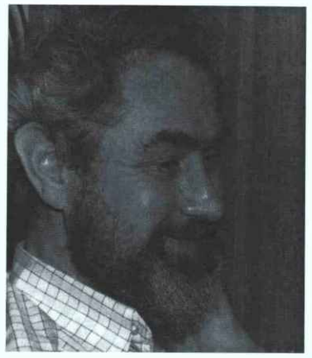
The economic situation has completely changed since 1970 and it is most probable that it will alter again. The Council of Europe will nevertheless continue in the future to regard as focal points of its work programme the maintenance or re-establishment of the environmental equilibrium, the conservation of beauty spots, and the protection of species which are already endangered and those threatened with extinction perhaps in the near future.

As I have been elected as the Secretary General of this organisation for a five-year term, I will consider myself responsible for the intergovernmental work programme in these spheres and for co-operation with the Parliamentary Assembly and also with other organisations. I am most anxious to ensure the best possible information about this problem and the measures taken, information to which Europeans who are making sacrifices to conserve the natural environment are entitled.

F.K.

Rupicapra rupicapra

Anne van Wijngaarden



Every sort and kind

Everybody with some basic knowledge of ecology will, after a glance at a physical map of Europe, realise that this fringed peninsula, with its enormous length of coastlines, surrounded by numerous archipelagos, shallow waters, estuaries, and backboned by a lot of impressive alpine chains, must be one of the places in the world where, within relatively small distances, a great wealth of landscapes can be found.

As this region is moreover influenced by no less than four types of climate (arctic, atlantic, continental and mediterranean) it becomes clear that a rich variety of wildlife, both in species and numbers, once resided here.

Coastal seas and oil pollution

Shallow seas with strong tidal movements belong to ecosystems where the highest biological productivity is reached. As light and warmth can penetrate to the bottom, nutrients supplied by the rivers are absorbed by incredible amounts of invertebrates and transformed into biomass. In former days large quantities of fish, marine mammals and birds could exist on this base.

Beginning with the whaling activities of the Basques at the end of the Middle Ages, when the big whales soon retreated to the far North, where the Dutch and British whalers practically exterminated them, the smaller species like the common porpoise (*Phocoena phocoena*) and the bottle-nosed dolphin (*Tursiops truncatus*) have survived up to present times, but they have recently disappeared from a big part of Western European seas, due to over-fishing of their food stocks and pollution. The seals of the European coastal waters met with the same fate. Lastly, sea birds are suffering at an ever-increasing rate from floating oil fields. Irrespective of the effluents from rivers, the habit of dumping highly contaminated mud (heavy metals, PCBs) dredged from harbour basins and canals into the high seas, ensures that this xenobiotic material is mixed into the food chain in the most effective way. The long-term effects on the ecosystems of our coastal seas are unknown, but our experiences with the Sandwich terns (*Sterna sandvicensis*) and harbour seals (*Phoca vitulina*) in the Wadden Sea are illustrative. The crashing of super-tankers is, in spite of all the preventive measures, becoming a routine. The effects of a spouting oil-well of the size of the defective one in the Gulf of Campeche in a basin of restricted size like the North Sea are beyond the imagination.

Coastal ecosystems are threatened

The coastline forms only a narrow fringe, but because of the impressive length of coast (80 000 km) and its situation between land and sea, one can still find here a number of most interesting ecosystems, varying from steep cliffs to mud-flats. The lower part, within the tidal zone, forms a habitat for numerous invertebrate species. Many so-called higher animals that spend the greater part of their lives in the sea use parts of the coast for resting, nesting and whelping.

On the other hand, many animals who live on solid ground use the coasts as fly-ways during their migrations. Millions of birds can be observed here twice a year. Geese, ducks, waders and divers rest and feed on salt-marshes, mud-flats and shallow water respectively. Not only birds, but also insects, for instance, can be found amongst the travellers here. Streams of whites (*Pieris brassicae*) can be observed passing by on their way south, hour after hour. Catches of tens of thousands of silver Y-moths (*Plusia gamma*) in one night in the dunes indicate that moth species with a migratory behaviour can also be found here.

The threats to the residents and migrants in this area are known: industries, harbours, nuclear power plants, pollution of all kinds, but above all recreational activities. Apart from those exposed to harsh climatic conditions, all beaches are crowded by an ever-increasing number of hotels and camping sites. Nevertheless, these developments could be planned in such a way that at least something of the natural habitat with its fauna is conserved. For instance, parts of the Spanish and Belgian coasts can be compared with those of northern France and the Netherlands.

Eutrophication

The biggest losses in European fauna have been suffered by the freshwater ecosystems. Once they were crowded with crayfish, numerous fish species, including big ones such as salmon, sturgeon and sheat-fish, many birds and striking insects like dragonflies. Nowadays complete river systems have been changed into sewers, where practically all life has disappeared.

Pollutants are accumulating in the lower parts of the system: for instance, the Netherlands has the honour of seeing some parts of its wetlands converted into outbreak-areas of botulism. This clearly indicates that the biological quality of those waters has reached the level of a rotting corpse, and they are now beyond help.

Those rivers and lakes which have escaped this fate are nevertheless heavily influenced by the construction of hydro-electric plants, the discharge of cooling water, regulations for flood control and shipping, eutrophication by fertilisers, acidification by air pollution, with all the negative consequences for their fauna. Therefore, nobody will be surprised that nowadays only some remnants of the European mink (*Mustela vison*) are living in south-west France, that the only thriving otter populations are to be found in Ireland, Scotland and Scandinavia, and that apart from Scandinavia, beavers (*Castor fiber*) occur only in relic-populations. Amongst the birds, for instance, the big fish-eating species such as herons (*Ardea cinerea*) and cormorants (*Phalacrocorax carbo*) are restricted to a few colonies today. The ubiquitous musk-rat (*Ondatra zibethica*), however, is rapidly spreading, as is the American freshwater crayfish (*Orconectes limosus*), adapted as they both are to eutrophic circumstances.

Lowlands

The lowlands of Europe were once covered by a mosaic of forests, grasslands, bogs and fens. The landscape differed considerably from that of North America, for instance, as a number of bulk feeders such as wisents, wild oxen, elks, wild horses, mouflons and wild goats were present to maintain an equilibrium between forest and grassland. Beavers fulfilled the same role along the lakes and rivers. Gradually their numbers decreased and some species were wiped out, replaced by man and his cattle.

For the fauna as a whole this change could not be considered as completely negative. Large areas of semi-natural habitats came into existence, such as atlantic heathlands, chalk meadows, grasslands, maquis and hedgerow landscapes.

Many animal species had a good opportunity to increase, from wintering geese to vole-hunting kestrels (*Falco tinnunculus*) and white storks (*Ciconia ciconia*), from Roman snails (*Helix pomatia*), wall lizards (*Lacerta muralis*) and many song birds to polecats (*Putorius putorius*) and stone-martens (*Martes martes*).

Other species such as susliks (*Citellus citellus*) and hamsters (*Cricetus cricetus*) could even settle in these new environments, and got the chance to populate large parts of the continent due to agricultural activities. Many bat species and the swift installed themselves in buildings.

At the end of the last century human influences became more and more negative in this respect. Industrialisation and urbanisation, drainage systems and irrigation, fertilisers and reallotments changed the traditional farmers' world into large-scale, industrialised, agricultural enterprises.

This process resulted in an incredible pauperisation of those habitats where the majority of people were living and working. The process is still continuing and every day common toads (*Bufo bufo*), common frogs (*Rana temporaria*), common terns (*Sterna hirundo*) and common dolphins are becoming less common than they used to be.

The most alarming aspect of this process is its sneaking way of action. The filling-up of a little pond, the regulation of a small brook, the uprooting of a hedgerow, the gradual lowering of the water table, the slow increase in the temperature of river water, the decreasing number of flowers along the road verges, all these have slowly accumulating effects, recognised by practically nobody. When the point is reached where one begins to realise that the only butterflies left are whites and that yellowhammers (*Emberiza citrinella*) have disappeared, then it is too late.

Hills and mountains

In the hilly regions of Europe, the greater part of the surface was traditionally used either for forestry, mainly on the slopes, or for non-intensive grazing, concentrated on the summits and plateaux. Here, impressive landscapes of atlantic heathlands and chalk meadows can be found. This combination formed the stronghold for many of the bigger animals of European fauna, mammals as well as birds. We are thinking of red and roe-deer, wild boars, bears, wolves, many birds of prey, etc. Due to hunting regulations many of them have survived to our days. The river valleys, in the meanwhile, are often crowded with cities, industries, roads, railroads, canals, etc., and have lost much of their fauna.

The mountainous regions of Europe had, for the greater part, escaped from negative human influences up till the middle of this century. The valleys were used for agricultural purposes, the slopes being forested to prevent avalanches. The alpine meadows were in use as summer pastures, and had lowered the timberline here and there, but the fauna was undisturbed, with the exception of bigger elements such as lynx, bears, ibex, mouflons, chamois and even marmots, which were brought to the brink of extinction by overhunting and poaching. Amongst the birds, the bigger ones, such as eagles, vultures, eagle-owls (*Bubo bubo*), and capercaillies (*Tetrao urogallus*) had to pay the bill.

Thanks to the activities of nature conservancy agencies, both governmental and non-governmental, all species originally present were saved and are now increasing.

Serious loss of habitat occurred in the valleys where power-stations were constructed. The most important stress, however, comes from the tourist industry, replacing the humble numbers of alpine walkers and climbers by massive groups of skiers, nowadays brought even in summer-time to the highest icefields and glaciers by helicopter.

Future developments

In this short review it has been demonstrated that the fauna of Europe, as a whole, has suffered enormous losses.

Although this has meant the extinction of an amazingly low number of species, a large and increasing number are living in natural reserves, in isolated populations. Their cases have been written and rewritten about, and the danger of extinction has been averted. However, they no longer form a real part of our daily environment. In some cases restoration is still possible, as has been proved with lynx, badgers, beavers, wild cats, ibex, mouflons and eagle-owls. Careful planning is required and, of course, extensive financial means.

In my opinion, however, much more attention should be paid to the conservation of habitats, where species are living which today do not yet appear in Red Data Books or in threatened species reports. This would seem to be a simple task, as these species have always been present in large numbers. However, in reality, it is even harder than conserving rare species, as it means converting and/or channelling the adverse side-effects of industrialisation and urbanisation.

The tools for this work are slowly coming into being. There is the wetlands convention, aimed at the protection of birds in a certain type of habitat; the network of biogenetic reserves has a wider scope and aims at the conservation of chains of natural habitats of all occurring types. The adoption of the Convention on the Conservation of European Wildlife and Natural Habitats gives hope for a quick realisation. This means a big step forward but should in no case give the impression that the conservation problems of our environment have been solved.

Biogenetic and other reserves can only maintain their existing level if the biological value of the surrounding areas does not decrease any further.

This means that, besides the efforts of all authorities on a European level, nature conservation on a local level remains even more essential. The hedgehog in our garden, the swallows under the roof, the tadpoles in the village pond, all represent today's conservation problem at our own level: conserve the common species.

A. van W.

Through the ages

H. Steinlin

The natural vegetation at any point on the earth's surface at any given time, provided that it is uninfluenced by human activity, is first and foremost the product of the soil in which it grows and the local climate which surrounds it. But other factors relating to the history of plants and their migration also play a part.

Multifarious influences

The soil characteristics influencing vegetation are dependent on the basic geological material, topography, water regime, age and also climate. The vegetation itself also affects the nature of the soil, protecting it to some extent from radiation and precipitation, and acting on it through root activity and plant decay. Climate exercises a decisive influence on plant life through such things as mean temperature and extremes of temperature, the length of the growing season and of the frost-free period, radiation, the rainfall and its distribution, and wind. Any site is characterised by the nexus of relationships between soil and climate.

Even without human intervention, vegetation is subject to change in the course of time as a result of changes in climate and in the soil, both of which are themselves influenced to some extent by the vegetation and by plant migration. Europe's geological history, with the great ice ages and the changes in climate since the end of the last ice age about 10 000 years ago, provides some particularly striking examples. The vegetation in Europe has been more strongly marked than that in other continents by the ice ages, with the repeated advance and retreat of glaciers. The most noticeable effect of this is the much smaller range of species. Only a few plant species were able to survive in the ice-free zone between the Scandinavian ice advancing southwards and the glaciers moving northwards from the Alps. Many were unable to escape to the more favourable areas south, south-west and south-east of the Alps or, having managed to get thus far, failed to return again at the end of the ice ages. The ice ages not only greatly reduced the number of plant species in Europe, but also induced genetic changes in the surviving species. Many plants weathered the often extreme climatic conditions only in small isolated pockets, where only those individuals which were best adapted to the specific environment survived. This selective survival together with the isolation reduced genetic variability, producing distinct sub-species which often remained distinct as they returned, sometimes by separate routes, to recolonise their old habitats.

But the vegetation is also affected by less dramatic changes in climate than the great ice ages: even the slighter climatic fluctuations since the end of the last ice age have repeatedly produced modifications in the plant cover. These have resulted not so much in the complete disappearance of certain plants as in changes in the frequency of species, because they have altered the ability of species within a single plant community or in adjacent communities to compete with one another.

Irrespective of evolutionary changes in the plant cover, climatic conditions since the end of the last ice age have been such that, were it not for human intervention, most of Europe would now be covered with forest, the only exceptions being the areas above and north of the treeline in the mountains and in Scandinavia, the vast tracts of moorland areas with a permanently high water-table, very rocky ground and, in places, narrow coastal stretches where constant wind and salt prevent the growth of trees.

The human impact

Admittedly it would be hard to find any completely natural woodland left anywhere in Europe. Even so-called primeval forests are rarely wholly unmarked by human activity, however slight. The earliest and most drastic changes in the plant cover took place in the Mediterranean area. The ancient civilisations, with their huge demand for wood as the only energy source for heat — think of the Roman baths — for lime-burning, metal-extraction and metal-working, as well as for ship-building and other technical uses, were dependent for their supply on forests which for reasons of climate and, to some extent, soil were not very vigorous or competitive. The extremely dry summer favoured intentional and unintentional forest fires. Once the forests had been felled or burnt, the heavy autumn and winter rains in a mainly mountainous region highly susceptible to erosion washed away much of the soil and formed mountain torrents. Animals, particularly large flocks of sheep and goats, largely prevented reafforestation, and the forms of vegetation which grew, such as maquis or olive and chestnut groves, were severely degraded and bore the mark of human exploitation, fire and grazing.

Thus developed the characteristic Mediterranean vegetation we know today, which has virtually nothing in common with the original vegetation. In many cases the degradation is in fact irreversible and even where cultivation and grazing have ceased there is no chance of the original plant cover being reconstituted.

In Central Europe, north of the Alps and east of the Pyrenees, not only did dense settlement occur much later, but the forests, the natural climax vegetation, were more resistant thanks to more favourable climatic and, to some extent, more favourable soil conditions. On the one hand this made land clearance harder, and on the other it meant that when human intervention ceased, for example after a plague or war, or when large sections of the population moved to the towns or emigrated overseas, the cleared areas were recolonised by forest.

The coniferous forest belt stretching across Scandinavia and western Russia has been the least affected by human influence. True, forests were cleared and the land converted to ploughland and pasture, but these activities were confined to the most favourable sites. Consequently not only the vast moorlands but also about two-thirds of the forest were preserved in their natural state. Here, too, the forest has shown and still shows itself capable of recolonising uncultivated agricultural land without much difficulty.

We know little about the actual process of forest clearance, except that it seems to have been a slow but steady process, until the late Middle Ages at least, and the widespread three-field rotation system with regular fallow periods allowed many wild plants to survive.

The change-over to monoculture and increasing demands for timber with industrialisation changed the proportions of trees in forests and sometimes brought about their destruction. As from the eighteenth century attempts were made to repair the damage, but for systematic forestry, which first began around this period, the solution consisted in growing plantations of conifers, particularly pines and spruces, but also species imported from other continents, which in many areas have since replaced the native species and given the forests their distinctive appearance. Only in recent years have there been signs of efforts being made again to bring the composition of species in cultivated woods more into line with that of natural woodland communities. The forest is, thus, an illustration of the tremendous influence exerted by man on the natural vegetation, an influence which has changed the whole face of the European landscape and for which man must accept full responsibility. H.S.

Athyrium cf filix-femina

Robert E. Boote

Taking up the challenge

Actions rather than words

Looking back to the European Conservation Year Conference at Strasbourg in 1970, we see a succession of intergovernmental environmental conferences. At the world level, the most notable venues have been Stockholm (environment), Bucharest (population), Vancouver (habitat) and Tbilisi (education). At the European level, we have just had the 3rd European Ministerial Conference on the Environment, in Berne. These meetings have undoubtedly raised the credibility and acceptability of environmental conservation, but are really not much more than a political response to the environmental concern generated by ecological scientists, the voluntary conservation movement and periodic environmental crises. The real test for conservation is the state of our environment and its natural resources. Future generations will judge us by our actions rather than our words. The fact that some environmental problems, such as oil pollution, loss of good soil and natural habitats and vandalism of wildlife, are worse now than in European Conservation Year is already a form of indictment.

With more and more people on this planet — some 4 000 million now and another 2 000 million in the next twenty years — a wiser, healthier relationship with its resources becomes critical. The pressures on land for minerals, timber, food, housing, transport and recreation are growing all the time. Another fact which we are finding difficult to digest is that industrial technology and international trade have given rise to widespread unemployment — a massive waste of human resources. So we are making an industry out of leisure and consuming more natural resources in the process.

The industrialised countries of the world have exported many of the environmental side-effects of their economic activities to the developing world. Demand for timber leads to the destruction of tropical rain forests at the rate of 20 hectares a minute, leaving sterile ground behind. Mining for copper and other minerals devastates large areas in Borneo, Chile and elsewhere. Trade in endangered animals and plants satisfies the whims and palates of the rich of Europe, North America and Japan and puts at risk not only these wildlife species but the lives of dedicated game wardens in Africa and Asia.

Controversy

Unfortunately conservation is seen by some people as contrary to their economic interests. It is blamed for hindering developments (e.g. the Alaska pipeline and nuclear power) and so slowing economic growth, for adding to costs and thus buttressing inflation, and now for causing unemployment. Though economic and ecological time-scales are everywhere becoming more and more coincident in impact — in the deserts and tropics, in the wetlands and uplands — the proposition that it is better, cheaper and quicker to work with nature from the outset is still spurned.

We are still asked, can we afford it? Thus motorways have priority over nature reserves, drainage and reclamation for agriculture destroy wetlands, and too much chemical fertiliser is applied to the soil. The harmful side-effects of these decisions are largely ignored in the pursuit of economic growth. This approach also aggravates resource consumption: timber and plastics are used for throw-away packaging and containers; and obsolescence is built into many products, either by way of inferior quality, phasing out of spare parts or through fashion trends. The energy and materials used in the world-wide trade in cars is another example of waste.

The 1970s: an evaluation

If the 1970s reveal anything, it is that economic well-being for all people must be the touchstone of economic growth – and that conservation has a major role to play in ensuring that we achieve a sustainable life-style. It is surely a moral crime to remove choice from future generations by using up resources, polluting and degrading the air, water and land. Recycling of materials and rehabilitation of land must be automatic; we must move out of the "spendthrift era".

The 1970s have also seen the "North-South dialogue" being battled through and between UNCTAD[1] Conferences and the attempt to establish the ground rules for a "new international economic order". In a Europe where conspicuous over-consumption and waste are too obviously all around us, it is difficult to deny the justice of the claims of the poorer people of the world to at least a subsistence standard of living — one square meal a day, clean water and a dwelling to call "home". Nature conservation must inevitably come a long way down the agenda of these peoples, unless it is shown to be integral to their future prosperity.

All those who care for the environment must, therefore, have concern for the health of other peoples — the millions afflicted with schistosomiasis, protein deficiency and the squalor of headlong urbanisation. In sum, the poverty of the poor and the leisure extravagances of the rich are inextricably linked. Poverty cripples the environment as well as people.

1. United Nations Conference for Trade and Development.

There are, however, encouraging signs. Environmental decision-making is now a global activity of the UN. The World Bank positively relates the needs of peoples and the environment in its programmes. An increasing number of third world countries are seeing the relevance of resource conservation to their development requirements; and the term "eco-development" is beginning to mean something world-wide. The International Union for Conservation of Nature and Natural Resources has promoted this approach since 1973 and it is the key theme in *A World Conservation Strategy*, to be published in March 1980.

"Environment" and "ecology" are now everyday terms and most European countries have formed government departments or agencies for environment protection. "Ecological" political parties have participated in recent elections. Public referenda have been held on environmental issues (such as that on nuclear power in Austria). The growth in number and influence of the non-governmental organisations in this decade is very impressive. More and more people are taking an interest in wildlife and joining voluntary nature conservation bodies, and large numbers are using the countryside thoughtfully for rambling, orienteering, jogging, sailing, bird-watching, hunting, shooting, fishing, hang-gliding, botanising, sketching and just seeking enjoyment of lovely scenery.

The economic benefits of wildlife and of an ecological approach to resource management are many. In some regions of the world, fish is a significant source of protein in the human diet, as are game animals in parts of Africa. As our crops and livestock had a wild origin, so wildlife continues to be an essential genetic pool for cross-breeding and developing new varieties. Bees and other insects play an important role in pollinating crops; other animals are vital predators or parasites of agricultural pests. Wild animals and plants are raw materials for many medicines and drugs. Working with nature in forestry, agriculture, and development projects can avert disasters such as desertification, erosion, flooding and loss of soil fertility. All these aspects are more widely known at the end of the 1970s than they were when European Conservation Year was initiated.

Fruitful work

Many of the objectives which conservationists were working for in the 1960s have been achieved. One is the restriction on the use of certain agricultural pesticides which were having a disastrous effect on wildlife, especially birds of prey at the end of the food chain. Another is the creation of a network of nature reserves in European countries. A third is the legal protection of much of our fauna and flora. The international dimensions of conservation are reflected in conventions on wetlands (Ramsar) and trade in endangered species (Washington) — though regrettably several European countries have not yet signed them. More recently the directive of the European Economic Community on bird protection has provided a sound basis for protecting our avifauna and it is to be hoped that the convention launched at Berne can do the same for wildlife habitats. But it takes more than a convention to safeguard our natural heritage.

One of the chief hopes of conservationists in European Conservation Year was that, through environmental education, we could inform a new generation about ecological principles and foster a commitment to the rational use of natural resources and the enjoyment of wildlife. Once again the initiatives were taken on the international front. In particular, the UNESCO/UNEP environmental education programme set out in the Tbilisi Conference in 1977 demonstrates the relevance of environmental thinking to every facet of modern life. Sadly, since Tbilisi, many national governments have done little more than pay "lip-service" to this exciting, well thought-out approach to education.

In many ways the past decade has been frustrating — the neurotic seventies contrast with the buoyant sixties — but conservationists have learned some salutary lessons. One is that the acceptance of the desirability of nature conservation does not mean that it automatically comes about; other economic and political factors usually take priority. Conservation has still to prove itself to the public as essential to our survival and as necessary a part of a better human environment as health, human rights and peace. Conservation can no longer operate in isolation — a rational use of land and water demands that agriculture, forestry, mineral exploitation and urban development take account of each others' needs and those of conservation. For their part, conservationists have to become more professional, forward-looking and constructive and ready to show that conservation is cost-effective and has something to offer to the employment problem and the energy crisis.

In some senses conservation becomes a measure of personal and public health; in others, one of wise investment and capital formation to sustain development. But most of all a conservation ethic — living in rapport with nature — offers moral values to replace the feeling of insecurity and recklessness and fears from inflation so prevalent everywhere.

Hopes for the future

We must consolidate and improve upon the achievements of the 1960s and 1970s; to start to relate population numbers and distribution to the viability of local communities and the well-being of the people in them; to protect the best quality soils, special habitats and sites, and the seas around us; and to revitalise and enhance our urban areas. A rational use of our land and water is required, based upon scientific and professional assessments of their capabilities and optimal, sustainable yield (derived from ecological principles); and we need to learn more of the scope for multi-purpose use.

The Council of Europe has a continuing role in creating the political and public awareness of conservation needs. At the national and individual level we have the task of putting appropriate measures into effect.

Though the challenge is immense there is no cause to be daunted. Man's power to transform his environment – for better or worse – is greater than at any time in history. And this means that we cannot escape or shirk our responsibilities to our fellows on this planet today and to future generations.

R.E.B.

A more dynamic policy

Michel Prieur

In many countries, the law on nature conservation is becoming as elaborate and complex as the law on pollution. States have in fact been taking advantage of widespread public concern for the environment to pass new laws in this field. The protection of wildlife and natural habitats is less directly in conflict with economic interests than pollution control, and the idea of a right to the enjoyment of nature is thus gaining ground.

The Stockholm Declaration

The protection of animal and plant species is vital to human survival, and it is thus essential that general principles, affirming the need to safeguard endangered species and biotopes, be formulated. For this reason, certain national legal systems (and even constitutions) have laid down new principles of law in implementation of the declaration adopted by the United Nations Conference on the Environment, held in Stockholm in 1972: "Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors" (Principle 4). One example is the French Act of 10 July 1976 on nature conservation, and another the Swiss Act of 1 July 1966 on the protection of nature.

To assert that the protection of species is in the public interest is to admit that these are communal assets, in the keeping both of citizens and of the state. The provision of protection will call both for the reorganisation of administrative responsibilities and for appropriate legislation.

The authorities responsible

In institutional terms, the conservation of wildlife is usually the responsibility of the central agricultural authorities. Their role in this sector stems from their traditional responsibility for the management of forests, hunting and the rural environment in general.

In countries which possess a Ministry of the Environment, the latter assumes responsibility for nature, whether or not this includes the management of forests.

Government departments can draw on the assistance of advisory agencies specialising in nature conservation. In Switzerland, the body concerned is the Federal Commission for the Protection of Nature and Landscape (decree of 27 December 1966).

In Luxembourg, the Act of 27 July 1978 established a Nature Conservation Council, with the task of submitting proposals on conservation to the government and giving its opinion on all questions or projects relating to the protection of wildlife.

As a result of the Act of 12 July 1973, Belgium also possesses a Nature Conservation Council, which is assisted in its work by a Nature Conservation Institute. In France, the National Conservation Council, originally established in 1946, was remodelled by the decree of 25 November 1977. Its task is to advise the Minister on ways of preserving and fostering wildlife, improving the protection of sites and maintaining biological equilibria. It also studies laws, regulations and scientific findings on these subjects. Its membership includes a high proportion of members of associations and scientific specialists.

What kind of protection?

There are two legislative approaches to nature conservation: general protection of fauna and flora throughout the national territory, and a special policy for the creation of protected areas. Most countries take both types of action.

The general protection of flora involves total or partial prohibition of the collection, picking, transport or destruction of rare or protected plants. Exceptions are sometimes tolerated for scientific, medical or educational purposes.

The protection of fauna meets much the same requirements. Here too, certain species are protected and a number of animals may not be hunted. The list of animals which were formerly regarded as harmful and might therefore be killed without restriction is tending to decrease.

In addition to these general measures, all the national legal systems provide for special protection in certain regions or for the creation of protected areas in the form of nature parks or nature reserves. The choice of this policy in preference to others has often given rise to controversy.

Care must be taken not to shut nature in a showcase, setting up reserves which salve the authorities' consciences and tolerating the destruction nearby of other species which should also be protected. However, provided that they are clearly demarcated and well run, the proliferation of reserves may well be a sound solution. The strict regulations enforced in these reserves, with the accompanying restrictions and prohibitions, have often made it possible to save endangered species. The Belgian Act of 12 July 1973 provides for "integral" or supervised reserves. The reserves established under the Act are all managed with a view to maintenance of a specific ecosystem which is considered rare or typical. This approach has made it possible to reintroduce the following species: the white stork (*Ciconia ciconia*), the greylag goose (*Anser anser*), the heron (*Ardea cinerea*) and the cormorant (*Phalacrocorax carbo*). In the Federal Republic of Germany, the framework law on nature conservation of 1976 provides for protected nature zones, national parks and nature parks.

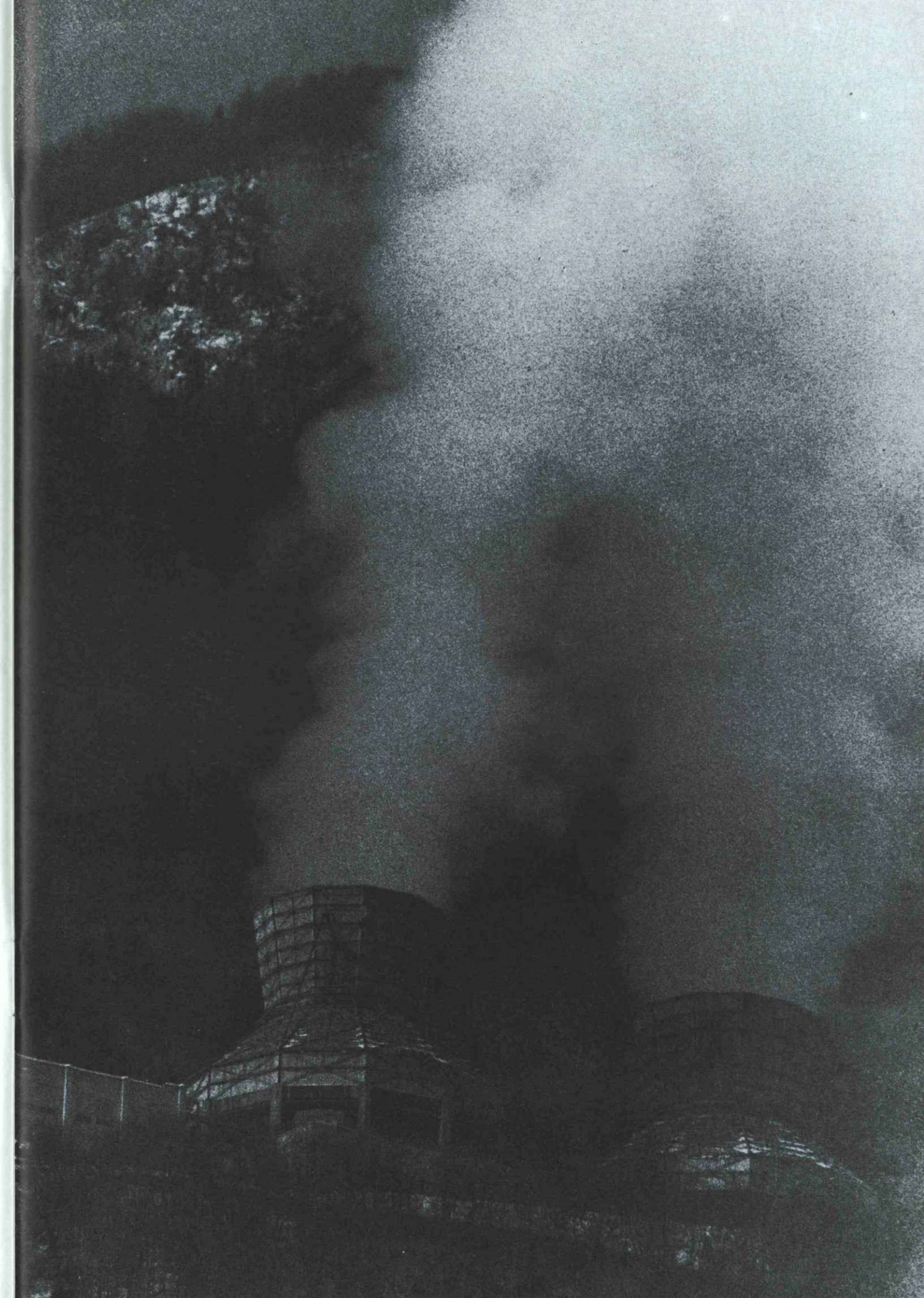
"Political will-power is needed"

The legal instruments of wildlife conservation exist and are manifold. However, local conflicts frequently prove stronger. Tenacious political will-power is needed to convince farmers and local representatives that protection measures are not going to compromise their interests or limit the development of tourism.

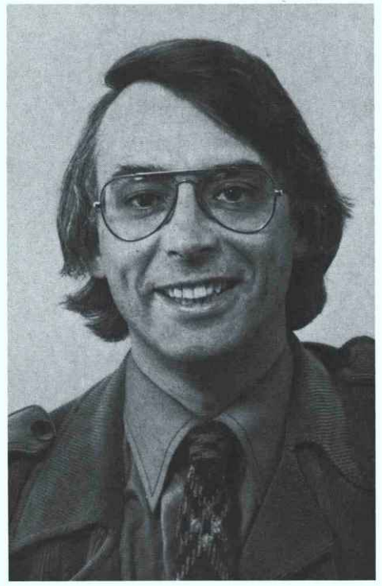
The conservation of wildlife calls for the support of the entire population. In European states where space is at a premium, the choice of zones for protection is difficult, requiring detailed scientific study and broad consultation of local interest-groups and communities. Once the resistance of farmers has been overcome, care must be taken to ensure that tourism, controlled or uncontrolled, does not frustrate the aims of conservation.

In view of these difficulties, it would seem essential that environmental impact studies should be extended in all countries as a way of ensuring improved management and planning of environmental development. These preliminary ecological studies should be required not only when a development or investment project seems likely to damage the environment, but also when the decision to establish a protected zone (park or reserve) has been taken. In the latter instance, scientific analysis of all the ecological consequences of creating a reserve may help to overcome resistance and anticipate problems. In 1977, the Council of Europe's European Committee for the Conservation of Nature and Natural Resources decided to consider a framework model for legal assessment of the environmental impact of development and planning operations in rural areas. Together with the various resolutions adopted by the Council of Europe on the conservation of wildlife (protection of the banks of lakes and rivers, protection of endangered mammals, conservation of rare and endangered plants, conservation and management of heathland, etc.), this initiative should help to pave the way for more dynamic nature conservation policies.

M.P.



Unity is strength



Hemmo Muntingh

Situated between the North Sea and the mainland of the Netherlands, Germany and Denmark, is one of Western Europe's most extensive and beautiful nature areas: the Wadden.

This Wadden area, which has a surface of 10 000 square kilometres, is situated 40% in the Netherlands, 50% in Germany and the remainder in Denmark.

It is a coastal area which consists for the major part of tidal flats, a large number of islands which protect the tidal flats against the turbulent waters of the North Sea, as well as a coastal area on the mainland where the influence of the sea can be clearly felt. The value of this primal nature area is almost entirely determined by the free play of low and high tide, wind and weather, of sun, sea and sand.

Innumerable birds, mainly stilt-birds, ducks, geese and gulls, feed on the all but unlimited quantities of shellfish, fish and plants. The common seal can still be found and the scenery is of matchless beauty.

Threatened area

Just like everywhere else in the world this precious golden edge of the ocean is under heavy human pressure: directly and indirectly. The Rhine, Ems, Elbe, Jade and Weser discharge their strongly polluted waters in this area, which has, amongst other things, resulted in the near extinction of the seal population in the Netherlands. The industry in the towns of Delfzijl, Emden, Wilhelmshafen, Hamburg and Bremen takes its toll as much in space-occupation as in inhabitant-equivalent (the euphemism for human pollution). The military train there on a grand scale and the recreation industry seems to endeavour to make the whole area its playground. And here the large oil and gas companies are also drilling into the earth to look for energy with all the risks that go along with it.

As a consequence of all these human activities the Wadden area is listed high amongst the areas which urgently require protection by the World Wildlife Fund.

The Wadden Association

In view of its extensive natural resources it is not surprising that the Wadden area ranks high with the conservationists. This interest is not yet long-lived, at least not with organised environment protection. The Dutch people were the first to make an effort, in 1965, to stop the continuous advance of the destruction of the Wadden area. On the initiative of a 16-year-old boy, Kees Wevers, who was afraid of an attempt to reclaim a large part of the Netherlands Wadden, a notice was put in some of the daily papers with an appeal to stop that reclamation. His appeal resulted in the foundation of a new association, called the National Association for the Conservation of the Wadden Sea, with the objective: "the promotion of the interests of the Wadden area in the broadest sense, and of the best possible conservation of the natural state of the area".

This Association grew after a somewhat hesitant start to become one of the largest nature protection organisations in the Netherlands, and today counts 35 000 members.

The Association has its own action centre, the "Wadden House", in the coastal town of Harlingen where approximately twenty people are permanently employed to devote themselves to the conservation of the natural environment of the Wadden area, and it is considered to be one of the most successful nature conservation organisations in the Netherlands.

In Germany and Denmark the nature conservationists also started to organise themselves in recent years in an effort to protect their part of the international Wadden area. The Netherlands Wadden Association and the World Wildlife Fund in this case play the role of godfather and godmother. Unfortunately, the results so far are not stupendous.

The different degrees of success met with by the Netherlands Wadden Association and the German and Danish ones are easily explained, on the one hand by the social structure in the Netherlands where associations abound and flourish, and on the other hand by the internal organisation of the Netherlands Wadden Association.

Volunteers

Central to the organisation are the volunteers, who do the bulk of the work. The permanent workers are mainly oriented towards the co-ordination and support of the volunteers, who are sometimes called "informed members" because most of them are people with specific training or experience. Amongst them are engineers, economists, biologists, biochemists, doctors, lawyers; in short the whole range of present-day scientists is available. Consequently the work contributed by them is of a high standard and problems can be approached in a multidisciplinary way. The contribution of volunteers, however, is not limited to members with an academic training, members without or with a lower level of training are also active; their activities are mainly situated in the field of information, recruiting of members and action support. The "informed members" operate mostly in working groups, which are oriented to specific parts of the Wadden area, such as the Ems estuary, the Lauwerslake, the North Frisian coast, or to specific problems, such as agriculture, defence, recreation, etc. The pattern of the work is varied, but usually follows a specific course, which can be described as follows. After the initial, exact specification of the problem, the objective is stated. In the next phase the greatest possible amount of data is gathered, analysed and put together in a report or pamphlet; if necessary, alternative solutions are provided. With the basic information thus acquired, action can be undertaken.

Such action can follow different courses, successive or simultaneous. It can be a publicity campaign, a legal procedure or a campaign aimed at the public with the objective of mobilising the community. Generally the action starts at local level and then moves upwards through the provincial level to the central administration or parliament.

The secret of the (relative) success of the Wadden Association is, next to the above-mentioned relatively favourable social structure, mainly based on a thorough multidisciplinary approach, on the supply of alternative solutions and on the fact that the "informed members" conduct their actions personally. Thus the actions obtain a certain degree of impartiality and a basis in the civilian population.

Results

What results has the Wadden Association obtained in its struggle of almost fifteen years? First and foremost, that the decline of the natural environment in the Netherlands part of the Wadden area (and decline, alas, there is) has been slower and less intensive than would have been the case had the Association not existed.

Furthermore, due to clever press management of the Association, which produces its own magazine and issues a large number of publications (ranging from simple reports and brochures to magnificent books) the realisation that the Wadden area is one of Western Europe's foremost nature areas, and needs to be protected, has become common knowledge in the Netherlands. Recently, the Netherlands Government published a resolution on this subject which will shortly be sanctioned by parliament. Large parts of the Wadden area will then be protected by law. The Association, furthermore, has successfully prevented large parts of the Wadden, such as the Balgzand, the Dollard and the North Frisian tidal flats, from being reclaimed in spite of heavy pressure from industry and agriculture.

The actions to prevent these reclamations have taken years (an average of five years per action) and have been conducted far over the borders of our country, under the motto: "nature has no boundaries and belongs to everyone".

The Association has also succeeded in combating all kinds of polluting industries and the gas and oil companies. In this case legal and planning instruments have been particularly used. In many cases the Association has instituted proceedings up to the Crown (the highest administrative court), but extensive mass actions have not been shunned in such cases.

Alas, the Association has also lost on many fronts. Recreation on the islands has increased into a nature-destroying avalanche that can hardly be stopped. The water pollution remains an insoluble problem and the military still have the largest NATO airforce training field of Western Europe in the area. The industry on the edges of the area keeps on growing.

In consequence, plenty of work remains to be done by the National Association for the Conservation of the Wadden Sea. That work remains as long as there are people that want to live, work and find recreation in the area. But as long as such people are there, there is hope. Hope for another mentality with regard to nature, hope for a society that acknowledges the rights of plants and animals, and that gives nature and scenery its due.

H.M.

Illustration on p. 17: *Hyla arborea*

We can do it

Gren L. Lucas

The best way to save a threatened plant is to protect its habitat, so that its population can continue to maintain itself and evolve under the pressure of natural influences. Once removed from the natural environment, plants have a tendency to lose their competitive edge while often expensive facilities are needed to maintain relatively small populations in cultivation.

Threatened flora

So it is especially appropriate that the next Council of Europe campaign will be pressing for the conservation of natural habitats of plants and animals. It is not an unattainable goal in Europe that suitable habitats of all plants and animals should eventually be conserved, but in the beginning special emphasis should be given to the rare and threatened species as these are the plants for which time is running out. With the help and support of many botanists throughout Europe, we now know which are the rare and threatened species. The list of rare, threatened and endemic plants in Europe, 1 878 in all, was compiled by IUCN's Threatened Plants Committee (TPC) and published by the Council of Europe. The list has been accepted by the governments represented in the Council, and their Environment Ministers have endorsed a strong resolution in which they recommended that their governments be guided by eleven principles, one of which is to establish nature reserves for all species listed as threatened.

The new Council of Europe campaign on the conservation of wildlife and natural habitats also underlines the relationship and links of the ecological and floristic approaches to conservation, the latter providing detailed highlights for the sites both approaches are seeking to protect.

In the next five years of its European programme, the TPC will be doing all it can to bring these two vital approaches together and looks forward to continuing the rewarding collaboration with the Council of Europe enjoyed so far. The campaign provides an ideal focus for this work, as above all we want to translate the data in our lists into firm recommendations and suggestions for action on the ground. In this task, the first step is to find out more about the precise distributions of the listed species: exactly where do they grow and on whose land? Looking at the distributions of each of the 1 878 species, one will find "clusters" of threatened

plants in particular areas and localities; here the data should provide the stimulus for action. When added to the ecological side of the argument, this presents a strong case with which national and international conservation bodies can push for the protection of these sites.

Protected areas

Essential in the task is to know how many of the rare and endemic species are already in protected areas of some kind. It is ironic that we now have a data base that shows which of the species are in botanic gardens — 529 have been recorded in 70 European gardens so far — but as yet we have no equivalent data base for species protected in national parks, nature reserves and other protected areas. We do not even have a list of all the reserves. Yet it is obviously in national parks and nature reserves that plants are most successfully and cheaply conserved, not in botanic gardens, except as a last resort. It is therefore essential that this data base is now rapidly built up by the TPC. In this way a regular monitoring of what is threatened, what is protected *in situ* and what is held in botanic gardens can be maintained, and national, regional and global strategies can be designed and acted upon using such a data base.

My colleague Max Walters has kindly done a small survey for me of the threatened flora in three important fenland reserves in East Anglia — Wicken Fen, Wood Walton Fen and Chippenham Fen. Together these reserves contain 6 of the 49 species that are listed by the British Nature Conservancy Council as threatened within Britain. Of these only one species, the fen orchid (*Liparis loeselii*), is on the European list, the rest being more common on the European mainland. This species illustrates the importance of a combined floristic and ecological approach to conservation. The fen orchid is extinct on these reserves, having fallen victim to normal plant succession in the reserve's early years when the ecological processes of fenland were little understood. Clearly, where a threatened species has been found to occur on a reserve, management based on an understanding of the relevant ecological principles and whole biology of the plant is essential for its survival. In this case, either cutting or grazing of the site is required.

Another interesting example of lack of management, this time of agricultural land, has allowed a rare Yugoslav endemic to increase its range. *Degenia velebitica*, according to the *IUCN Plant Red Data Book*, only survives in reasonable numbers because increased cattle-grazing has enabled it to colonise out of its loose mountain scree habitat into nearby over-grazed land.

Although it is relatively easy to assess the threatened species content of parks and reserves in Northern Europe, it is a much larger and more difficult task for the Mediterranean region, simply because of the great richness of the flora. Yet the effort must be made. For example, many botanists know of the famous primitive endemics *Jankaea heldreichii* and *Viola delphinantha* in the Mount Olympus National Park, Greece. Yet how many more of the 680 species on the TPC list for Greece are in this plant-spectacular of national parks?

As part of this programme, we also need to look more closely at the habitats of the individual threatened species. Already it is apparent that on a European scale the floras of wetlands and sand-dunes are among the most in danger. The TPC hopes that, as part of its programme with the Council of Europe, it will be possible to produce habitat data for the species as part of a general updating of the list.

But gathering data is only a step in the thrust for conservation. It is action in the field that is needed. From our researches it is clear that most if not all of the threatened species could be conserved with little or no economic hardship. The sites are often small and well within the reach of voluntary support groups, such as natural history societies, university clubs and so on. So the target is simple — no more plant extinction in Europe! G.L.L.

To make amends

Antal Festetics

To repair the damage

The conservation of as many species as possible of Europe's fauna, together with their habitats, is a matter that concerns us *all*. Furthermore, the losses suffered over the last 200–300 years have been so great that just preserving the *status quo* is not enough. For many countries in Europe that would simply mean isolating a few scant remains of natural, ecologically intact landscapes from the general process of industrialisation (and nowadays even farming is just another branch of industry), leaving only ordinary, everyday species elsewhere. There would be no room for the more demanding species, the specialists of the animal kingdom. Nature conservation, however much of a cliché it may now sound, means preserving nature in its original form. This does not, of course, mean "resurrecting" extinct species of wild cattle, for example, by unscientific "regressive breeding" of the aurochs (which is in fact an ordinary domestic ox), because the clock cannot be turned back. Once a species of fauna has been completely destroyed, nothing can be done to bring it back. This applies to the wild horse, a few specimens of which can nonetheless still be admired in zoos — but only in zoos. Much as we might wish to see them in their natural surroundings, this is impossible because their habitat — wide, open steppes — has disappeared from Europe. However, there are a number of wild animals which have only relatively recently come under pressure and have managed to survive to the present day in some countries, as in the case of Europe's large predators. Lynx, bear and wolf disappeared and the bearded vulture (*Gypaëtus barbatus*) ceased to breed in the eastern Alps some 100 years ago. They were exterminated by our forefathers because they were regarded only as competitors in an age when livestock-farming was still extensive and game-farming already intensive though confined to the so-called useful species, primarily those bearing horn and antler trophies.

Now we know that they were wrong. We have no right simply to eliminate species we regard as "harmful"; on the contrary, we have an obligation to repair any damage already caused by our ancestors, as has already been done in some cases. In the case of some species, it is possible to preserve or restore the original variety and natural state of habitats. In others, a little artificial help is necessary, because they would not return of their own accord, as in the case of the lynx, which would have to migrate from the Carpathian mountains of Slovakia or Transylvania, across broad, industrial plains, to reach the Alps. In this instance, "helping" — a necessary evil — means transporting captured specimens from the Carpathians and releasing them in the Alps. This sounds very straightforward, but it is in fact much more complicated.

A long and exacting labour

In order that the lynx might again become indigenous in the Austrian Alps, three years of scientific and technical preparations were required at Göttingen University and in Styria, finding a suitable large and ecologically intact area for the reintroduction of this feline predator. In close co-operation with Ostrava Zoo, the lynxes were caught in Czechoslovakia, acclimatised to their new habitat in a large enclosure in the high Alps and then released, fitted with miniature radio transmitters. It was then possible by means of telemetry to reconstruct fairly accurately the lynxes' gradual "occupation" of the surrounding area during the snow-free season, their territories, movements and the extent of their habitat. Two members of the Göttingen Institute staff were continuously employed in following the lynxes by radio on foot, by car or, occasionally, by light aircraft. This indirect method of behaviour research enables us to find out about the lives of such species which otherwise remain "invisible" in large forests.

After the first snowfall, the emphasis shifted to tracking on skis. In rocky mountains with a high risk of avalanches, this was not easy, but results were good. Resting places and remains of prey were found and it was possible to reconstruct the lynxes' hunting behaviour in snow. Several hundreds of individual facts (mainly biotope parameters concerning local climate, exposition or plant cover of lynx territories) were analysed by computer at Göttingen University. The results will serve as guidance for further reintroduction schemes.

The lynxes proved to be "conspicuous by their discretion", keeping to their same territory and able to settle into the community of Alpine animal species quickly. Neither the fears of the hunting community that the lynx would exterminate deer and chamois, nor the foresters' hopes of their help in reducing the numbers of such herbivores and so diminishing damage to trees, came true. The effect of these predators on their prey is primarily not quantitative but qualitative. The effect is not so much one of regulation as of selection, in a biologically positive sense.

The nine lynxes reintroduced into Austria in 1977–78 have already reproduced, so that the experiment may be regarded as a success. It would scarcely have been possible without the financial help of the Frankfurt (Main) Zoological Society, the Austrian Fund for the Furtherance of Scientific Research and the Austrian Nature Conservation League. No less important, however, has been the co-operation of landowners, the hunting community and the local population in general. Opponents of the lynx are a minority and they must be educated about the lynx's role in nature.

Precautionary measures are needed

Lynxes must not be released illegally, as has unfortunately occurred elsewhere and led to lasting conflict between those for and against the lynx. Nor should animals bred in captivity be set free, as has also occurred elsewhere and caused only harm. In Central Europe only Central European lynxes should be released (e.g. in the Alps, Carpathian lynxes) and not specimens from Scandinavia. We have resolved to abide by these principles in order to make the best "use" of the small number of wild animals captured, and have set priorities as regards suitable areas for reintroducing lynxes. This is important because there is at the moment a kind of "reintroduction mania", with attempts to release lynxes in both suitable and unsuitable places. To begin with, numbers in the Alps should be built up. Barely 150 km as the crow flies from our site in Styria, six lynxes were released in Yugoslavia (Slovenia) in 1973 and have since bred. The first reintroduction attempt in Central Europe was in Switzerland in 1970, where present numbers are estimated at 30–40 animals. Lynxes might also be reintroduced in the (future) Hohe Tauern National Park in Tyrol and in the Bavarian Alps, in order to complete the Alpine chain. In the Federal Republic of Germany, we have now been waiting eight years for official authorisation to reintroduce this magnificent species of feline predator in the Harz mountains, where it has been extinct since 1818. In time the Palatine Forest, the French Alps and a number of other areas could gradually be stocked with lynxes. For the time being, however, the results in the Styrian Alps have to be assessed. The University of Göttingen Institute of Wildlife Biology and Game Studies has committed itself to lynx reintroduction and research in Europe. We have even taken the lynx as our institute's emblem, for what better symbol of wildlife and game studies could there be than this master of the art of hunting?

A.F.

All in the same boat

Brian Johnson
and Nora Liechtenstein

The third world: nature in danger

The success of Dr Norman Myers's recent book, *The Sinking Ark*, a remarkable description of the appalling rate at which species — and whole categories of species — are disappearing from the earth, testifies to the concern shared by many people at man's despoiliation of nature.

As Dr Myers points out, it is not only the pileated gibbon (*Hylobates hoolock*) in Thailand or the white-nosed saki monkey (*Chiropotes albinasus*) in Brazil which will be gone within a year or two unless the most drastic effort is made to save them — it is, more seriously for the human race, a problem of even greater gravity than that often suggested by the aesthetic fanciers of exotic fur and feathers. For the species that we are destroying so rapidly (Dr Myers calculates the rate at one animal species or sub-species a year, a rate ten times higher than that which obtained in the period from the mid-seventeenth to the mid-twentieth century) may themselves be critical to man's survival. In short we, the human species, with a world population only exceeded amongst mammals by the genus *Rattus rattus* — the household rat which lives on our detritus — are not only eroding the physical landscape of the earth which feeds our gigantic and often destructive appetite, but we are eroding the genetic base of thousands of species of small organisms, whose survival and interaction with one another, insect with insect and insect with plant, may be necessary to our own survival.

The rate of destruction is made the greater because, as a species, we not only prey upon our co-habitants of the natural world, but upon each other. Our failure to organise socially in a way commensurate with our extraordinary intellectual and technical advance means that of the 4 300 million of us on the planet, a tiny minority hog most of the resources and drive a substantial proportion of the human race — estimated by the World Bank at at least 800 million people — to the very fringes of environmental destitution.

These "poorest of the poor" are the people driven from the land by modernising, mechanising agriculture, people who wear the ancient haggard face of poverty, drifting to the teeming squalor of city-fringe slum or migrating, unemployed, to previously untilled land, often fragile grass land, savanna and more often still primal forest.

This most fragile fraction of humanity is currently destroying the most fragile of our natural ecosystems, and at an impressive rate. Aside from the unimaginable suffering which grows hourly and daily with the swelling population of third world metropolises, the forests of the developing countries, which today still cover one-quarter of their land surface, are being cut for firewood and for space to grow food at an estimated 20 hectares per minute — a rate which would leave the entire third world as denuded of tree cover as the Middle East a generation and a half from now.

How can species hope to survive this quite incredible scale of blitzkrieg against nature? Only one answer can be returned. They cannot, and will not, until man turns his attention seriously and massively to nature conservation — and it will have to be on the scale of effort that so far has only been occasioned by war — but, more fundamentally, the other species in our Ark will continue to share with us an increasingly dubious future until we help the poor one-third and the totally destitute one-fifth of human beings in ways that will divert them from their short-sighted destruction of nature for the sake of survival.

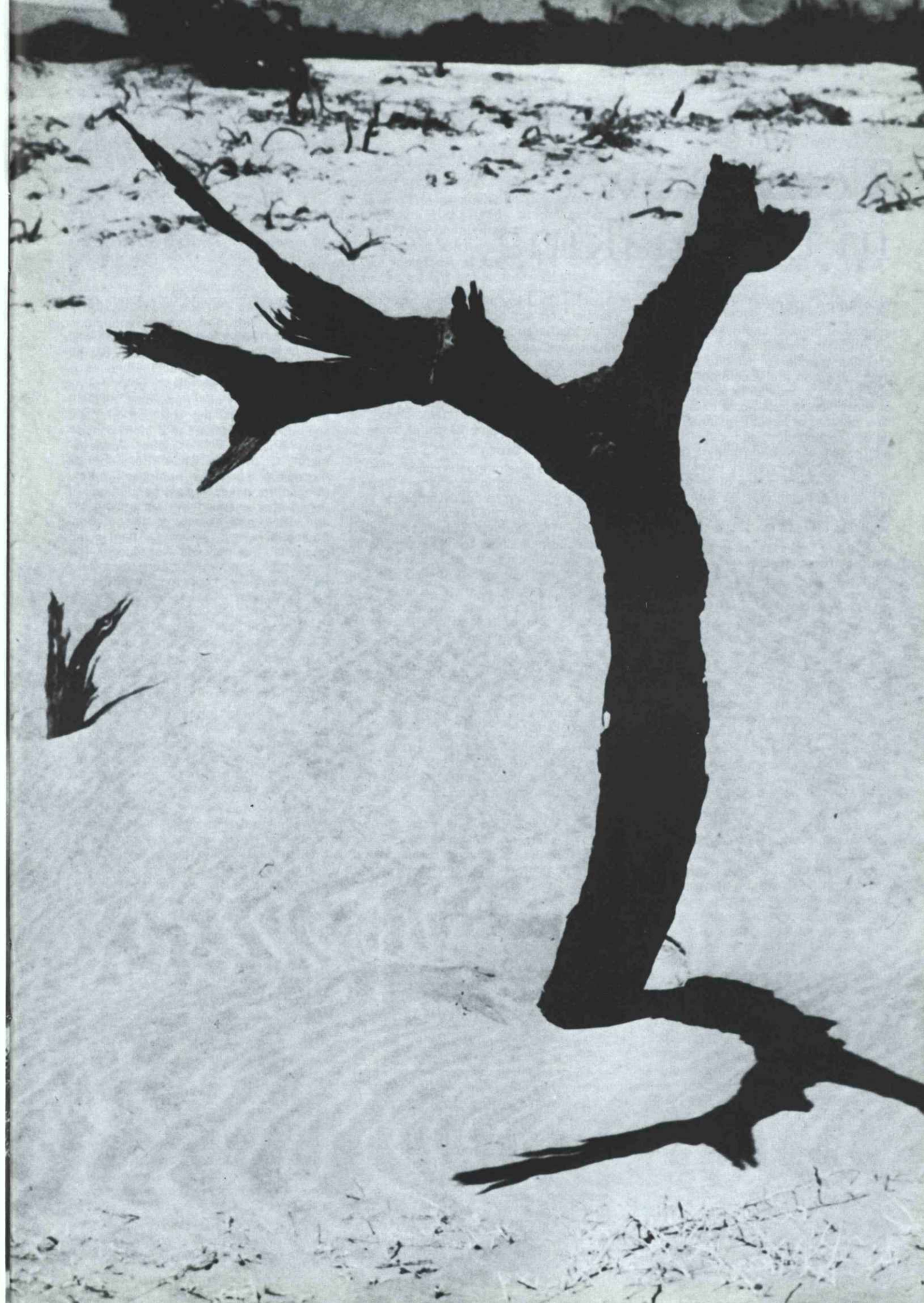
A new development strategy

This implies an immense redirection of resources. But the resources to effect this change are there in abundance. At present, development aid, for example, is devoted almost entirely to an effort to reproduce within developing countries the economic infrastructure — the harbours, railways, roads, bridges, power utilities, etc. — for rapid industrial expansion. This has been the development strategy of the 1960s and of the 1970s. As we enter the 1980s, we face the prospect that the inattention paid in the past to the poorest may, for several reasons, sweep away much of the investment of the past. The tale of appalling soil erosion, dam siltation and souring of vast tracts of irrigated land, and the consequent climatic girations from flood to drought are becoming apparent for anyone with eyes and ears. Until now, they have too often been ignored by governments in charge and by the development aid agencies, which collectively spend almost $ 30 000 million of taxpayers' money per year to aid these countries with their economic development.

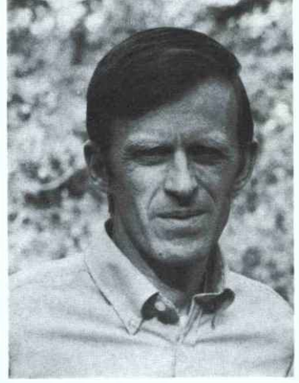
Nature conservation cannot be seen or considered separately from this vast development effort. If it is diverted excessively towards further building of economic infrastructure at the expense of conserving or rebuilding the natural resource base, by the end of this decade we face the prospect of much of our development effort being almost literally washed away. If, on the other hand, through myriad small and medium-sized decisions, help is brought to the neediest with alternative energy (e.g. solar), with reforestation, with soil conservation, with restoration of irrigated land and with the application of a hundred promising new small-scale or low-impact technologies, then the present tide of destruction could be stemmed.

It is only in this process of rethinking our patterns of development — both in poor countries and in rich, that the conservation of species — ones that are vital as well as attractive to man — can be achieved.

B.J. and N.L.



Tomorrow in the making



Magnar Norderhaug

"Common species"

In spite of marked improvements in conservation efforts during the 1970s, an increasing number of wildlife species all over the world are becoming vulnerable due to man's expanding activities. Many of these species still exist in large numbers but loss of habitat, disturbance, pollution, exploitation and other negative factors may easily bring many of them into the endangered category in the years to come. The maintenance of these species and their population levels will most certainly be one of our most important conservation tasks in the 1980s.

One of the first lessons to be learned is that "common species" are often not so numerous or widely distributed as people believe. In Norway, many people were surprised when, in 1977, the Ministry of Environment presented plans for the establishment of 60 seabird sanctuaries in the Oslo-fjord, since the main part of the seabird population in this area consisted of "common gulls" (*Larcus canus*).

But many people were also surprised when they learned that the total population of breeding gulls in this area was equal to only half the number of small boats used for recreational purposes in the Oslo-fjord. And another point: the number of these small boats increased by more than 10% per year, whilst the gull population showed decreasing trends. The same may also apply to many species on the European level. Information material presented at the International Conference on Conservation of Wetlands and Waterfowl (Federal Republic of Germany, 1974) on seventeen of the most important species of waders wintering in Europe, showed that nine species had a winter population of below 20 000; only five species had a winter population of over 100 000; and out of eight duck species wintering in North-Western Europe, only three species had a winter population of 500 000 or more.

Many of these species may easily find themselves in an unfavourable situation simply because their populations are less numerous and more vulnerable than people often think.

In this connection, attention should also be paid to a rather small group of species with a high reproduction potential and great tolerance to human-dominated habitats (pheasant (*Phasianus colchicus*), mallard (*Anas platyrrhynchos*), starling (*Sturnus vulgaris*), etc.). The ecological success of such species may easily lead to the wrong conclusion that many other species also have a high reproduction potential and ecological resistance to human interference.

In general, all over the world, increasing interference and environmental pressure from *Homo sapiens* leads to ecological simplification and instability. For most species, this ultimately means less favourable living conditions.

Point of no return?

An example illustrating the vulnerability of species occurring in fairly large numbers is the population model developed at Yale University with the American sandhill cranes. The model proved that despite a population of close to 193 000 sandhill cranes, a hunting rate of 12 500 per year could bring the species to extinction in nineteen years.

There is also a widespread opinion that man, by means of total protection, can easily restore depleted populations. However, in reality, we can never be sure. Certainly there have been a number of well-publicised examples of successful re-establishments. Two examples from the conservation history of Svalbard are amongst them:

—The population of the Svalbard reindeer (*Rangifer tarandus*) numbered probably below 500 animals when the population was totally protected in 1925. Today, the population has recovered and numbers about 11 000 to 12 000 animals.

— The walrus population (*Odobenus rosmarus*) in Svalbard was brought close to extinction before being given total protection in 1952. During the 1960s and the 1970s, the walrus has shown signs of recovery, probably due to immigration from the USSR.

From the Svalbard area, however, there are also other examples, far from convincing:

— The population of the Greenland right whale (*Balaena mysticetus*) was intensively exploited from the beginning of the seventeenth century. In spite of total protection in 1935, there is no sign of recovery. Since 1945 the species has only been recorded five times in Svalbard waters.

— The light-bellied brent goose (*Branta bernicla hrota*) was formerly the most abundant of the geese breeding in Svalbard. Exploitation during summer and winter, combined with a reduced food base in their wintering areas, led to a marked population decrease. In spite of present total protection in the breeding areas, along the migration route and in the wintering areas, there is no clear evidence of population recovery. At present, the population counts only about 2 000 birds.

The lesson to be learned from such case studies is the importance of ensuring safe margins in wildlife management.

The "management" history of the large whales probably underlines best the need to change from the tradition of "one species management" to a more conservation-oriented "ecosystem management". Of the blue whale (*Balaenoptera musculus*) and the humpback whale (*Megaptera novaeangliae*) populations of the southern hemisphere, only about 3% and 10% respectively of the original populations have survived. There is no guarantee that they will ever recover. The "ecological vacuum" formed when these populations were brought close to extinction may since then have been utilised by other marine species (fish, seals, seabirds, etc). And since man has also started the exploitation of krill, the basic food for many whales, their recovery may well be rather doubtful.

Migration

Migratory and non-migratory species are obviously in different situations. Non-migratory species are normally simpler to manage, since their management depends on relatively few factors and on one or a few countries.

Migratory species are in a much less favourable situation as their life-cycle and population level normally depend on a greater number of external factors. At the end of the 1970s we may, however, note that a better basis has been established for the future management of migratory species:

— The Convention on Wetlands of International Importance especially as Waterfowl Habitats came into force in 1975. At present, about twenty-five nations are Parties to the convention.

— The new Convention on the Conservation of Migratory Species of Wild Animals, concluded in Bonn in June 1979, was signed by twenty-two nations at the end of the meeting.

— The European Communities' "Directive on bird conservation" was agreed upon in 1978.

— The Convention on the Conservation of European Wildlife and Natural Habitats was opened for signature at the Ministerial Conference in Berne, September 1979.

These international agreements represent, however, no real solutions to the problems. They are simply the tools for co-operation in international conservation and wildlife management.

Wildlife management in the 1980s

In the 1980s the pressure on all biological resources will most certainly increase. This means also an increasing need for effective wildlife management:

— Species must not be considered as populations isolated from their environment and other species: they must be managed as an integral part of the ecosystem. Such a far-sighted philosophy is reflected in the US Marine Mammal Act of 1972: "Species and populations should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part".

— Nationally, there is a need to take all relevant public interests fully into consideration in the management of wildlife and their habitats. Internationally, there is a need for better co-operation and co-ordination in relation to wildlife interests involving two or more countries.

To ensure strengthened efforts in wildlife management in the 1980s, the following issues may be of importance:

— Effective national legislation based on the principle that all species are totally protected except when otherwise stated. Exploitation is accordingly restricted to species where this is ecologically and socially acceptable.

— Increased control of negative factors, including control of pollution, exploitation, incidental take and other forms of negative human interference.

— Effective habitat protection, including the establishment of national systems of protected areas to ensure the maintenance of vital breeding, migration and wintering areas.

— Multiple use: all social interests should be taken fully into consideration in wildlife management. Since habitat protection will normally cover less than 10% of a nation's land area, land management of the rest (90% or more) should adequately integrate conservation and wildlife management principles.

— Research: more management-related research is needed in most countries. Two issues seem vital:

- development of reliable and sensitive monitoring programmes to follow population changes;
- research related to the impact of negative, human-induced factors on wildlife and their habitats.

— International co-operation: during the 1970s various legal instruments for international co-operation in wildlife management have been developed. In the 1980s these instruments must be actively used to improve the conservation status of wildlife.

— Information and education: public interest and participation in fauna conservation must be further encouraged. Understanding of wildlife's social value and the increasing problems facing most animals in the next decades must be fully realised.

M.N.

Anthropophily . . .

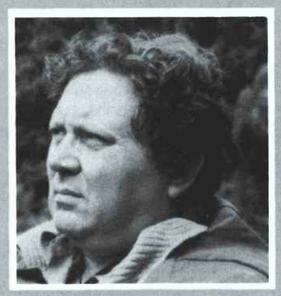
Sergio Frugis

Every day scientists are confronted with new problems for the survival of one or other animal species to be added to the list of those threatened by man.

Far less frequently the scientist, and the layman as well, pause to think of the other side of the coin, namely of those species which have profited by man's activities and habitat changes, expanding their populations and often becoming so man-addicted as to be incapable of thriving without him. A score of species, in fact, have so finely attuned their life cycle to man-made habitats or human activities that their previous, more natural way of living has been completely abandoned.

Brown and black rats (*Rattus norvegicus* and *Rattus rattus*) are just two animal species which, after reaching Western Europe with the Asiatic hordes, have subsequently spread to almost every corner of the earth, hand in hand with man (especially white man), and have now begun to compete amongst themselves for the title of "man's partner". What all this has meant to mankind, with the spread of the plague and other epidemics, we know only too well.

Happily there are less harmful and more friendly species. The barn swallow (*Hirundo rustica*) and the house-martin (*Delichon urbica*) are two birds that at some time in their evolutionary history have decided to nest almost exclusively in or around buildings, barns, cowsheds, ruins, etc. The marked preference of the white stork (*Ciconia ciconia*) to nest on top of roofs, chimneys, towers and ancient walls is also well known. Even if other more subtle causes have also been at play for the spreading of other species, like some gulls, the fulmar (*Fulmarus glacialis*) or the eastern collared dove (*Streptopelia decaocto*), man's influence cannot be denied. Herring, common and black-headed gulls (*Larus argentatus, L. canus* and *L. ridibundus* respectively), amongst others, have found new sources of food in human refuse, sewage, fish offal, etc. In this way, such species have "nicely" solved their energy intake problems, all year round.



Some human artefacts are exploited in curious ways: television aerials, for example, have proved to be excellent substitutes for natural song-posts for many birds, such as blackbirds (*Turdus merula*), starlings (*Sturnus vulgaris*), collared turtle doves (*Streptolia decaocto*), redstarts (*Phoenicurus phoenicurus*), etc.

The combined habits of British housewives and great and blue tits (*Parus major* and *P. caeruleus* respectively) have been essential in discovering that even the last stronghold of man's peculiarity, so-called cultural transmission, we share with many other animal species, such as apes, monkeys and even insects, as well as with tits, in so far as we can trust some very recent experiments. In other words, animals too are able to "skip" organic evolution and its genetic laws, spreading new knowledge, such as the acquisition of new habits, through imitational learning. By this process British tits have learned to open the metal caps of milk bottles left every morning on the doorstep by the milkman. After the discovery of the availability of a new, important source of fat-rich food (cream below the cap) made by one or a few particularly skilled tits, the habit has spread throughout the country in a way that suggests a learning process occurring amongst those tits who witnessed the first discovery. Too few detailed studies have been carried out so far to allow any generalisation. Most authors nonetheless agree on one major point: synanthropy (or anthropophily, if you prefer), that is the strong tendency to live with man or in man-made habitats, is an expression of the ecological disorder caused by man in energy flow and cycles. In other words, those species which are closely connected with, and do seem to gain from, human activities are the tangible proof of man's failure to cope with his own place in nature and, albeit unawares, he is taking part in an irreversible process which, if continued at the present rate, will surely shorten the life span of our planet.

S.F.

Parliamentary action

Marga Hubinek

Only a few years ago, people were amazed to find politicians taking an interest in nature conservation. They were used to them talking about political, social or economic issues, but nature conservation was the preserve of unworldly enthusiasts.

Quality of life

The hectic economic growth of Western industrialised countries and their ruthless exploitation of natural resources have done our environment irreparable damage and slowly led to the realisation that quality of life means having an environment worth living in. If man thoughtlessly destroys this environment, to which every plant and animal species belongs, human life will be confined to proliferating, soulless concrete towers which blot out the landscape. The uneasiness of people who have to live in the high-rise blocks of our modern cities, complaining of air pollution and traffic noise, can be seen from the unending lines of cars streaming headlong from the towns every weekend.

A new wave of destruction is hitting the countryside through haphazard development in the outlying areas of major cities. The space left for wildlife, both plant and animal, is being reduced more and more by weekend-home developments.

It is to the Council of Europe's credit that it has been involved in environmental and nature conservation since 1965, stiffening the resolve of any individual politician prepared to make an issue of these matters. A younger generation of politicians has come to realise that the natural environment, with its flora and fauna, is a valuable asset which, once destroyed, is lost forever. They no longer unreservedly worship unrestricted economic growth. They have grown up and had to live with this systematic destruction of the environment and now want to stop the uninhibited growth of the cities. Quality of life means living in small, manageable communities, and not in great cities. New building must be controlled.

Conservation of nature — including flora and fauna — has gradually become very much a political matter, in which the Council of Europe provides an important forum. For instance, the 1976 recommendation on bird protection caused a stir, especially in those Mediterranean countries where netting exhausted migratory birds is a popular sport. Undoubtedly it will take many more years before public opinion in those countries swings against these annual massacres and governments take suitable measures.

Similarly, Recommendation 825 of the Council of Europe's Parliamentary Assembly, dating from 1978, on wildlife protection and seal-hunting was not wholeheartedly welcomed by all the Council's member states. In some Scandinavian countries the annual killing of tens of thousands of baby seals had become a mass entertainment for jaded youngsters. The economic benefit from this seal-hunting is relatively small; the "sport", in which the baby animals have no chance of survival, predominates. Seal-hunting may be of some economic benefit to a few Greenland islanders, but they hunt mainly fully-grown animals for food. Unfortunately, the recommendation was not able to embrace the country where, despite world-wide protests from conservationists, the annual slaughter of seals assumes huge proportions: Canada is not a member of the Council of Europe. Petitions signed by thousands of people in Europe, which were recently parcelled up and sent to the Canadian Prime Minister, proved in vain. The culling quotas were increased so much this year that some seal species are threatened with extinction. So what's the use? . . .

Yet work in international organisations continues in the hope of bringing home the importance of nature conservation to every member of the public in those countries.

M.H.

Gyps fulvus

Hope was born in Berne

Egbert Ausems

On 19 September last, the Convention on the Conservation of European Wildlife and Natural Habitats was opened for signature in Berne on the occasion of the 3rd European Ministerial Conference on the Environment.

Nineteen states[1] and the European Community signed the convention, whilst several delegations announced their government's intention to do so in the near future.

Two years of negotiations

The Council of Europe's achievements – and, therefore, its important role — in the field of international nature conservation have been widely recognised. Hence, when in European conservation circles the need was felt for an international legal instrument for the conservation of European wildlife, the task of elaborating such a text was entrusted to the Council of Europe, with its wide membership, its structure of intergovernmental committees of experts, its secretariat facilities, and, above all, its experience in European conservation issues.

In November 1976, following recommendations made by the Council's Parliamentary Assembly and the 2nd European Ministerial Conference on the Environment, the Committee of Ministers convened an intergovernmental committee of experts "to draft a legal instrument on the conservation of wildlife, with particular reference to migratory species and natural habitats in Europe, which would obviate the difficulties encountered in the implementation of existing conventions . . . "

This committee, chaired by Ambassador Gunnar Seidenfaden (Denmark), after two years of hard negotiations submitted on 19 December 1978 the text of a draft convention to the Committee of Ministers, who, after thorough examination, adopted it and decided to open it for signature on 19 September 1979.

Compromise

This drafting committee was guided in its work by three considerations. Firstly, the convention, as an official activity on the Council of Europe's work programme, had to be drafted along the lines set out for other Council of Europe conventions.[2] Secondly, the committee was instructed to present a draft which, whilst raising the general level of nature conservation in Europe, would obviate the difficulties encountered in the implementation of existing conventions, either because the latter went too far in their obligations, or because their provisions were too ineffective.

And lastly, it was realised from the beginning that many of the conservation problems that are encountered and which call for international co-operation are not capable of solution solely within the membership of the Council of Europe, and an endeavour had accordingly to be made to draft a text that would encourage other states to become Contracting Parties.

It was clear that to conciliate these three requirements a compromise had to be found. Thus the convention was elaborated as a Council of Europe convention that entrusts to the Contracting Parties special prerogatives that are unusual in other Council of Europe conventions. It furthermore lays down the framework for effective protection — both at national and at international level — of the whole of European wildlife. It avoids imposing undertakings so severe that they would deter some of the potential Contracting Parties, but provides flexible machinery so that its articles and appendices can be progressively strengthened.

The structure of the convention reflects this compromise. The convention falls into four parts:

a. a preamble, setting out the motivations of the Contracting Parties;

b. a substantive part, consisting of the various objectives and undertakings of Contracting Parties to conserve wildlife;

c. an operational part, governing the implementation and adaptation of the convention;

d. four appendices, listing respectively the plant species which are to be strictly protected, the fauna species which are to be strictly protected, the fauna species which must be protected, and the methods and means of killing, capture and other forms of exploitation which are to be prohibited.

Effective protection

The convention stipulates that Contracting Parties undertake to improve the conservation of wild fauna, flora and natural habitats in Europe, both at national level — mainly by adapting or enacting national legislation — and, through co-operation in a Standing Committee, at international level. Here lies an important aspect of the convention: it covers the whole of European wildlife, not only birds, and not only threatened species; on the contrary, Contracting Parties undertake to "maintain the population of wild flora and fauna at, or adapt it to, a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally"[3].

Furthermore, the convention obliges Contracting Parties to ensure in principle the conservation of the habitats of all wild flora and fauna species. Although it was felt unanimously that the protection of habitats was of extreme importance for the conservation of wild species, the wording of this provision gave rise to long discussions, mostly because of the reluctance of some governments to put at stake issues of territorial sovereignty. The present article, therefore, has been drafted in a form that would keep it open for developing co-operation between the Contracting Parties, as for instance in the field of biogenetic reserves and wetlands.

Particular emphasis is given in the convention to threatened species, migratory and endemic species, habitats of such species and endangered natural habitats. For the reasons set out above, only species occurring on the territories of those states that have participated in the elaboration of the convention have been taken into consideration at this stage.

119 plant species, considered by IUCN's Threatened Plants Committee in Kew (United Kingdom) as deserving first priority for legislation and mostly from the Southern European region, were selected to serve as a first basis for Appendix I, which lists plants which are to be strictly protected; every Contracting Party undertakes to prohibit any deliberate picking, collecting, cutting or uprooting of such plants, as well as, as appropriate, possession or sale.

55 species of mammals, 294 species of birds, 34 species of reptiles and 17 species of amphibians[4] which are all being considered as being endangered, or which are otherwise too valuable to be exploited, or finally which look very similar to threatened species, were included in Appendix II; they will thus benefit from strict protection by the Contracting Parties. To this end, the Contracting Parties undertake to prohibit in particular the deliberate capture, keeping or killing of these species; the damage or destruction of their breeding or resting sites, or deliberate disturbance of them; the destruction, taking or keeping of their eggs, and possession or trade in them.

Finally, most other mammals, birds, reptiles and amphibians whose conservation status in Europe needs attention are included in Appendix III, and Contracting Parties undertake to ensure their protection. This means that any exploitation — hunting included — must be regulated in order to keep the populations out of danger. These regulations must include, amongst others, closed seasons, temporary or local prohibition of exploitation and the appropriate regulation of sale of these animals. Furthermore, if exploitation is allowed, then there is a prohibition against all indiscriminate means of capture and killing, means capable of causing serious disturbance to populations and in particular the means specified in Appendix IV.

In this way Contracting Parties undertake to put a definite end to such practices as catching birds with snares, limes or nets, poisoning birds of prey, and poaching with the aid of artificial light sources, aircraft or motor vehicles.

Whether certain fauna species should be in Appendices II or III gave rise to hard negotiations. Whilst in most European countries the lynx (*Lynx lynx*) is strictly protected, in some northern regions some control of this species is absolutely necessary. Furthermore, there are regions in Europe where some local populations have traditional hunting rights, or where hunting is an economic necessity: the immediate abolition of these practices would not be feasible.

The convention of course allows for Contracting Parties to make exceptions from the undertaking above, subject to stringent conditions. Exceptions are possible, provided:

a. the exception is not detrimental to the survival of the population concerned;

b. the exception serves one of five purposes outlined in the convention (for instance, for the protection of flora and fauna, to prevent serious damage, in the interests of public health, etc.);

c. there is no other solution than to make the exception;

d. Contracting Parties report on such exceptions.

Contracting Parties may also make reservations regarding certain species and regarding certain prohibited means or methods of exploitation of certain species.

However, states are very reluctant to make reservations when signing an international agreement, and prefer to straighten out eventual obstacles at the drafting stage of such an agreement.

The composition of Appendices II and III especially is therefore based on several compromises, which had to be reached in order to have the convention signed by as many states as possible. The lynx is thus placed in Appendix III, some songbirds may still be exploited, and not all amphibians are to be strictly protected. The convention, however, provides for a flexible procedure which permits the Standing Committee to adapt the provisions to changing circumstances.

The substantive part of the convention concludes with some special provisions which ensure the protection of migratory species through international co-operation, encourage and co-ordinate research, regulate reintroduction of native species and strictly control introduction of non-native species.

Open convention

As was explained above, Council of Europe conventions normally entrust the Committee of Ministers with certain prerogatives as far as the implementation of such instruments is concerned. This applies in particular to the competence of the Standing Committee, the amendment procedure, the signing of the convention, and accession. It was felt that the aims of the future convention would more easily be achieved if the representatives of the Contracting Parties had the possibility of meeting regularly to develop common and co-ordinated programmes to ensure that the provisions of the convention and the contents of the appendices meet the changing needs of wildlife. Much of the responsibility for the functioning of the convention should be left to those representatives meeting in the Standing Committee in order that the convention would have the flexibility to respond to changing needs, to which great significance was attached. It was therefore decided that the Standing Committee itself could invite any state which is not a Contracting Party to send observers to the committee's meetings, and admit international agencies or bodies, governmental or non-governmental, who wished to do the same. The Standing Committee may further make recommendations to the Contracting Parties concerning measures to be taken for the purposes of the convention, and to the Committee of Ministers concerning accession by non-member states (see below). It may also, on its own initiative, arrange for meetings of groups of experts. Finally, the Standing Committee may adopt amendments proposed to the substantive provisions, including the appendices.

Although not completely independent, the Standing Committee is thus entrusted with enough power to keep under review the provisions of the convention and their application, to carry out research on the conservation status of all species and to adapt the conservation provisions quickly to new situations without having to go through the lengthy decision-making procedure of the Council of Europe. To amend the operational part of the convention, approval by the Committee of Ministers of the proposed amendments is required. This provision, which enables the supreme organ of the Council of Europe to exercise a certain control on one of the organisation's instruments, was subject to long discussions, because in theory this could lead to a situation where a member state of the Council of Europe could vote on an amendment to a convention to which that state was not party, whilst a Contracting Party, not represented in the Committee of Ministers, would have no vote on an issue in which it was directly concerned. As most member states have signed, such a situation is not likely to arise; however, in respect of non-member states this procedure of indirect representation is certainly not ideal.

A similar problem came up in the procedure of signing the convention or acceding to it: normally, member states may sign, non-member states may be invited by the Committee of Ministers to accede. Again a compromise was found; those non-member states which had participated in the elaboration of the convention or which had been invited to attend the 3rd Ministerial Conference on the Environment were invited to sign. Other non-member states who would be interested in becoming Contracting Parties may accede to the convention after its entry into force and are to be invited by the Committee of Ministers on the advice of the Standing Committee.

European Economic Community

At the request of the European Commission, special provisions were made to allow the EEC to sign. Whilst this signature was welcomed as a strong example

(continued on p. 34)

1. Austria, Belgium, Denmark, Finland, France, Federal Republic of Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom.

2. The Council of Europe, as an international governmental organisation is bound by its Statute, which lays down its main objective: to achieve greater unity between its members. To this end the Committee of Ministers may, amongst other things, conclude conventions or agreements. Such conventions — 103 so far — are normally signed by member states only, in some cases non-member states are invited to accede after their entry into force (so-called "open conventions"). But in the application of all these instruments the Council's Committee of Ministers plays a dominant role, rather than the Contracting Parties themselves, who, anyway, are in nearly all cases represented on this Committee of Ministers.

3. Article 2.

4. It is foreseen that threatened freshwater fish and invertebrates will be added at a later stage.

would you
miss us?

1

2

4

3

5

Hope was born in Berne

of the so much needed European co-ordination, it could complicate the smooth and fast implementation of the convention. Nature conservation is based on the protection of habitats, and the protection of areas is strongly linked with territorial sovereignty. By its adoption, in December 1978, of the EEC Directive on the protection of birds, the Council of Ministers of the European Community recognised the EEC's exclusive competence on the protection of birds in the EEC area. It was therefore only natural that when a convention was to be signed on the protection of wildlife, the EEC had to sign on behalf of its nine member states in so far as the protection of birds was concerned. In any vote within the Standing Committee on EEC birds, the EEC representative would exercise nine voting rights. However, as the provisions of the convention make no clear distinction between birds and other fauna species, it is possible that situations will arise where the delimitation of competences and the exercise of voting rights require lengthy discussions between the Parties concerned, with delay in the entry into force of any contested decision.

On the other hand, this participation guarantees a joint action of the two leading European organisations, the Council of Europe and the European Community.

Other legal instruments

In drafting the convention, special attention was given to avoid unnecessary conflict or overlapping with existing international legal texts and those in the process of being elaborated at that time. Although it is practice in international agreements that in the case of several international commitments states are bound by the strictest provisions, the convention spells out in a special article that Contracting Parties may adopt stricter measures than those provided for under this convention. For example, there are various international agreements on the protection of sea-mammals (International Whaling Convention; the Agreement on the Conservation of Polar Bears, Oslo, 1973) which have stricter provisions for the individual species. Due account was taken of the following instruments:

a. The Convention on International Trade in Endangered Species of Wild Flora and Fauna (Washington, 1973). Since the Washington Convention deals with international transactions, the wildlife convention limits itself to regulating possession of such species and internal trade.

b. The EEC Directive on the conservation of wild birds. All through the drafting process, the elaboration of the directive was taken into consideration. This resulted in several provisions, the contents of which were identical with provisions in the directive. That part of Appendix IV dealing with birds was largely inspired by Appendix IV of the EEC Directive.

c. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979). This world-wide convention aims at direct protection of certain threatened species and promotes the conclusion of separate international agreements on other individual species. A special provision was included in the wildlife convention to enable Contracting Parties to conclude such agreements, even with non-Contracting Parties.

Impact of the convention

In judging the possible impact of the convention on the conservation of European wildlife, three things should be borne in mind. Firstly, the originators of the convention, the European Ministers of Environment, asked for an instrument which "would obviate the difficulties encountered in the implementation of existing conventions". Thus the wildlife convention was drafted in a form that would raise the level of nature conservation over as wide an area as possible, yet not be so onerous as to prevent states taking the initial step of adhering.

Secondly, the convention was drafted to cover not only birds but also plants, mammals, reptiles, amphibians and natural habitats, as well as, at a later stage, fish and invertebrates. The conservation status of these various elements is different; whilst in several countries effective efforts are undertaken to protect birds, less attention has been given so far to, for instance, amphibians and their habitats.

Thirdly, it is quite obvious that some countries are more advanced in their conservation policy than others. Yet it was thought that it would be preferable to put the same obligations on all states concerned, in order to ensure a common action, which would be of more benefit than scattered efforts with various degrees of efficiency. Some provisions in the convention therefore add very little to legislation already in existence in some countries.

A sudden revision of most national laws can therefore not be expected: the drafting committee was very much aware of the fact that states are reluctant to undertake international obligations that are seriously out of line with their internal rules.

Perhaps the most important aspect is that the convention has created an international structure which obliges and enables those participating in it to raise progressively the general level of nature conservation, not only by exchanging information but also by developing joint conservation policies to be carried out nationally. And public opinion has been given an instrument on which to base its claims for nature conservation when participating in national planning policies.

The immediate signature of the convention by nineteen states and the EEC clearly indicates that Europe was in need of this instrument. E.A.

Illustrations on inside colour pages

1. *Asio otus*
2. *Sus scrofa*
3. *Vulpes vulpes*
4. *Circaëtus gallicus*
5. *R. rupicapra*

IUCN UNEP WWF

World Conservation Strategy

Secretariat General, United Nations Environment Programme

Conservation and development

Conservation has long suffered from an image problem. Regarded along with church appeals and outing clubs as worthy if somewhat marginal, it has traditionally been placed rather low on governments' lists of official worries. The image problem has not been helped by the connotation of the word "conservation". Along with its etymological first-cousin "conservatism", it has become associated with opposition to progress. Too often, conservationists have allowed themselves to be seen as resisting all development – although often they have been forced into that posture because they have not been invited to participate in the development process early enough. The result has been not to stop development, but to persuade many development practitioners, especially in developing countries, that conservation is not merely irrelevant, it is harmful and anti-social. Consequently, development has continued unimpeded by conservationists yet with the seeds of its eventual failure lying in the ecological damage that conservation could have helped prevent. With the launching of the World Conservation Strategy on 5 March, conservation has adopted a bold tack which should carry it into the mainstream of relevance — relevance to the members of that broader constituency whose support is essential if soundly based conservation action is to result. The Strategy recognises the need for development, without which a large proportion of the world's population would be condemned to poverty. But it argues that for development to be sustainable, it must rest on well-established conservation principles. That conservation and development are mutually dependent can be illustrated by the plight of the rural poor. The dependence of rural communities on living resources is direct and immediate. For the 500 million people who are malnourished, or the 1 500 million people whose only fuel is wood, dung or crop waste, or the almost 800 million people with incomes of $ 50 or less a year — for all these people conservation is the only thing between them and at best abject misery, at worst death. Unhappily, people on the margins of survival are compelled by their poverty to destroy the few resources available to them. In widening circles around their villages they strip trees and shrubs for fuel until the plants wither away and villages are forced to burn dung and stubble. The 400 million tons of dung and crop wastes that rural people burn annually are badly needed to regenerate soils already highly vulnerable to erosion now that the plants that bind them are disappearing.

Faced with such bleak realities and with the frustration of seeing its piecemeal action undermined by events beyond its control, the conservation community was forced to re-evaluate its priorities and to redefine its mission in the light of new realities. The result is the World Conservation Strategy. The concept of the WCS emerged from discussions between the United Nations Environment Programme and the International Union for Conservation of Nature and Natural Resources some years ago. The World Wildlife Fund recognised its importance in programming its own efforts in conservation, and soon expressed an interest in helping in its development. In the second half of 1977, IUCN consulted widely among its constituency of more than 400 members on conservation priorities, and, in 1978, prepared a first draft of the Strategy based on the results of that review. This draft was sent for comments to more than 1 000 persons. A second draft was the subject of a full day's discussion by the participants at IUCN's 14th General Assembly in October 1978.

Last year, the Strategy was redrafted several times, with the help of review panels, to take into account the views expressed at the IUCN General Assembly and by UNEP. There have been fruitful consultations with FAO and UNESCO as well.

In the Strategy, conservation is defined as the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. Thus conservation, like development, is for people: while development aims to achieve human goals largely through use of the biosphere, conservation aims to achieve them by ensuring that such use can continue. The goal of the WCS is the integration of conservation and development, to ensure that modifications to the planet do indeed secure the survival and well-being of all people.

The solutions are there

The problems faced by development officials and conservationists alike are familiar enough, but what is refreshing about the Strategy is that it is focused upon solutions. In order to help advance the achievement of sustainable development through the conservation of living resources, the Strategy:

1. explains the contribution of living resource conservation to human survival and to sustainable development;

2. identifies the priority conservation issues and the main requirements for dealing with them; and

3. proposes effective ways for achieving the Strategy's aim.

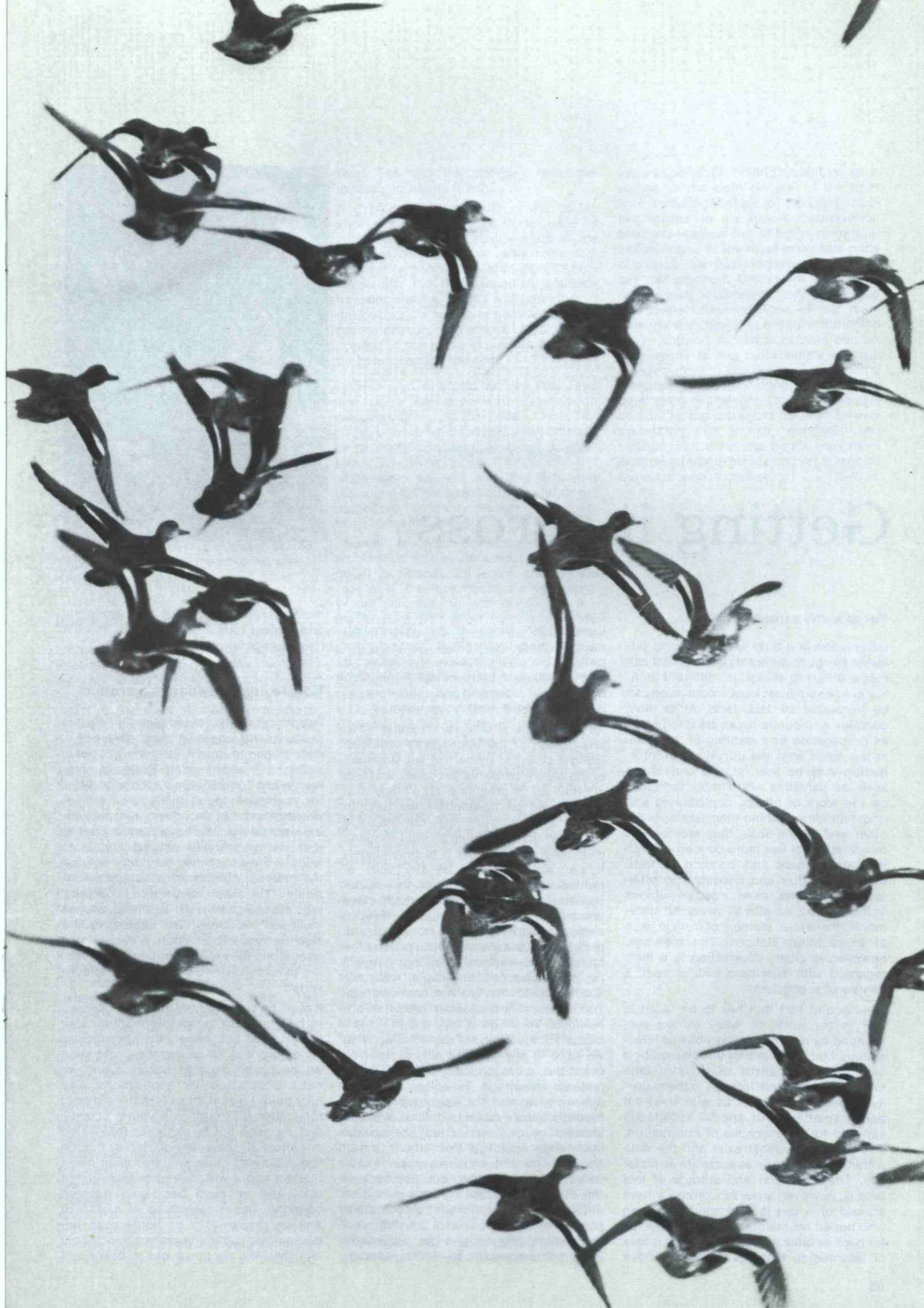
The Strategy is intended to stimulate a more focused approach to living resource conservation and to provide policy guidance on how this can be carried out. It concentrates on the main problems directly affecting the achievement of conservation's objectives, and how to deal with them through conservation. In particular, the Strategy identifies the action needed both to improve conservation efficiency and to integrate conservation and development.

As the product of an extremely thorough consultation process, the WCS evidently reflects a compromise: among conservationists, who may differ on the relative importance of particular ecosystems, species, issues and measures; and between conservationists and the practitioners of development, who may differ in their emphasis on maintenance on the one hand and production on the other. The document also shares the limitations of every global analysis: it is obliged to aggregate and simplify a host of diverse local phenomena and to ignore a host of local problems. These drawbacks, however, are considered less important than the need to present a statement of agreed conservation requirements and priorities, around which conservationists and development practitioners alike could rally, and to adopt a perspective unconfined by the boundaries that separate but do not insulate nation from nation, sector from sector, interest from interest.

The WCS is intended to be an evolving effort and is expected to be updated and improved from time to time, in response to new knowledge, better understanding, changes in perception and values, and conservation progress as a result of the Strategy's implementation. It is strongly hoped that governments, non-governmental organisations and intergovernmental bodies will be quick to carry out the relevant recommendations.

The foundation for the achievement of conservation is the popular will that it be achieved. In the face of pressing short-term needs, it is difficult to resolve on action whose benefits may only be felt after an interval. The WCS reflects a major rationalisation of conservation in the context of development imperatives. But conservation should not lose its ethical imperative, expressed in the belief that "we have not inherited the earth from our parents, we have borrowed it from our children".

UNEP



Anas crecca

Michael W. Henchman

Getting it across

For effective information

Information is a dirty word. It means different things to different people and it can mean different things in different contexts. At its simplest level, information can be translated as data, facts. At its most complex and subtle it can be interpreted as propaganda or a slanting of the truth. In the same way, the purveyors of information may be seen at one end of the scale as parasites who simply capitalise on the work of others, contributing and understanding nothing themselves. At the other end of the scale they are seen as missionaries of lies more concerned with the concealment and bending of truth than with virtue and honesty and often serving ends that are regarded as dubious in themselves. As with all sweeping statements, there is an element of truth in each of these interpretations. The message, however, is clear; information is a term regarded with suspicion and, at best, a degree of scepticism.

The second fact that has to be faced is that in the world of today we are surrounded by a million million bits of information. Much of it is only understood by a handful of specialists, much is of little more than academic interest to the majority of people. Those of us with even the barest smattering of special knowledge can add to this stockpile of information. The data banks must exist and the data within them must be as accurate as possible. The collection and storage of this data is, however, a sterile exercise unless an end or a use is envisaged. The man who buried his talents was condemned as far back as biblical times. The same is true of information that lies fallow and does not work. What are the messages here, then? Quite simply these: information must be made available; it must be comprehensible; it must serve a purpose; it must be relevant to the needs of the user; it must meet a demand and if that demand does not exist it must be engineered.

All this is generalisation and applicable to any branch of the information business. Bring it closer to home and you find that, in the nature conservation game, we have another set of problems. Like many who are classed as do-gooders we tend to have the naive belief that our message speaks for itself and that all right-thinking men have only to hear it to immediately follow what we see as the path of righteousness. Unfortunately this is not so. There are other, and apparently more immediate, messages clamouring for our audience's attention. Even worse, we tend to believe that we have only to present the facts and the rational, thinking man will be persuaded to our beliefs. Alas, the 100% rational man is a very rare creature. Too often he is distracted, too often our particular message is very low in his immediate scale of priorities, too often what we have to say may not only seem irrelevant but, more cynically perhaps, of no material advantage. Too often the message we give, and the way we present it, prompts the response "so what?". Dazzled by our own virtue and special knowledge we forget that others cannot comprehend or see the relevance of what to us is blindingly obvious. Because of this outlook we forget the basic principles of effective communication, we do not explain, and we choose as a starting point somewhere way beyond our audience's initial comprehension level. Our message must be relevant, it must be meaningful and it must fulfil a need. What is more it must compete with other messages.

Nature conservation is a product

People cannot be forced to assimilate this product. They must be made aware of it, encouraged to want it, told where to get it, and then provided with it. Business, commerce and industry have recognised this for years and spend millions on market research, promotion, advertising, packaging and selling. We have a head start in that few people are actively hostile to wildlife; a number may be indifferent, but the greatest number of all is simply unaware. The lesson for us here is obvious. We must sell, we must sell hard and we must sell effectively. The alternative is a slow decline into oblivion, a decline that goes along the incestuous path of preaching to a narrow circle of the already converted.

It must be clear by now that what I believe to be important is not information as an end in itself but, rather, the information-giving process. Of course the information we deal with must be accurate and we must understand its implications. The only point I would make is that we should remember that ours is a young science and we need not be ashamed that we do not know all the answers. Heresy though this will seem to purists, this must mean that occasions will arise when facts do not exist and we must back our educated opinions. This is something we must face and be prepared to do battle over, because if we confine ourselves to provable fact then the danger is our message will become thin and dreary to a degree. What is critical is getting our message across, getting people to act on our belief, getting our message to help us achieve our ends. Let us also not forget that major elements of this message must be an increase in enjoyment and an increase in the quality of life.

Information is the raw material with which we work. Of far greater significance is effective communication. How do we achieve this? The basic rules are very simple and all that is involved is the application of a straightforward methodology. Any communication situation, be it problem or opportunity, can be approached by posing oneself a number of questions and by taking action on the basis of the answers to those questions. What are those questions? Quite simply these: what do we want to say, why do we want to say it, and what do we hope to achieve by saying it? To whom do we want to say it? Where and when do we want to say it? How do we say it? A final question can be, "how do we measure the effectiveness of what we have said?".

Information methods

Let us look in rather greater detail at the implications of these questions. "What do we want to say?" Unless we can answer this clearly and unequivocally we have failed at the start. A muddled message achieves nothing but confusion; it also destroys credibility and makes remote the chance of achieving anything. Similarly we must avoid trying to do too many things at once. A chisel is good at cutting wood. When used as a screwdriver or to open tins of paint it is not particularly effective; what is worse such usage destroys its primary utility (to pursue the analogy, you destroy its cutting edge!). The same rules apply to "why do we want to say it?". Unless we have a reason and objective there is no point making the statement. Here again one clear reason is infinitely more effective (and its results more capable of measurement) than a jumble of subsidiary and perhaps conflicting reasons. The same can be said of "what do we want to achieve?". The principle here is clear: simplify, concentrate, do not try and do many things at once, design for a single, clear purpose, be it keeping visitors to a footpath or selling the ethical basis of wildlife conservation.

"To whom do we want to say it?" To a large extent this is governed by our main message and its objectives. At the simplest level this means, for example, that if we want to slow down hedge removal there's very little point in aiming our message at urban developers. We must select the target audience appropriate to the message and what we want to achieve. We must also beware aiming at more than one target. In the communications business the shotgun technique misses more than it hits.

And having decided who is our target, always remember to talk in language he can understand. Because we are in the business of gaining converts, remember that our jargon will be a mystery to him. Remember too that a specialist outside his specialism is simply a lay member of the public. Do not be condescending, do not be obscure and, above all, do not be boring. In the world of wildlife there can be no excuse for the last!

"Where and when do we say it?" Time and place are important. A television message aimed at the under 11s is not going to be very effective if transmitted at 12 midnight to a population that only has radio! This methodology is sequential and once again we will find that time and place are dictated by function and target audience. Too often, though, this simple truth is overlooked.

"How?" It is in this area that most amateur communicators meet their downfall. The choices are legion and, on the face of it, the techniques are so simple. Worse still, playing with media (be it a leaflet or a film show) encourages too many to indulge frustrated creativity, with end results that do no credit to the author and no good to the enterprise. Partly this is because it all seems so simple; partly this is because playing with technology requires less mental discipline than the essential earlier stages of devising the rationale. Beware. There is far more to producing a leaflet (let alone a film) than meets the eye. Beware, too, the choice of medium may be wider than you think. Of course the ultimate choice is governed by your purse but even within these bounds the scope for disaster is infinite. Get your rationale right, in particular the why and the what, and only you can do this.

To some extent, then, your "how" will be determined for you. Unless you really know what you are doing, though, don't be ashamed at this stage to call in the professional. It may cost you money, but in terms of effectiveness and long-term efficiency this is far cheaper than throwing your money away on misconceived solutions arrived at on the basis of ignorance. The message decides the medium; follow this rule and express it simply and directly and you will be a long way on the road to success.

The final question is, "how do we measure success?". A range of techniques is available. None will work, however, unless you clarified your objective back at the beginning. If you don't know what you wanted to do, how can you tell whether or not you have done it? If you have a rationale, at least you can deduce where you went wrong and get it right next time.

Information, there is no doubt, is important. What I have tried to argue is that even more important is getting that information across to the right people, at the right time, in the right place, by the most effective means. In the nature conservation business I believe that effective communication is one of the most important parts of our job. We must motivate and we must get participation. Unless we are heard, recognised, understood and supported we cannot succeed. One of the main reasons we cannot succeed without the active support of others outside our organisations is that quite simply we lack the resources to tackle on our own all the work that needs to be done. The outsiders must become insiders. Otherwise we fail, and in failing cause to be lost forever something that is rich, wonderful and strange, that enhances man's enjoyment and the quality of his life and yet is beyond the wit of man to replace. M.W.H.

The role of young people

Marc Pallemaerts

As young people account for more than half of the world population, it goes without saying that it is of paramount importance to arouse their interest in nature conservation. This is no doubt the most effective way of bringing about the change in mentality essential to maintaining diversity in the biosphere and an overall ecological balance, while ensuring in the long term an attitude of individual and collective responsibility for the natural environment.

Better education for more effective action

The challenge is daunting and unfortunately it has so far only partially been taken up by the teaching profession, notwithstanding the growing share taken by environmental education in school curricula. Admittedly, formal education plays a necessary and specific role in this field, but it does very little to exploit the immense potential for immediate action, disinterested enthusiasm and direct participation to be found among young people.

Children possess an innate curiosity for everything around them, and it is therefore a simple matter to stimulate their interest in nature. But can this be fully achieved by lessons in the natural sciences, or even ecology, mainly dispensed in an artificial classroom environment? Young people are only too ready to demonstrate their initiative and creativeness by protecting nature in practical ways. Do our schools really offer them the chance to do so?

It is obvious that environmental education at school, however thorough it may be, does not suffice to develop true ecological awareness among young people, urging them to feel personally concerned and responsible and, above all, able to do something themselves. This calls for the continuous commitment, practical experience in the field, and freedom of action which belong precisely to the complementary field of out-of-school education, in which voluntary self-governing youth organisations for the study and protection of nature and the environment pursue their activities.

Although these associations, of which about thirty exist in Europe (twenty-four being affiliated to the International Youth Federation for Environmental Studies and Conservation — IYF) have recently extended their sphere of action to all aspects of the environment, they traditionally devote the major part of their programme to various activities specifically designed to protect natural habitats, fauna and flora.

The motto of the Belgian youth organisation *Groupement des Jeunes Protecteurs de la Nature* — "Learn more about nature to protect it better" — sums up perfectly the philosophy underlying these activities. The observations made during the countless excursions and nature study camps and the findings of all naturalist activities are devoted to the cause of nature conservation. Frequently, local sections carry out a systematic inventory of the fauna and flora of the natural habitats in their area. A report is compiled and submitted to the authorities with a view to obtaining any protective measures that may prove necessary. In this way, youth groups effectively act as auxiliaries to government conservation departments, which are frequently short of scientific staff. In the Netherlands, there is a long-standing agreement between the *Nederlandse Jeugdbond voor Natuurstudie* and the state forestry agency *Staatsbosbeheer* which bears the publication costs of ecological studies of natural habitats carried out by young naturalists. In Flemish-speaking Belgium, the *Belgische Jeugdbond voor Natuurstudie* prospects sites of outstanding ecological value and draws up protection proposals which are submitted to the Royal Commission for Monuments and Sites.

Practical action

In addition, youth societies offer valuable help to citizens' action groups opposing certain planning projects detrimental to the environment, by providing them with scientific arguments justifying the conservation of threatened sites. The Danish Association *Natur og Ungdom* has formed an itinerant team of young botanists who stand by to take urgent action in the form of botanical surveys of endangered biotopes at the request of any organisation or individual concerned.

Many youth organisations for nature conservation regularly carry out practical management tasks in nature reserves and other protected sites. Work camps are organised for performing jobs such as the construction of small dams to check the excessive drainage of a peat bog, the felling of young birch trees to prevent their colonising a moorland area, the upkeep of a sunken lane, or the pruning of pollard willows which deteriorate if left untended for too long. The youth section of the Malta Ornithological Society has undertaken the reafforestation of the shores of Lake Ghadira, the only large stretch of fresh water on the island and a major resting place for migratory birds. By providing voluntary aid to organisations which own reserves but cannot afford to employ the necessary manpower for such work as upkeep and management, youth groups contribute in a very practical way to the preservation of our natural heritage.

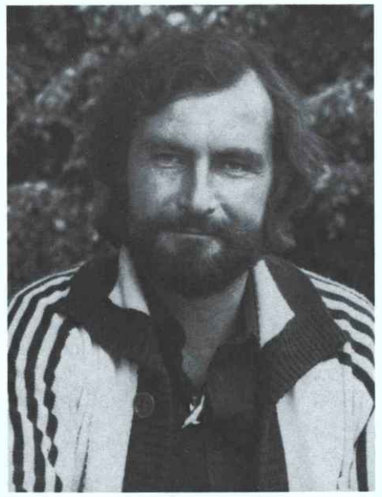
Young people may sometimes act as catalysts by directing their efforts at the general public. Here, we may quote the example of the national campaign for the protection of small carnivorous animals recently launched in Belgium by the association known as *Jeunes et Nature*. The aim of this campaign was "to inform public opinion as widely as possible of the real economic and ecological role of small carnivorous wild animals, misguidedly regarded for centuries as harmful pests", and thereby obtain the integral protection of stoats, weasels, martens, polecats, badgers, wild cats and otters. For this purpose, a whole arsenal of educational material was created and widely distributed in the media and in schools.

Next summer, the IYF member organisations of the Netherlands, the Federal Republic of Germany and Denmark will unite their efforts in a vast information campaign on the numerous threats to the Wadden Sea, a unique ecosystem of international importance. A boat will be chartered to tour this whole coastal area from Den Helder to Esbjerg for three weeks with an exhibition on board. At each port of call, numerous activities will be organised and contacts established with the press and the local government officials. This campaign will lay stress on the international character of environmental problems and on the need for close co-operation between the countries involved in order to solve them.

When their appeals fall on deaf ears, young people do not hesitate to have recourse to direct action in a final bid to avoid the irreversible destruction of a valuable area or a species. For example, in Finland where the members of *Luonto Liitto* and other nature conservationists occupied the shores of Lake Koijärvi last May and filled in the drains to prevent it being completely dried up for land reclamation; or in Norwegian Lapland where more than 3 000 demonstrators, mostly young people, organised the non-violent summer-long occupation of the site of a huge hydro-electric complex on the river Alta, one of the finest salmon rivers in Europe and one of the last intact valleys in Norway.

M.P.

Hit where it hurts



Roland Wiederkehr

To be successful in the long term, a conservation organisation must not limit itself to rescue operations and treatment of symptoms; it must also have the courage to seek out causes and declare war on private interests which destroy the environment — in the best sense of the word it must be politically (for the "polis" = for the community) active.

Nature conservation and politics

Mr Willi Ritschard, member of the Swiss Federal Council (*Bundesrat*) recognised this need when he was Minister for Energy last year; but there are all too many people in positions of public responsibility who have not yet recognised it. They would say that a conservation organisation has no business meddling in politics.

To say that is to condemn conservation organisations to impotence.

Those who adopt this attitude have not recognised that, for example, the wasting of resources or energy and the destruction of nature are inseparably linked. Hence they cannot understand that a conservation organisation *must* support a moderate energy policy.

And how, for example, can the construction of an unnecessary motorway link which will irretrievably destroy the otter's last habitat be prevented, if not by political means? How, except by political means, can the clean water which is vital to the otter and is endangered by the excessive use of agricultural fertilisers and pesticides be safeguarded? And do conservation laws not derive from the interplay of political pressure and counter-pressure? Can we conceive of a conservation law in whose preparation the conservation organisations have had no hand?

Such an attitude also reflects a failure to understand the difference between politics and *party* politics. A politically efficient conservation organisation would never let itself be harnessed to a party political cart: its only duty is to conserve nature and the environment, and this responsibility has nothing to do with "right" and "left", even if an environmental offender on whose toes the conservation organisation has trodden would do his utmost to hang a party political label on it.

Those who cannot see the situation as it really is are unfortunately all too ready to howl with the wolves: the charge of "political agitation" is compounded by the accusation of seducing children and young people, luring them with endangered otters, threatened orchids and birds on the brink of extinction, to rope them in for their political ends.

Let us investigate the truth of these allegations.

First, there is no question that we face conservation problems of enormous proportions.

Secondly, in spite of over ten years' talking there is no improvement, let alone solution, in sight in any area (pollution of the oceans, destruction of forests, damage to the soil, poisoning of the environment by chemicals, etc.). On the contrary, the problems are growing visibly.

Thirdly, our public leaders have not so far been able to tackle the destruction of the environment as an *overall social phenomenon*.

Finally, the main reasons are the following:
— they are entangled in situations for which there is no patent remedy;
— in the main they belong to a generation for whom a rise in the quality of life means first and foremost an increase in gross national product;
— even if they can see that optimum quality of life must not mean giving priority to purely quantitative material growth, in a democratic state they are caught up in the system. A society which has for decades lived on nature's capital cannot be taught overnight to live on the interest alone. Thus a leading politician in an industrialised state who tries to wean people of their greedy habits so as to husband irreplaceable resources can certainly not yet count on the understanding and support of an enlightened majority: he is bound to lose his seat at the next elections, if not sooner (for instance, President Carter's energy-saving policy).

How do we get out of this vicious circle?

Of course, only through non-stop environmental education at all levels: by teaching people to understand relationships, and by inculcating long-term ecological thinking rather than the wresting of short-term economic returns.

Much more easily said than done. Where should a private conservation organisation with limited human and financial resources begin? With managers, who are committed to high turnover? With politicians, who are trapped by the system? With philosophers — those voices forever in the wilderness? With the rest of the adult population, the most diehard materialists?

With the churches, which as yet have hardly realised their responsibility for non-human life?

With the schools? Admittedly, some cautious steps have been taken, yet in general schools are still purveyors of factual knowledge, analytical thinking and specialist skills. Wholeness of subject-matter, which is essential for grasping relationships, is found in subsidiary subjects but, as ever, these carry little weight in examinations.

With children and young people direct, then?

Yes, we should go straight to them. For they are receptive to all things new, their capacity for assimilation is still unlimited, their ability to see the total picture is still intact.

The approach should be as educational as possible, based first on the surroundings familiar to the child or youngster, and secondly on an emotional resource. For the theme "the wood", for example, this could mean progressing from the tree (to be experienced) behind the house (its inner world and its surroundings) to the trees in the wood, to the wood itself and the point of view of the forester (habitat or saw-mill? That's a political question!) And then beyond the limits of the village, town and state to the complete deforestation around the Mediterranean and the forest fires on the Spanish coast, and further on through the Straits of Gibraltar and across the Sahara to the Sahel, and finally to the destruction of the tropical rain forests of the Ivory Coast.

The creation of protected areas and protection programmes for species of animals and plants — even the enactment of legislation — all these measures will ultimately be unable to save the natural environment if man's attitude to nature does not change. Even now, most people have no idea of the cycles in nature or of the interdependence of living creatures.

One cannot learn to understand nature overnight. One needs time, personal experience and receptiveness: preferably in a human being's most impressionable period, during childhood.

Among our children are the decision-makers of tomorrow. In the way we adults shape them today, they will shape the world tomorrow.

The future is being made now. R.W.

Conservation's outcasts

Stefan Plank

In Europe today we live in a landscape that has been influenced, modified and shaped by man for many thousands of years past. Whereas our neolithic ancestors still had to contend with primeval forests as they strove to earn their daily bread, twentieth-century man holds sway over a largely artificial agricultural landscape in which there remain only a few isolated relics of the original areas of natural vegetation. Whereas many centuries of extensive exploitation of natural resources had resulted in a park-like countryside with its woods, meadows, pastureland and cultivated fields very close to nature, such as we still find even today in some mountain regions, there began with the industrial revolution an increasing technicalisation and industrialisation of agriculture which has turned large areas of this parkland into cultivated steppes.

Traditional methods have failed

To begin with it was chiefly the artists, poets and landscape painters who rose up in protest against ruthless destruction of the natural countryside, as for example when parts of the Forest of Fontainebleau south of Paris were placed under protection as long ago as 1848 through the efforts of artists. The second half of the nineteenth century saw the introduction of the first nature conservation laws in a number of European countries, and although at that time they were still strongly influenced by practical financial considerations, some species were afforded special protection, as evidenced by the Law on the Protection of the Edelweiss Plant promulgated at Salzburg in 1886. Finally in 1914 there came Europe's first national park in the Swiss Engadine. In these days every European country has its nature conservation legislation dealing with the protection of threatened species of animals and plants or particular biotopes.

Nevertheless, in spite of numerous efforts and legislative provisions, something has happened which nobody had seriously imagined could take place: thousands of species of animals and plants in Europe are in danger of extinction. Even in countries where nature conservation has been practised for more than a century past, the number of natural species is gradually being reduced: it is becoming more and more difficult to keep track of the "red lists" of threatened species that are being published or revised all the time.

Perhaps one of the reasons for this may be that traditional concentration on conservation measures to protect a specially endangered species or a scientifically interesting biotope blinded many nature conservationists to the real dangers of changes taking place in the environment. Whilst wardens in nature reserves and elsewhere were chasing after trippers caught picking flowers on Sunday, bulldozers were digging wide tracks through mountain forests, meandering rivers were being turned into drainage channels, wetlands into agricultural steppes, motorroads were being cut through marshlands and dry grasslands and villages along the highways were being linked up to form sprawling towns. Token gifts to Nature in the shape of isolated nature conservation areas were in these circumstances not adequate to make up for the loss of natural habitats and refuges for animals and plants.

The "lower" groups

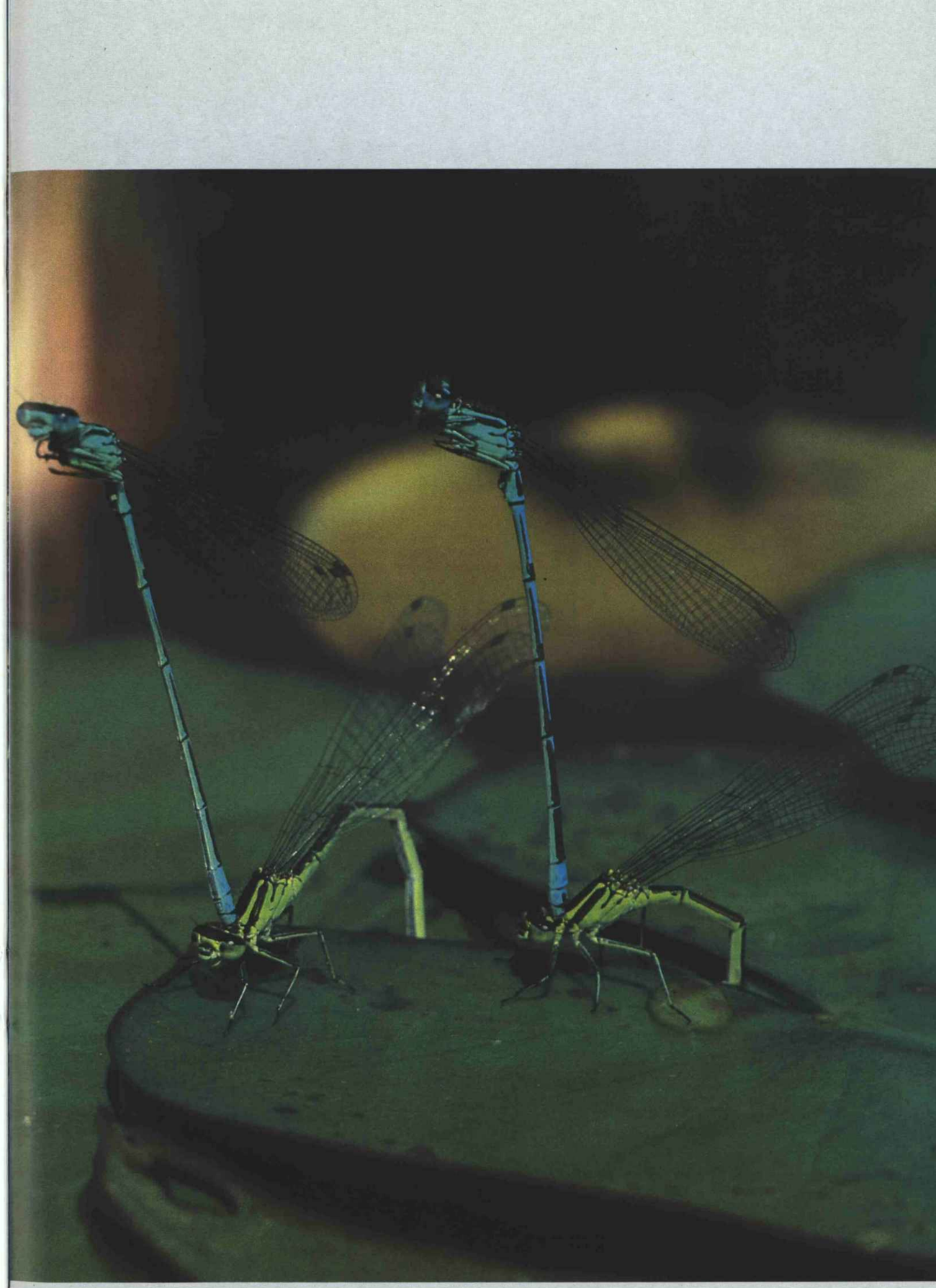
In this connection it was only in a few individual instances that radical methods of landscape management constituted a threat to the treasures traditionally protected by nature conservation measures such as orchids, lilies, daffodils and other magnificent representatives of the vegetable kingdom as well as butterflies and beetles; it was more of a danger to the large army of "anonymous" representatives of our environment such as weeds, inconspicuous plants growing alongside our roads, mosses, fungi, lichens and seaweed, worms and snails and, last but not least, the fantastic and many-sided world of the microcosmos about whose preservation there is really no one to bother. In particular, the so-called "lower" groups of organisms belonging to the animal and vegetable kingdoms are, in the majority of cases, closely dependent on the exactly defined and unchanging conditions of their habitats. For these countless thousands of species the sole possibility of survival lies in preservation of their natural surroundings. Conservation of individual species, such as is being tried in many countries with fungi, for example, nearly always turns out to be practically useless, for no matter how good such protective measures may be they will not save fungi if their natural woodland habitats are destroyed, no moss that depends on moisture will be able to survive on concrete walls and no lichens will continue to exist in an atmosphere polluted by sulphur dioxide.

Since in these days it is apparently no longer sufficient to emphasise that particular organisms are worth protecting on account of their ecological importance alone — invertebrates and cryptogams play a particularly important role both in a number of food chains and in most natural ecosystems as producers and destroying agents — one need only point to the many-sided practical significance of such inconspicuous animals and plants, to their "genetic potential" as it is now popularly termed, ranging from pharmaceutical products to human food. Special emphasis must be laid in this connection on weeds growing on agricultural land, many of which have acted as forebears of our cultivated plants and whose wilful eradication is indeed destroying an irreplaceable potential. The practical importance of many species is not yet recognised at all. Let us not forget, for example, that penicillin, the saviour of so many lives, was not isolated from a mould fungus until 1928.

Thus, when we speak today of an all-embracing dynamic concept of nature conservation, we must understand it as extending to the whole of our natural heritage and realise that preservation of it demands a multiform countryside rich in a variety of habitats and ecological niches. In our natural ecosystems there are no species that either are or are not worth protecting, but a balanced structure of animals and plants developed from a permanent confrontation with the animate and inanimate environment that can only fulfil its ecological functions and so survive as a complete whole, i.e. as a biocenosis.

The happiness and well-being of our children and future generations are often given as reasons for numerous interferences with our environment, but in this respect we must not forget that our great-grandchildren too will be human beings, biological creatures and, in the end, components of the ecosystem earth who will need to be linked to a natural environment. For this reason alone they too will have need of the wide variety of natural resources that we are still enjoying today.

S.P.



Coenagrion puella

Natural habitats

Laurence de Bonneval

A world heritage to safeguard

Not a year has passed since 1970 without some major event increasing government and public awareness of the need to safeguard the natural resources of our planet. Over the last ten years there has been an ever more rapid succession of conferences, international agreements and conventions which have strengthened the defences of nature and the environment, built up with such perseverance since the beginning of the century by the few people aware of this need. After the world-wide impact of the initial warning sounded by Rachel Carson, after the UNESCO Conference on Natural Resources in 1968 and the declarations of the Club of Rome, the Stockholm Conference was to be the reference point for the 1970s.

With the idea that natural resources were finite and that reckless exploitation of them, exceeding the environment's capacity for self-renewal, presented dangers for the future, there was a sudden realisation that it was vital to set aside areas of land and water, not so much for the enjoyment of future generations as to provide reserves — not unlike hunting and fishing reserves — to safeguard a heritage of which the role, value and potential were rarely appreciated. In addition to traditional protection of environments and species for their scientific interest or rarity, the objective was to preserve genetic diversity in environments representative of the ecosystems or biomes of which they are part.

Relating renewable natural resources to the idea of a world heritage has naturally added an international dimension to national activities in this field. The International Union for Conservation of Nature, founded in 1948, UNESCO (at the world level) and the Council of Europe have in turn launched programmes to set up regional and world-wide networks of protected areas so as to consolidate the measures taken individually by each country, encourage the setting up of new protected areas and enable knowledge to be exchanged. Their initiatives were preceded by other regional co-operation programmes such as the 1940 Washington Convention and the Algiers African Convention which dealt with nature protection measures as a whole, and by the activities of the International Waterfowl Research Bureau (IWRB) which originated a conservation network of wetlands to protect the breeding, resting and feeding grounds of migratory birds.

Various types of protection

Most countries, at least in Europe, now have nature conservation laws, whether recent or well established, together with their own categories of protected areas which serve a range of purposes, from total protection to the maintenance of a region whose human population is vanishing. Protected areas also differ greatly in the extent to which they are natural sites — the Greenland National Park is virtually uninhabited and its environment alters only under the effect of climatic fluctuations, whereas the Camargue Reserve at the mouth of the Rhône is subject to many different influences.

The IUCN Commission on National Parks recently produced a report reviewing the various types of environmental protection that exist throughout the world. These are:

— *Scientific reserves/integral nature reserves*
These are areas free from any human interference or internal artificial influences, set aside exclusively for scientific research and the continuous monitoring of the environment, to provide an understanding of how ecosystems work and evolve. These reserves often protect ecosystems or biotopes and vulnerable forms of life or areas which are important for their biological diversity (wetlands, for instance) or their geological diversity, and are of particular value in preserving genetic resources. Their size is determined by the area which can be preserved intact.

— *National, provincial or state parks*
Although these parks serve some of the same purposes as reserves — conservation of the environment and animal and plant species — their regulations do not exclude the public, or the provision of access roads and tourist and educational itineraries. Ideally, research projects on the evolution of the environment should be carried out in these parks, but such studies are usually piecemeal. The parks are generally zoned to meet the objectives of strict conservation, recreation and education of the public simultaneously. Contrary to the general rule in the United States, human activities — and especially traditional ones — are not systematically prohibited in European parks; for instance, herds of reindeer are grazed in the protected parks in Sweden.

— *Beauty spots/sites of national interest*
These sites, which are often spectacular and include gorges, geological formations, caves and waterfalls, are protected in the same way as a historic monument but are accessible to the public.

— *Managed nature reserves and wildlife sanctuaries*
These reserves are designed to protect a species or group of species, biocenoses or physical environmental elements which require human intervention to survive and would be threatened with extinction in an integral nature reserve. Examples are forestry, game and fishing reserves. In such cases the biotope must be managed to ensure that one or more of these elements are preserved. An example is provided by the mesophytic grasslands of Mont Ventoux in the South of France, which have particularly interesting flora and are maintained by the grazing of sheep, without which the environment would rapidly be transformed.

— *Man-made landscapes and protected landscapes*
Landscapes which have been shaped by traditional agricultural and pastoral activities are destined to disappear once their economic *raison d'être* no longer exists and they are abandoned by their inhabitants. Protecting such environments involves maintaining or reviving human activity. The regional natural parks in France are examples of an endeavour to revive traditional or declining agricultural areas.

European network of "biogenetic reserves"

Despite the wide variety of methods for protecting the natural environment and the efforts made over the last twenty years in both the industrialised and the developing countries, the European Ministerial Conference on the Environment observed in 1976 that these measures were inadequate and that the effect of human activities on the environment was becoming increasingly marked. It suggested a programme to set up a European network of "biogenetic reserves" in order to conserve representative specimens of flora, fauna and natural areas in Europe. Arrangements were made for close collaboration with Project 8 of the MAB Programme, which was setting up a network of biosphere reserves throughout the world.

The purpose of biogenetic reserves is to safeguard the genetic potential and diversity of European biomes as well as the preservation of the various types of habitat, so as to ensure that the ecosystems of the biogenetic network are available for ecological research. Since the primary purpose of these reserves is conservation, the areas included in the network must have a status affording strict legal protection, and this has prompted the various countries concerned to designate existing reserves as nature, forestry or wildlife reserves, for instance. There are criteria governing the types of environment acceptable in such a network: they must be habitats or biomes which are still in the natural state or have not been spoilt to any appreciable extent through human agency. They may be typical of a given region, unique, rare or threatened. The size of a biogenetic reserve must be such that the protected habitat or biome can function normally. It is also desirable to reduce the influence of surrounding areas by means of a buffer zone encircling the reserve.

Besides prohibiting any alteration to the environment, the management of these areas involves supervising human activities, restricting them and banning any new activity which could alter the protected biotopes. Interdisciplinary studies of the ecosystems are also planned.

As far back as 1972, UNESCO's MAB (Man and Biosphere) Programme was also concerned with setting up a world-wide network of zones representative of the world's principal ecosystems and yielding an insight into their functioning, which would then be applied to the rational management of the environment. These reserves are designed to protect sections of the ecosystem where the evolution of the natural environment is to be permanently monitored. They include different zones subject to varying degrees of human intervention, monitored simultaneously: strictly protected zones (reference zones), buffer zones, experimental and restoration zones — field laboratories, as it were. The areas to be included in the network were initially selected on the basis of Udvardy's world classification of biogeographical provinces. The network includes national parks, nature reserves and state forests, but also areas which do not enjoy any of the traditional forms of protection. But protection is necessary if they are to survive. There are certain areas of special interest in Europe that are both biogenetic reserves and biosphere reserves — the Camargue, for instance — and the former can constitute the strictly protected zone for the latter. Scientific monitoring of environmental development is a subject which remains largely untouched, and the encouragement given by international organisations will never be enough to meet the needs.

"Knowledge means better management"

Although the creation of protected areas seems to be the surest way of preserving certain habitats or species, particularly those which are most in danger, these areas will be fully effective only when they form part of an overall regional plan which takes account of environmental factors.

This presupposes, however, that planners and decision-makers have sufficient information, in a comprehensible form, on the features and potential of the environment. This is the crux of the problem. Where is this information? With a few exceptions, it is totally lacking, particularly in countries with a vulnerable environment, as is the case in many developing countries. Scientific research is not yet in a position to meet the needs of the planners who, until recently, rarely consulted ecologists. In France, the obligation to carry out an impact study at the preliminary design stage of schemes or projects on a scale which may damage the natural environment, may bring more rapid advances in the understanding of ecosystems. It is essential, in this connection, to set up networks of permanent environmental monitoring units.

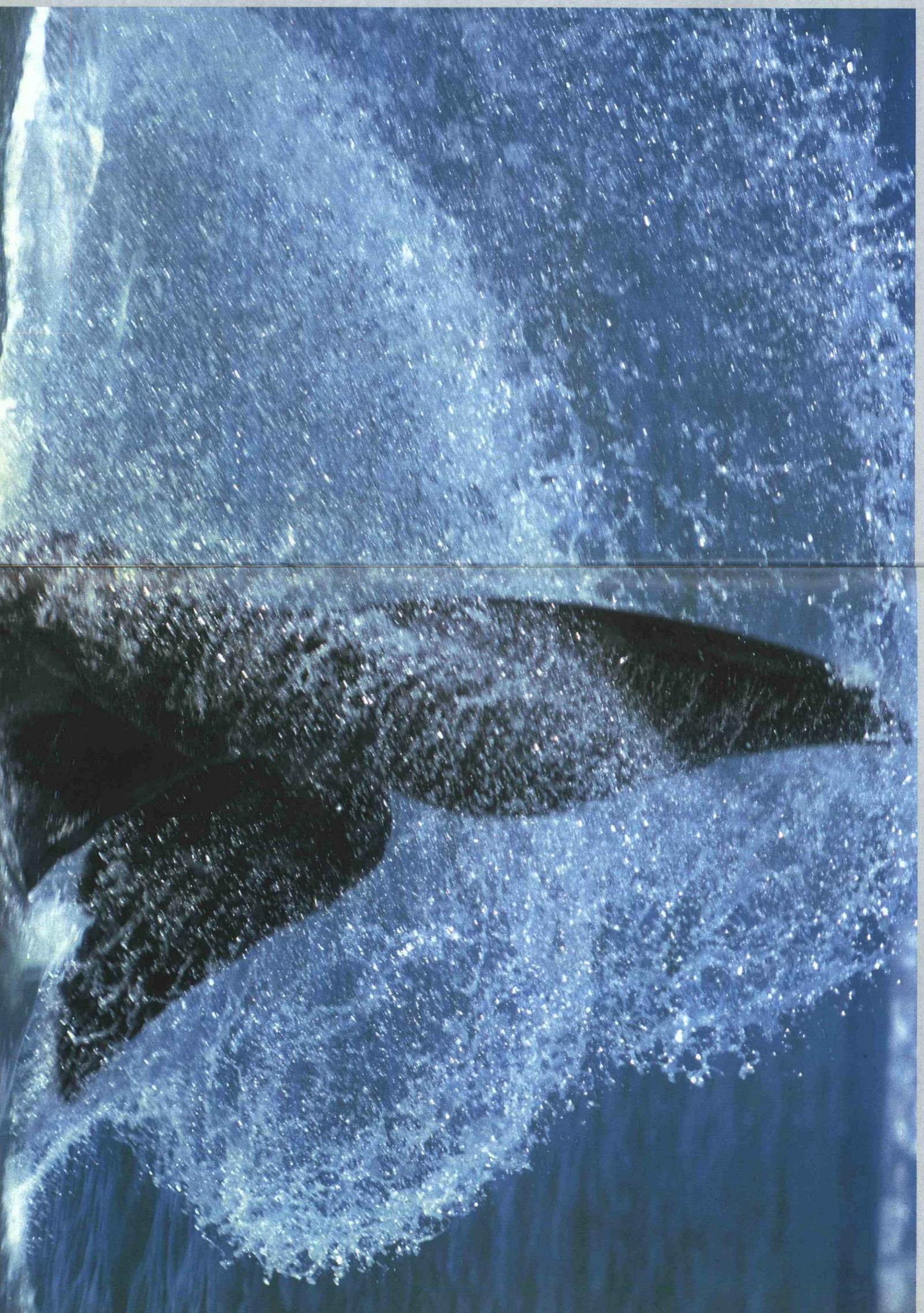
"Knowledge means better management" — the motto of the Fauna and Flora Committee of the French Ministry of the Environment — reflects the work which precedes, accompanies and follows the designation of protected areas. A knowledge of the natural heritage of a region or country is a prerequisite for an overall management and protection plan. Cartography is an essential tool here for scientist and planner alike.

Maps showing the distribution of species can be useful in highlighting the genuine rarity of taxona — and therefore often of habitats — and enabling an extinction danger index to be calculated for each one. Such maps clearly reflect the ecological diversity of an area in the richness of its fauna and flora, and also help in the definition of priorities and in the selection and determination of natural or other areas to be conserved.

Species distribution maps, vegetation maps, ecological maps and maps of environmental potential are all tools developed either nationally or internationally (Council of Europe, EEC, Nordic Science Council, UNESCO, etc.) which should improve our knowledge of habitats needing protection and provide the decision-makers and planners with information which is easy to assimilate, following the example of the biotopes cartography work being done by the Ministry of the Environment of the Federal Republic of Germany.

L. de B.

Balaena glacialis



The sea, cradle of life

Constantin E. Vamvakas

Human pressure

The beautiful marine environment which has nourished so many creatures for millions of years is now in danger.

Today over-fishing is a fact: the need for proteins has increased fish consumption and such heavy fishing has eliminated young fish in different areas. The lack of petrol under land has increased offshore drillings and oil transportation by sea routes has resulted in more tanker accidents, with the unfortunately well-known black tides of oil which destroy marine life, especially near the coast. The need for construction materials obliges man to take some of his raw materials from the sea: gravel and sand are dredged from shallow or deeper waters, thus destroying marine communities and ecosystems. But man's impact comes also from the land: large quantities of domestic and industrial effluents are dumped directly into the sea without any treatment. Other pollutants such as pesticides, fertilisers, etc., also increase pollution, which is no longer just evident but unpleasant as well. Finally, dumping from ships is also an important source of pollution of the sea environment.

Marine parks: many advantages

Under the pressure of such worrying events, marine scientists together with national and international organisations decided to pinpoint at least some marine and coastal areas, in order to protect them from human impact. These areas, analogous to land reserves, are called marine parks. In these areas marine ecosystems are protected from degradation; many endangered species can survive and be protected and the ecological balance of the marine habitats preserved for the future. At the same time many scientific problems may be studied, while a possibility of combining research, protection and recreation is sometimes possible.

But apart from the protection of ecosystems, *sensus stricto*, and the preservation of the genetic material of marine life, marine parks can play a very important role in protecting and increasing natural marine resources. Many areas are nursery, spawning or feeding grounds for fish and other commercially important marine animals. By establishing marine parks in such areas, the stock of young fish is protected from irrational utilisation by man; and fish exploitation can be studied in the natural habitat, because fisheries research needs a special environment, other than the one which is freely accessible to fishermen for commercial purposes.

Another association of reserve and ecosystem management is the combination of marine parks and the culture of organisms having a commercial importance. Aquaculture nowadays has become a very important way of increasing the production of aquatic organisms. Such a combination also provides the possibility of studying the biology of cultivable species, their ecology and their behaviour in controlled breeding. It is evident that such a combination is only efficient when the chosen forms of aquaculture interfere as little as possible with natural processes. For such a combination a prior examination of the environment and sophisticated research is necessary in order to identify and evaluate the possible impact and the probable changes to the candidate area. Suitable areas for similar activities are coastal lagoons and brackish waters such as river deltas. River deltas are also very important natural habitats for birds migrating to or through the country where the marine park is located.

Mediterranean reserves

The concept of the marine park is especially suitable for semi-enclosed regions like the Mediterranean Sea. The Mediterranean bridges three continents, Europe, Asia and Africa. It is a sea heavily utilised by man, with a distressing pollution problem; its natural resources are greatly endangered because of over-exploitation and the degree of pollution. Man's impact is of course different in space and time around the Mediterranean basin. Pollution is heavier to the north and west and less to the south and east. But all around, the Mediterranean basin comprises a big variety of ecosystems, each of which has its own particular importance and may be called a "critical habitat". In some of them, Mediterranean endemic species are present, and characteristic Mediterranean ecosystems and biocenoses are continuing to exist as they have done for thousands of years. These are amongst the candidate areas for establishing marine parks, in order to keep, for the future, a record of the environment of the past which may be compared with other environments where man's impact has destroyed or changed the ecosystem structure.

Mediterranean reserves are probably the only solution for keeping the natural but also historical, geographical and archaeological heritage of the area intact. The combination of the protection of nature and that of cultural monuments is ideal in that area, which has seen the rise of the first and the most important and glorious civilisations of our planet. Most of the ancient monuments are endangered today due to different sources of pollution. It is sure that every lucky man, biologist or archaeologist, fisherman or common snorkeller, who has seen, down in the brilliant sapphire waters of the eastern Mediterranean, the wreck of an ancient galleon, full of amphora, surrounded by beautiful fishes, sea anemones, red sponges, seaweeds and ascidians, would have thought that this monument should be protected.

The importance of marine parks and their utilisation has been recognised by almost all the countries of the Mediterranean during several international meetings and conferences. National and international organisations urge governments to protect the marine environment and to establish marine reserves. Several initiatives have been taken and the number of marine parks in the Mediterranean region is rapidly increasing. At the same time other requirements very important for the appropriate functioning of the marine parks, such as the creation of satisfactory national and international legislation, creation of adequate national authorities responsible for the good management of the reserves, education of suitable and qualified personnel, evaluation and good selection of priority candidate areas, good organisation and monitoring of the selected areas, all have to be considered by the different governments.

Of course, marine parks are a hope. A good hope for the future of the Mediterranean, the sea of man himself. But it is also only one way, a partial approach, to reach our aim: the conservation and the protection of the natural marine environment. The efforts of all scientists, governments and agencies for the preservation of the environment must be understood by all men: everybody will be faced, one day or another, with the results of human impact on nature. Protection of nature is a *must*, let every one of us do something, right now!

C.E.V.

Arousing public interest

Marc Segers

In choosing the conservation of wildlife and its habitat for its fourth biennial campaign directed at the European public, the European Information Centre for Nature Conservation aims to give greater importance to the convention on the subject.

Teething troubles

These campaigns are in line with the work programme which the European Committee for the Conservation of Nature and Natural Resources has been carrying out over the past eighteen years and which it is the Information Centre's task to publicise through its national agencies and correspondents far beyond the frontiers of the twenty-one Council of Europe countries.

Already known for the quality of its journals and other publications, the Information Centre hopes that its regular campaigns will stimulate national authorities and the European public to take a more active part in safeguarding the natural environment.

The promulgation in 1972 of the European Soil Charter's twelve basic principles for preserving the full ecological value of the soil and combating the threat of erosion, particularly severe in mountainous regions and in the Mediterranean countries, provided the material and the occasion for the first information campaign.

But such a difficult subject, considered no doubt by some to be too technical or too specific, lacked the power to capture the public imagination, so that the first campaign had only a limited success.

Two years later the second campaign was launched as a follow-up to the 1967 Water Charter. Firmly rooted in the draft Convention on the Protection of International Fresh Water against Pollution, it drew a much more encouraging audience, though still not enough to secure the conclusion of the convention, still floundering in the heavy seas of technical negotiations.

Enjoying from the very start a much more favourable reception and spontaneous support, the third campaign took the protection of wetlands as its theme. There is no denying that it attracted a very wide response in most countries during 1976 and 1977. In fact its repercussions can still be felt today.

The highly topical theme of wetlands was moreover the first and only one to be chosen by common consent by all the national agencies of the Information Centre. This obviously played a part in the campaign's success, which exceeded even the wildest dreams.

This repeated appeal to public understanding and support, already worn down by so many other appeals, in a matter which is generally neither of immediate relevance nor particularly familiar, is bound to raise a number of questions. What do these campaigns really hope to achieve, and what are the best means towards the desired end?

Why launch campaigns?

It can no longer be acceptable in a democracy for the powers that be to impose any measures, however just and highly principled, without the ordinary citizen being told of them in advance and feeling fully involved.

This is particularly true when such measures threaten to restrict the day-to-day life of the individual, or demand sacrifices in the name of the public good; and that is precisely the effect of calling for respect for fauna and flora and their natural habitats.

Despite the apparent concern for anything to do with nature, wild or domestic animals, plants, forests, gardens or crops, one has to admit that much of it does not go below skin-deep sentimentality.

It is enough to think of the tens of thousands of household pets shamefully abandoned at holiday times, forced to "return to the wild".

Of course we should not confuse kindness to animals with the desire to conserve nature. But it would be more than a little surprising if people capable of inflicting pain and suffering on an individual animal were still to take an interest in the survival of its species.

And so it is more important than ever to encourage greater respect for the living world around us. Love and respect for nature are obviously more likely to arise from a profound conviction than from slogans which are easy to mouth.

By constantly drawing attention to the threats to flora and fauna, we may hope to imbue public attitudes with that ecological awareness about which there is so much talk.

It will not be long before the world has a thousand million of its inhabitants living in cities, increasingly isolated from nature, alienated from it, and mostly forgetting how to behave towards it.

It is no longer enough to expect that information about the fascinating wealth and unimagined resources of the living world will by itself alter attitudes and behaviour unless it is closely bound up with a real rediscovery of a forgotten way of life more in harmony with nature.

By selecting a theme as general as the protection of wildlife and the natural habitat in preference to several more specific suggestions, the Council of Europe has elected to draw attention to the full range of its work in this field, in the hope of demonstrating that, unless something is done, the whole of nature will be seriously threatened.

The design for the poster illustrating this fourth campaign, showing a sample of European flora and fauna cradled in the palm of a hand, surely sums it all up: the precariousness of the balance of nature and its absolute dependence on man's responsible action.

By using a conventional but very wide range of publicity media — posters, stickers, commemorative stamps, publications, lectures, specimen lessons, study excursions, nature trails, etc. — the different countries will have every opportunity to emphasise whichever aspects of the general theme are particularly appropriate to their national situation.

May the campaign help to strengthen European co-operation and may a better understanding and hence greater love of wildlife ensure that it finds itself in good hands.

M.S.

Integrated management: ecology/land use planning

David Cabot

The objective of land use planning is the optimum utilisation of resources. Immediately one has to ask, what does "optimum" mean, and who is to determine acceptable levels of optimum utilisation? Economic development aims at enhancing the material well-being of man, while nature conservation, also concerned with sustained yields from the resource, embraces the more qualitative aspects of the environment. These qualitative aspects cannot be quantified on a financial basis alone, connected as they are with those less tangible aspects of life relating to the cultural enrichment of mankind.

Land use planning

Land use planning provides the matrix or system by which competing land use activities can be recorded, evaluated and appraised. The system is thus a vehicle for the integration of diverse data. Years ago, when the price of land was relatively inexpensive and demands on land use were not severe, it was possible successfully to pursue the acquisition and management of nature reserves with a certain disregard for other land use activities. Today it is difficult to operate along these lines. Careful land use planning can offer an alternative means towards securing wildlife conservation objectives. For example, in Britain the Nature Conservancy Council has the power to designate areas of particular interest for flora or fauna as sites of special scientific interest (SSSI). The owners of designated SSSIs are notified and the local planning authority incorporates these designations into their development plans prepared under the Town and Country Planning Acts 1962 and 1968. Approximately 2 500 sites are scheduled in this manner. The Nature Conservancy Council must then be notified by the local authority if an application is received for a development which may affect the scheduled area. Unfortunately agriculture and forestry are classified as "*exempted* development", so that the local authority has no legal power to control such developments in SSSIs! Hence the scheduling of sites does not guarantee that they are totally protected, but it ensures that their special wildlife conservation value is considered as part of the planning process. The Nature Conservancy Council also secures its conservation objectives by declaring national nature reserves under section 19 of the National Parks and Access to the Countryside Act 1949. Up to 31 March 1978, 126 246 hectares were protected either by ownership, leasing or nature reserve agreement. A further 1 199 hectares of local nature reserves were under protection by local planning authorities in consultation with the Nature Conservancy Council.

A similar system operates in Ireland, where the National Institute for Physical Planning and Construction Research has designated a range of international, national, regional and local areas of scientific interest. Most local authorities have incorporated this information into their county development plans prepared under the Local Government (Planning and Development) Acts 1963 and 1976. Applications for development in, or close to, scheduled areas are generally referred by the local authority to the National Institute for Physical Planning for appraisal. Again, unfortunately, forestry and agricultural developments (including arterial drainage) are classified as exempted developments. That these particular activities are exempt from planning control procedures is ironic as they possess great potential for creating a variety of harmful ecological impacts.

Environmental impact studies

The incorporation of areas of high ecological value into land use plans is, however, only the first step to adequate nature conservation. Traditional planners tend to be more concerned with new buildings, providing services of water, sewage and transport, and ensuring adequate provision of recreational amenities. The planner is perhaps not so concerned with "theory" or "prediction" as the ecologist is, but more with response to the pressures of the legal framework within which he has to work. The forces of local political democracy which are designed to provide checks and balances are also factors to be taken into account. Thus, for one reason or another, the priority which ecologists might like to be allocated to conservation values may in theory or in practice be quickly submerged by other apparently more pressing demands for land use change.

Many people concerned with wildlife conservation feel that local authorities are not in the best position to secure wildlife conservation objectives.

Planners should be able to utilise the specialist advice of ecologists for the management of designated areas of high ecological value. More importantly, advice and guidance should be continuously sought by planners from ecologists as to the ecological consequences of developments. The best vehicle for the incorporation and evaluation of this information is the environmental impact assessment procedure. Many governments will claim that these procedures are already operating within the existing mechanisms for regulating land use change. However, scientists now feel that a more comprehensive system is required.

In order to play its role in this development, the Council of Europe has prepared a model outline environmental impact statement from the standpoint of integrated management or planning of the natural environment. This report is a follow-through of Resolution No. 1 of the second European Ministerial meeting, held in Brussels in March 1976. Another important advisory report from the Council concerns the effects of recreation on the ecology of protected areas. This report provides a *vade mecum* for land use planners of all known recreational impacts.

Perhaps one of the most important instruments for the conservation of European wildlife and natural habitats is the European convention on these matters. The convention was recently signed in Berne by most Council of Europe member countries. It now requires ratification before becoming a binding legal instrument. The convention provides an umbrella under which threatened flora and fauna will be protected. The necessary technical information to support the convention is contained in a series of Council of Europe reports on threatened mammals, birds, vascular plants, reptiles and amphibians. Reports on freshwater fish and certain invertebrates are in progress. This convention should have important repercussions on land use planning.

In conclusion, it is clear that there must be closer liaison and integration between exponents of wildlife conservation and land use planners to secure conservation objectives through land use planning. There are many problems, as already outlined, but we must continue to build up the dialogue and understanding between the ecologist and land use planner. D.C.

Bountiful nature

Fausto Hidalgo do Nascimento

The oil crisis which is one of the main concerns of Western societies at the present time is not just pushing up the price of petrol. It also has indirect effects on our "food energy", because farm machinery too uses oil-based fuels, as do fishing vessels and the fertiliser and pesticide industries.

The repercussions of the crisis have not yet placed an undue stress on the food energy situation. It is, however, a factor that may upset the balance and therefore must not be overlooked. It is important that we should now set about finding other ways of tapping the energy of the universe (solar power) and converting it into food energy, using a minimum of oil-based energy or even none at all.

Other energy sources

Quantitative analysis of the energy produced by ecosystems and biocenoses has demonstrated that terrestrial ecosystems exploit comparatively less energy than certain aquatic ones, which in turn convert it very readily into thermal, chemical, food and mechanical energy.

This finding underlies the campaign that has been embarked upon in Portugal to conserve the coastal wetlands, the Ria Formosa (Faro-Olhão-Cacela) being a typical example.

The Ria Formosa is a peculiar lagoon formation whose shape and stability are not dependent on large rivers but on a set of complex characteristics such as the shape of the coast, its geological structure, the frequency of Atlantic gales and the movement of the sandy coastal shelf. These structural factors have been compounded by human agency (artificial dykes have been built and canals dug, and land has been drained) and by the depositing of sediment carried down by mountain streams.

The Ria Formosa covers an area of about 11 000 hectares and is located, broadly speaking, at latitude 37° 5' north and longitude 7° 40' west. The part linking it to the mainland consists of farmland, saltpans and fishponds.

Sizeable income

The inter-tidal zone consists mainly of numerous muddy islands separated by channels. The former are stabilised with *murraça* (*Spartina stricta*) and are the habitat of a range of fauna, the most typical being the fiddler crab or *Boca de Cava Terra* (*Uca tangeri*); the water contains complex and varied aquatic fauna, including – besides surface fish – benthos, molluscs and lamellibranches. The latter are of great economic importance to the local population: the shellfish industry brings in 1 000 million escudos each year in direct income for some five to seven thousand people and is of indirect benefit to many more (marketing networks, hotels, the food industry, etc.).

In view of this situation, and in order to preserve the existing, renewable natural resources, the Portuguese Government has enacted legislation (Act No. 45/78 of 2 May 1978) designating the area a nature reserve under the responsibility of the National Parks, Reserves and Landscape Heritage Department within the Ministry of the Environment.

During this initial phase, the reserve is being administered by a joint board on which all the public bodies that have hitherto been concerned in piecemeal fashion with the Ria Formosa are represented. The local authorities and the fishermen's association, which have had little say in the past, now have an important part to play as representatives of the local inhabitants and professional interests. The administrative board is chaired by the National Parks, Reserves and Landscape Heritage Department, which encourages the scientific studies needed to remedy or elucidate certain situations. For example, studies have been begun on the social and economic situation of the people living in the protected area, the ultimate objective being conservation decisions that reconcile the various interests involved. An inventory of the flora and fauna is also being made.

Safeguarding water quality

In order to improve the quality of the water, an analysis is being done of the industrial effluents of varying origin that are discharged into the lagoon (from the fishing, cork, carob processing and motor industries). The most serious pollution stems from the canning factories, the high-fat wastes from which cause the death of many aquatic animals as well as producing noxious decomposition smells. Discharge of these wastes is shortly to be subjected to control by the Ministry of Industry, and most of the factories in question will be required to treat their effluent before releasing it into the Ria.

The liquid urban wastes which are wholly discharged into the reserve at the present time pose a more difficult problem. From the ecological point of view, the ideal arrangement would be for this effluent to be treated in such a way as to minimise the damage done by its discharge (bearing in mind that the discharge of fresh water, even after treatment, into a salt environment upsets the aquatic ecosystem, sometimes with grave results). However, the picture is growing more complicated as studies advance. The amount of highly prized shellfish currently harvested each year in the reserve raises the question whether a new equilibrium may not have come about in which the aquatic medium purifies and utilises the nutrients present in the waste, these nutrients subsequently being exploited by man in the form of bivalve molluscs. This consideration dictates caution in advancing the argument either for or against treatment of sewage: on the one hand the reserve must not be allowed to spread pathogens (which is why the waste water is eliminated), but on the other hand the aquatic medium must not be deprived of the nutrients it needs for self-renewal.

Reconciling nature conservation with human needs appears to be extremely tricky, but nonetheless possible. The requisite balance is complex and sometimes unstable; but there cannot be the slightest doubt that its attainment demands a fuller understanding of natural phenomena, and human respect for them. We must not jump to the conclusion that the total humanisation of nature is possible, or even desirable. For every type of natural landscape covered by Portuguese legislation (leisure parks, protected landscapes, nature reserves, integral reserves, etc.) there is a corresponding category of human use. In some cases, as for example in wetland reserves, that use is a means of maintaining equilibrium, not a damaging influence. Because the biotope is so fertile, there are normally seasonal population surpluses, and if man did not exploit those surpluses nature itself would see to it that they were eliminated. One of the aims of environmental studies is to achieve understanding of such regulatory mechanisms so that they may be placed at man's disposal, in his own interest and in that of nature too.

F.H. do N.

Finland's rich forests

Esko Jaakkola

Finland has more forestry land in relation to its total land area – about 87% – than any other European country. Forests have always played a very important role in the Finnish national economy, but are also important as a most characteristic type of landscape and environment for men and wildlife. When considering the economic interest of forests, it can be noticed that some forest products are marketable and have market prices, whilst some products, such as many game species, are not marketable in Finland but can be evaluated by using calculated prices. Recreation and nature conservation are examples of forest uses which are difficult to assess in economic terms. It is certain, however, that the attraction of Finland as a tourist country is largely based on the seemingly natural state of our forests, lakes and archipelago.

The forestry policy in Finland has largely been centred around timber production. This is quite natural, because half of our export income comes from the products of the forestry industry. Recently, the situation has somewhat changed and the economic importance of non-timber products and other uses of forests have been critically compared with mere timber production. The various uses of forests in Finland which can be directly assessed in economic terms are grouped in the following way:

1. timber production,
2. reindeer,
3. game, wild berries, mushrooms, lichen and other harvestable products.

Amongst those values which are more difficult to assess in monetary terms, the most important are: recreation, nature conservation, and protection of a major ecosystem and of other ecosystems which depend on the forest.

Economic interest of game

In 1976 there were more than 230 000 Finns who purchased a hunting licence, that is about 5% of the total population and 15% of all men above the age of 15 years. Hunting in Finland nowadays is almost solely for domestic and recreational purposes. As a source of income it is practised to a very small extent only. Recently the economic importance of hunting has again been noticed because of well-managed and exploited elk (*Alces alces*) populations. About 75% of the game in Finland comes from the forests, the rest being mainly waterfowl. The value of hunting is assessed from the quantity of bagged game multiplied by the calculated prices. Exact numbers are known only for elk hunting: in other species they are estimated from the catch announcements of the hunters. The total production of hunting in Finland at the present time is about 8.6 million kilogrammes of meat with the monetary value of 200 million Fmk (= $ 50 million). The main part of this comes from elk hunting (about 7.6 million kilogrammes, 150 million Fmk) and the remaining million kilogrammes are made up of hares, tetraonids and waterfowl.

It is assumed that the game resources of Finland are now rather well utilised and no marked increase in production can be expected.

Wild berries and mushrooms

The wild berries and mushrooms from Finnish forests and peatlands, including private land, are freely available to all citizens. They represent great economic and recreational value and there is growing interest in a more effective harvest. It is estimated that the total amount of useful mushrooms produced annually by the Finnish forests averages 1.7 million tons. In 1972 about 350 tons were exported and an unknown (but not very large) amount was used domestically. Apparently only a very small fraction of the potential harvest was collected. The nutritional characteristics of mushrooms are particularly suitable for modern man (low in calories, but rich in proteins, minerals and vitamins). In addition, wild mushrooms are generally more delicious than cultivated ones.

In 1969 the Central Board of Forestry launched a campaign to promote the utilisation of wild mushrooms. It includes the training of commercial mushroom collectors, who now number about 30 000. Thirty important species of mushrooms — easily recognisable, fairly common and nutritionally valuable — have been chosen for export. The utilisation of wild berries has a wider and longer tradition in Finland. Cowberries (*Vaccinium vitis-idaea*), blueberries (*V. myrtillus*), cranberries (*V. oxycoccus*) and cloudberries (*Rubus chamaemorus*) have been used since times unknown. The cowberry has a long tradition in Finnish export (more than 2 million kilogrammes annually). There is an insatiable demand for blueberries and cloudberries, although so far only a small fraction of the total production of the forests and peatlands is utilised. It seems, however, that increasing awareness, rising prices and more effective methods of transport will result in fuller use of this natural resource. Some experimental work is being carried out to find methods to increase natural productivity and to cultivate the wild species.

The value of wild berries and mushrooms used in Finnish households in 1976 was estimated at some 165 million Fmk. Added to the revenue from export, 71 million Fmk, and from berries and mushrooms used by industry, 10 million Fmk, the total value exceeds 200 million Fmk (= $ 50 million).

In conclusion, it can be said that a forestry exploitation which takes into account products other than timber is economically wise in Finland, at least on a local scale, and in the future, when the harvesting of these renewable natural resources is better organised, on a national scale.

E.J.

Peter H. Sand

Stop this shameful traffic!

In February 1979, special agents of the US Fish and Wildlife Service seized more than 17 500 fur pelts on a ranch in Texas: smuggled across the Rio Grande, the 2.5 ton haul included 1 556 Mexican bobcat skins, destined for European markets (where coats made from 10 to 15 pelts sell for as much as $ 20 000). The ranch owner and four Mexican smugglers were arrested.

One month later, French nature conservation authorities seized 8 chimpanzees, 3 pythons and 2 crocodiles illegally shipped to Bordeaux. The importer (a circus owner) was fined 10 000 francs, and the animals are to be taken back to West Africa.

In April, West German customs officers seized 3 600 rare cactus plants from passengers of a single charter flight arriving at Frankfurt airport; and 141 rhinoceros horns (200 kg, reported black market value several million DM), mailed to Bremen under false labels from Kenya. Court proceedings have begun against the cactus tourists; the rhino case turned out to have ramifications as far as Thailand, and is now in the hands of Interpol.

Finally, in August, Indian customs inspectors seized a shipment of 150 000 snake skins and 500 otter furs, ready to leave from Calcutta airport for Frankfurt. Investigations are pending in both countries involved.

The Washington Convention

This recent chronology of international enforcement action goes back to a single legal instrument: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Concluded at Washington on 3 March 1973, the convention entered into force on 1 July 1975. It now has 59 member countries, already including most of the important exporters and importers of wild animals and plants.

The aim of the convention is to establish world-wide controls over trade in endangered wildlife and wildlife products, in recognition of the fact that unrestricted commercial exploitation is one of the major threats to the survival of species. For this purpose, endangered species of wild animals and plants are listed in three appendices to the convention. Depending on their agreed degree of protection, the export and import of live specimens, and of parts or derivatives (such as ivory or whale oil) is either prohibited or subjected to uniform permit requirements recognised by all member countries.

Each Party to the convention has designated national authorities in charge of administering the licensing and control system, in direct co-operation with their foreign counterparts and unfettered by the constraints of diplomatic channels. It is through this unique global network of wildlife administrations that some of the spectacular recent seizures became possible.

The small international secretariat (consisting of two scientists, a lawyer, and two secretaries) co-ordinating the network from an office in Switzerland merely functions as a "switchboard", to facilitate direct contacts between the countries concerned. It is attached to the International Union for Conservation of Nature and Natural Resources (IUCN), which administers the convention on behalf of the Executive Director of the United Nations Environment Programme (UNEP). With funding from UNEP and from direct government contributions, and in close co-operation with scientists in the Survival Service Commission of IUCN, it also assists in trade monitoring and information exchange and services the biennial meetings of the Parties (Berne, 1976; Geneva, 1977; San José/Costa Rica, 1979).

Illegal traffic and legitimate trade

The odds against which this system has to operate are enormous. According to the Director of Munich's Hellabrunn Zoo, Dr Arnd Wünschmann, "the illegal trade in furs, trophies and protected animals now has higher profit margins than the drug traffic". Significantly, recent Australian investigations into bird smuggling revealed connections with the US mafia. When member governments began to exchange export and import documents and to compare their national trade statistics, they discovered curious discrepancies, and in some cases were able to trace them back to forgeries and corruption. The task of harmonising permit forms and procedures is now in the hands of a Technical Expert Committee, which held its first meeting at Bonn in January 1980 and also keeps liaison with Interpol and the Brussels-based Customs Co-operation Council (OCC).

At the same time, the convention seeks to draw a clearer line between illegal traffic and black markets on one side, and legitimate trade in renewable natural resources on the other. A number of countries have well-managed programmes of wildlife conservation and utilisation, enabling them to harvest the excess yield as "interest" of their resources without drawing on the capital. To third world countries in particular, these programmes may be important development factors and a significant source of foreign exchange earnings on the world market. International authorisation of trade in products derived from national wildlife management projects thus tends to be the focus of debate at the biennial meetings of the Conference of CITES Parties, such as the one held in March 1979 in Costa Rica: the main examples there were vicuna conservation and management projects in Peru and Chile (trade authorisation denied by the Conference) and crocodilian management projects in the United States and in Papua New Guinea (trade authorisation granted).

Not surprisingly, the decisions of the CITES Conference are taken under a con-

Loxodonta africana

Stop this shameful traffic!

siderable amount of pressure, both from private conservation groups (non-governmental organisations have full observer status under the convention, and have tended to use it effectively) and from economic lobby groups — ranging from the luxury fur and leather industries (for various wildlife products) to pet dealers, safari parks and biomedical research establishments (for live animals). While the scientific-taxonomic classification work undertaken to improve the appendices of the convention so far has demonstrated a high level of global consensus, some issues are bound to be controversial due to socio-economic reasons. The listing of species on the CITES appendices is decided by the Conference, by a qualified majority vote if necessary (at Conference meetings, or through postal voting), and in accordance with agreed standards, the so-called Berne criteria. Conference resolutions relating to the interpretation of the convention (e.g., on the status of hunting trophies) are recommendatory in nature.

Some problems remain

In spite of the impressive confiscation record — evidence of improved enforcement in many member countries — a number of problems and "loopholes" remain. One of them is the level of sanctions and penalties for violation of the convention: while confiscation of smuggled specimens undoubtedly is a good deterrent, monetary fines are often woefully inadequate to offset the calculated risk the offenders are taking (e.g., in 1979, 4 900 DM for the smuggling of a live snow leopard; and £550 for the offering for sale of three leopard skins). Even some of the prison sentences rendered by US courts have been described as derisory in proportion to the profits made (e.g., in 1978, eight months in jail and fines totalling $ 87 500 for an alligator skin transaction involving an estimated street sales value of more than $ 1 million). At a time when penal sanctions for "environmental crimes" are being introduced in many countries, contraventions of the Washington Convention continue to be dealt with as misdemeanours.

Another dilemma arises because of the very success of enforcement measures. After confiscation, national authorities often do not know what to do with the confiscated animals, plants or products. The usual customs practice of public auctions has been discouraged by the CITES Conference, at least as regards the most endangered species (on Appendix I), whose return into the trade would only stimulate the market further. Short of destroying them, the Parties thus had to find other ways of dealing with these specimens, through non-commercial exchange programmes (for products and derivatives), by assignment to scientific centres or rehabilitation in the wild (for live specimens). The problem is far from being resolved.

On the whole, however, the convention may be said to have demonstrated its practical viability during its first four years of operation. As its membership is beginning to reach the goal of near-universal coverage, the attention of the Parties turns to the harmonisation and improvement of national enforcement aids, such as training courses and "identification manuals" for customs officers. Perhaps the most important aspect of enforcement, still largely neglected, is public information as a means to induce voluntary compliance. The efforts of the Council of Europe's Centre for Nature Conservation, and of *Naturopa* in particular, can be an important contribution to this goal. P.H.S.

Luxury at any cost

Peter H. Sand

Europe has traditionally been the centre of international trade in endangered wildlife and wildlife products — both as a consumer market and as the hub of re-exports and the transit trade.

Furs and ivory

The Federal Republic of Germany alone accounts for approximately 60% of the world's fur imports, and for a proportionately high share of trade in spotted cat skins. Adding the shares of the other major West European fur traders (United Kingdom, Belgium, Switzerland, Netherlands, France, Italy), 80% is a conservative estimate for Western Europe as the market for all endangered species of wild felines; i.e. about 0.5 million fur skins per year, from South American ocelot to Siberian lynx.

Ivory imports recorded by official customs statistics in the major West European trade countries (Federal Republic of Germany, France, Spain, United Kingdom, Italy, Netherlands, Belgium) totalled 180 tons in 1977. While this figure includes a large portion of re-exports to Asia — the ivory actually consumed in Europe (for carvings, piano keys, etc.) is approximately 50 tons per year — it does not include the huge additional volume of ivory passing through Belgium and France "in transit", hence not recorded by customs statistics. Even so, Western Europe's official 1977 imports of raw ivory may be estimated to represent at least 10 000 dead elephants.

Europe's leading position in international traffic

Besides the USSR, five European nations (Denmark, Iceland, Norway, Portugal and Spain) are still active in whaling, and in the export of whale products. In addition, Cyprus exported more than 2 700 tons of whale meat to Japan in 1978, as a result of whaling operations by the now infamous MS *Sierra* (registered in the name of a Liechtenstein company, and operating out of Spanish and Portuguese ports). Europe also remains a major consumer of whale products, especially sperm oil, which is used for the processing of luxury leather, as an industrial lubricant, and for cosmetic products. The Federal Republic of Germany, the United Kingdom, the Netherlands, France and Italy together thus imported more than 11 500 tons of whale oil (mainly from Japan) in 1978, equivalent to some 2 000 whales.

Together with Japan, Western Europe is the principal market for crocodile hides, the vast majority of which are taken from the wild (contrary to industry claims, only a small fraction originate from "crocodile farms"), although up to 50 % of the catch is unusable or lost. Of the estimated 2 million crocodilian hides which are traded annually in international commerce, approximately 1.2 million (60%) are consumed by tanners in Western Europe (France 500 000; Italy 400 000; Federal Republic of Germany 250 000). The European share is equally high as regards snake skins, other reptilian products, and the leather, shells and meat of marine turtles.

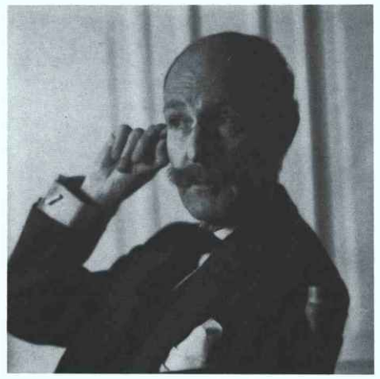
Europe also maintains its leading position in the international traffic in exotic live animals and wild plants. The consumers are pet traders, safari zoos, biomedical research establishments, scientific and pseudo-scientific collectors for every imaginable species. European expatriates often control the local collection and trade supply of endangered wildlife species in Africa and Latin America; and affluent tourists from Europe have become the predominant clients for various wildlife products which are now exported as mass souvenirs from developing countries.

There are still loopholes . . .

The fact that several European countries such as Belgium, Austria, Spain and Yugoslavia are still outside the scope of application of the Washington Convention (Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES) has resulted in a shifting of trade routes. Commercial dealers from CITES countries circumvent the convention by way of subsidiaries and affiliates in non-member countries, or by "transit" operations through free-port areas outside the reach of national customs controls. Furthermore, under pressure from their luxury leather industry, four European countries (Federal Republic of Germany, France, Italy and Switzerland) jointly refused in 1979 to grant full CITES protection to the valuable saltwater crocodile (*Crocodylus porosus*), and in the case of France and Italy also to other endangered crocodilians and marine turtles. Although this "opting-out" clause under the convention has previously been used by other member countries (e.g., for certain whale species), this is the first time global protection of a highly endangered species was virtually undermined as a result of concerted action by industrial lobbyists in importing countries. Even more important perhaps is the disruptive effect which these national reservations will have on current efforts towards common implementation of the convention within the European Community. P.H.S.

Future prospects

Niels Borch-Jacobsen



Justification of the programme

Directly after the Second World War, and more particularly during the decade 1960–69, Europe underwent the greatest economic boom of its history. Full priority was given to economic development in a mood of near euphoria. Everything was sacrificed to development. But this idyllic, fairy-tale picture was marred by dark warnings voiced by certain specialists, ahead of their time, who already sensed that such prodigious and rapid development spelt danger for the natural environment. Scientists convinced of the pre-eminence of biological and ecological principles, even in a hyper-industrialised society, sounded the first alarms which were fortunately re-echoed in parliamentary circles.

And since our biological environment never has and never can take account of political frontiers, it was obvious that the member states of our organisation had to pool their resources to protect our European "natural heritage". The programme launched by the Council of Europe at this time was thus fully justified.

Since 1963, this programme has continued to develop as governments realised its ever-increasing importance, and today an entire chapter of the intergovernmental work programme is devoted to it.

We are, therefore, justified in asking whether the study of the problems of nature conservation undertaken at that time remains valid today.

My answer is yes, for over the last two decades these problems have become so complex that no individual, no government, however well intentioned or well equipped, can alone solve the problems which consist essentially in striking a happy balance between the economic needs of society and their impact on the natural environment. This is a difficult task calling for intensified efforts by the Council of Europe in this field, in an attempt to find this balance which alone, in the final analysis, can enable man to play his proper role in the biosphere.

Future of the programme

This action must be continued. We have daily proof of its necessity when we witness the stupendous, headlong rush to consume, or rather squander, natural resources by our industrial society, which appears to regard nature as a bottomless, inexhaustible treasure-chest. This is a gross miscalculation, notwithstanding current forecasts that try to reassure us that our technology will succeed in finding a remedy to heal the wounds which we inflict on nature.

From the outset, the Council of Europe had to cope with a vast number of problems. During the early years, efforts were mainly concentrated on identifying the common concerns of member states and deciding how to act. At the beginning, therefore, the programme consisted of a relatively wide variety of activities, which also included problems of pollution.

It was not until the first Ministerial Conference on the Environment (Vienna, March 1973) that the precise framework for our work was defined. In so doing, the Committee of Ministers of the Council of Europe paid great heed to the programmes of other international organisations. As a result, problems of pollution were practically abandoned, since, owing to their major economic implications, they more properly belong in the programmes of OECD and the European Economic Community. Only the problems of planning and managing the natural environment and the conservation of wildlife and natural habitats still form part of our programme, which also covers problems of information, education and training. I believe these activities will be permanent, for on the one hand no problem is ever completely solved, and on the other hand our natural heritage is continually being subjected to new attacks.

For the next ten years, I would propose that the Council of Europe programme for nature conservation should concentrate on the two following aspects:

First, hitherto biological and ecological considerations have predominated in the majority of projects. This is entirely logical in view of their nature: lists of endangered species (plants and animals), network of protected landscapes (European Diploma scheme), network of biogenetic reserves, studies of specific natural habitats, etc.

We must continue along the same lines, for it is probably in these fields that the Council of Europe can claim to fulfil a specific purpose. While continuing to stress the ecological aspect, however, it should not ignore the other needs of society, particularly those of an economic and social nature. While it is our duty to condemn those who pillage nature for their own profit, this does not necessarily mean going to the other extreme of prohibiting any human activity which may have an adverse impact on the natural environment. The Council of Europe's work will primarily be concerned with protecting and managing our natural assets. By drawing the lessons from the experience of others (OECD, European Economic Community), it will nevertheless have full regard for the economic and social background against which any conclusions must be set.

A recent Council of Europe achievement, the Convention on the Conservation of European Wildlife and Natural Habitats, signed in Berne in September 1979, is an illustration of how objectives which were initially purely ecological have been redefined to take other interests into consideration. This convention moreover sets guidelines for Council work in the years to come: to ensure the full application of the convention and endeavour to improve its effectiveness through agreements for the more effective conservation of species or groups of species. This will call for research work which is a direct follow-up to the preparatory studies to the convention.

Secondly, in addition to the sector "protection of nature and management of natural resources", the Council of Europe deals with two other very important sectors, namely "regional planning" and "integrated conservation of the architectural heritage and town planning", which together form one single field of activities within the intergovernmental programme.

These three sectors are closely related, owing to the nature and conception of the problems concerned, and it would therefore be valuable if future work programmes could bring out more clearly their interdependence. Together they in fact cover the man-made environment taken in its widest sense. In our forthcoming programmes, we must try to integrate these different sectors more closely. In current terminology, this is known as a multi-disciplinary approach which, alas, is as easy to defend in theory as it is difficult to apply effectively in practice. But when one has faith, as we have, it is all the easier to make a start.

For my part, I would regard the programmes for these three sectors as a book whose general title might, for example, be "The biophysical environment of Europe", with individual chapters dealing with specific problems such as:

— general physical planning;
— the planning and management of the natural environment;
— the planning of the urban environment;
— the conservation of the architectural heritage.

And the foremost concern of the author of this "book", i.e. the Council of Europe itself, should be to ensure the close harmonisation of all the chapters, as a prelude to devising an integrated plan for our biosphere.

In this way, the problems of the environment, whether urban, rural or "natural", may be solved in harmonious and practical ways taking account of physical, biological, economic, sociological and cultural factors. Here is a challenge to create a world which is still worth living in.

N. B-J.

Contributors to this issue

Mr José Pires Cutileiro
Ambassador Extraordinary and Plenipotentiary
Permanent Representative of Portugal to the
Council of Europe
11 rue Fischart
F-67000 Strasbourg

Dr Franz Karasek
Secretary General of the Council of Europe
B.P. 431 R6
F-67006 Strasbourg Cedex

Dr Anne van Wijngaarden
Research Institute for Nature Management
Kasteel Broekhuizen
NL-3956 ZR Leersum

Prof. Dr H. Steinlin
Forstwissenschaftliche Fakultät
Albert-Ludwigs-Universität
Belfortstrasse 24
D-7800 Freiburg i. Br.

Mr Robert E. Boote
Director General
Nature Conservancy Council
19/20 Belgrave Square
GB-London SW1X 8PY

Prof. Michel Prieur
Société française du droit de l'environnement
Place d'Athènes
F-67000 Strasbourg

Mr Hemmo Muntingh
« Het Waddenhuis »
Voorstraat 18
Postbus 90
NL-8860 AB Harlingen

Mr Brian Johnson and Mrs Nora Liechtenstein
International Institute for
Environment and Development
10 Percy Street
GB-London W1P 0DR

Prof. Dr Antal Festetics
Institut für Wildbiologie und Jagdkunde der
Universität Göttingen
Forstliche Fakultät
Büsgenweg 3
D-3400 Göttingen

Mr Gren L. Lucas
Secretary
IUCN Threatened Plants Committee
c/o the Herbarium,
Royal Botanic Gardens
Kew, Richmond
GB-Surrey TW9 3AE

Mr Magnar Norderhaug
Conservation Inspector
Ministry of the Environment
Oslo Dep
N-Oslo 1

Prof. Sergio Frugis
Centro Italiano Studi Ornitologici
c/o Istituto di Zoologia
Università di Parma
via dell'Università 12
I-43100 Parma

Mrs Marga Hubinek
Member of the Council of Europe's Parliamentary Assembly
Friedmann Gasse 1b
A-1160 Wien

Mr Egbert Ausems
Secretariat General, Directorate of Environment and Local Authorities
Council of Europe
B.P. 431 R6
F-67006 Strasbourg Cedex

Secretariat General
United Nations Environment Programme
Bureau de Genève
Palais de Nations
CH-1211 Genève 10

Mr Michael W. Henchman
Head of Interpretative Branch
Nature Conservancy Council
Attingham Park
GB-Shrewsbury SY4 4TW

Mr Marc Pallemaerts
President
International Youth Federation
for Environmental Studies and Conservation
Klostermølle
Klostermøllevej 48
DK-8660 Skanderborg

Mr Roland Wiederkehr
Fondation WWF Suisse
pour l'Environnement
Förrlibuckstr. 66
CH-8005 Zürich

Mag. Dr Stefan Plank
Institut für Umweltwissenschaften und Naturschutz d. Österreichischen
Akademie d. Wissenschaften
Heinrichstrasse 5
A-8010 Graz

Mrs Laurence de Bonneval
257, boulevard Jean Jaurès
F-92100 Boulogne

Dr Constantin E. Vamvakas
Director General
Institute of Oceanographic and
Fisheries Research
Aghios Kosmos
Hellinikon
GR-Athens

Mr Marc Segers
Ministère de l'agriculture
Administration des Eaux et Forêts
31 Chaussée d'Ixelles
B-1050 Bruxelles

Mr David Cabot
National Institute for Physical Planning
Conservation and Amenity Research
St Martin's House
Waterloo Road
IRL-Dublin 4

Mr Fausto Hidalgo do Nascimento
Ministério da Habitação e Obras Públicas
Serviço Nacional de Parques, Reservas
e Património Paisagístico
Av. 5 de Outubro, 204, 2º DTO
P-8000 Faro

Mr Esko Jaakkola
Ministry of Agriculture and Forestry
Bureau of Natural Resources
Vuorikatu 16 A
SF-00100 Helsinki 10

Mr Peter H. Sand
Convention on International Trade in
Endangered Species
of Wild Fauna and Flora
IUCN
CH-1196 Gland

Mr Niels Borch-Jacobsen
Director
of Environment and Local Authorities
Secretariat General
Council of Europe
B.P. 431 R6
F-67006 Strasbourg Cedex

Platalea leucorodia

National Agencies of the Centre

AUSTRIA
Mag. Dr Stefan PLANK
Österreichische Akademie
der Wissenschaften
Institut für Umweltwissenschaften und Naturschutz
Heinrichstraße 5/III
A 8010 GRAZ

BELGIUM
Ing. Marc SEGERS
Ministère de l'Agriculture
Administration des Eaux et Forêts
29-31, Chaussée d'Ixelles
5e étage
B 1050 BRUSSELS

CYPRUS
Nature Conservation Service
Ministry of Agriculture and
Natural Resources
Forest Department
CY NICOSIA

DENMARK
Mr Claus Helweg OVESEN
National Agency for the
Protection of Nature,
Monuments and Sites
Ministry of the Environment
13 Amaliegade
DK 1256 COPENHAGEN K

FRANCE
Ministère de l'environnement
et du cadre de vie
Service de l'information
164, rue de Javel
F 75015 PARIS

FEDERAL REPUBLIC OF GERMANY
Deutscher
Naturschutzring e. V.
Bundesverband für
Umweltschutz
Generalsekretariat
D 5300 BONN-OBERKASSEL 3
Kalkuhlstraße 24
Postfach 320 210

GREECE
M. Byron ANTIPAS
Secrétaire Général
Société hellénique pour la
protection de la nature
9, rue Kydathineon
GR ATHENS 119

ICELAND
Mr Arni REYNISSON
Director
Nature Conservation Council
Laugavegi 13
ISL REYKJAVIK

IRELAND
Mr D. O'Crowley
Department of Fisheries and Forestry
Forest and Wildlife Service
22, Upper Merrion Street
IRL DUBLIN 2

ITALY
Dr ssa E. MAMMONE
Ministero dell'Agricoltura
Ufficio delle Relazioni
internazionali
9, via XX settembre
I 00187 ROME

LIECHTENSTEIN
Ing. M. F. BROGGI
ETH/SIA
Liechtensteinische Gesellschaft
für Umweltschutz
Helligkreuz 52
FL 9490 VADUZ

LUXEMBOURG
M. F. Ch. MULLER
Conseil supérieur de la Nature
Direction des Eaux et Forêts
34, avenue de la Porte-Neuve
B. P. 411
L LUXEMBOURG-VILLE

Lynx pardina

MALTA
Dr Louis J. SALIBA
Department of Health and
Environment
15, Merchants Street
M VALLETTA

THE NETHERLANDS
Drs H. J. C. KOSTER
Department of Conservation of
Nature and Landscapes
Ministerie van C R & M
370 Steenvoordelaan
NL RIJSWIJK (ZH)

NORWAY
Mr Thorstein DREYER
Ministry of the Environment
Myntgaten 2
N OSLO DEP OSLO 1

PORTUGAL
Dr José de ALMEIDA FERNANDES
Presidente da Direcção
Liga para a Protecção
da Natureza
Faculdade de Ciências
58 rua Escola Politécnica
P LISBOA 2

SPAIN
Mr Pedro de MIGUEL GARCIA
Subdirector General de Formacion
Ministerio obras Publicas y Urbanismo
Subsecretaria ordenacion
Territorio y Medio Ambiente
Avenida Generalisimo, s/n
E MADRID 3

SWEDEN
Mr S. LUNDSTRÖM
National Swedish Environment
Protection Board
Smidesvägen 5
Box 1302
S 171 25 SOLNA

SWITZERLAND
Dr J. ROHNER
Ligue suisse
pour la protection de la nature
Wartenbergstraße 22
case Postale 73
CH 4020 BASLE

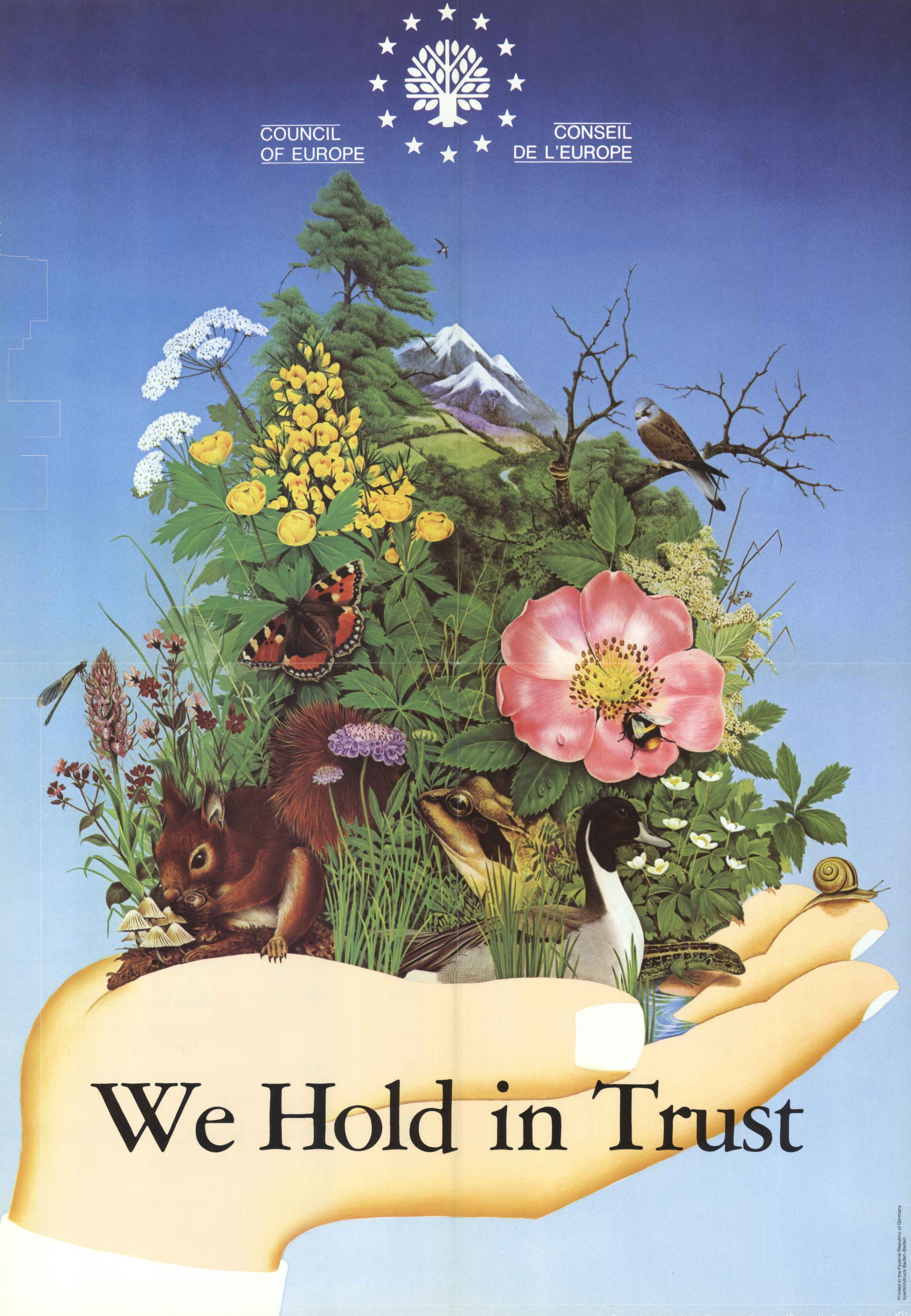
TURQUIE
Mr Hasan ASMAZ
Turkish Association for the Conservation
of Nature and Natural Resources
Menekşe Sokak No. 29/4
Kizilay
TR ANKARA

UNITED KINGDOM
Miss S. PENNY
Librarian
Nature Conservancy Council
Calthorpe House
Calthorpe Street
GB BANBURY, Oxon, OX16 8EX

Information concerning Naturopa, *the European Information Centre for Nature Conservation or the Council of Europe may be obtained from the Centre or the National Agencies listed above.*

COUNCIL OF EUROPE

CONSEIL DE L'EUROPE



We Hold in Trust

Printed in the Federal Republic of Germany
Koelblindruck Baden-Baden

Commissioned by the Nature Conservancy Council and Designed by Conran Associates