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FOURTH JANE HODGE MEMORIAL LECTURE

DILEMMAS IN CONSERVATION

DELIVERED BY

H.R.H. The Prince Philip
Duke of Edinburgh, K.G., K.T.

at the University of Wales Institute of Science and Technology,
on Friday, November 23rd, 1973

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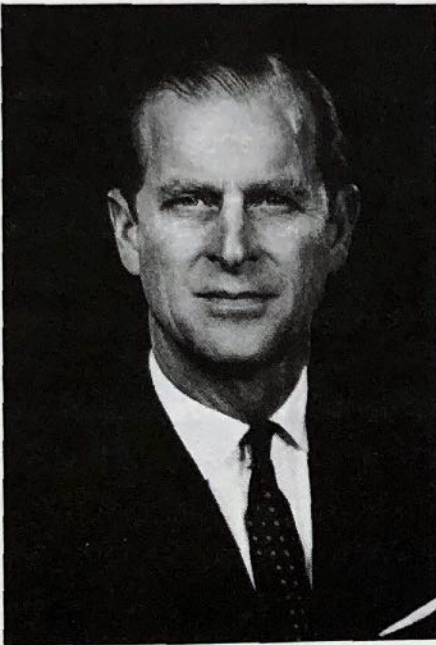
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The Jane Hodge Foundation,
set up by Sir Julian Hodge, Merchant Banker, in memory of his mother,
endowed a chair of Banking and Finance at the
University of Wales Institute of Science and Technology
in April 1970, with provision for an Annual Memorial Lecture
concerned with the Science and Practice of Banking and Finance

Dilemmas in Conservation



According to the rules, the Jane Hodge Memorial Lecture should be concerned with the science and practice of banking and finance. I can only assume that Sir Julian Hodge was indulging his sense of humour when he asked me to deliver this Lecture. I think a good many people have come to expect me to be an instant expert on almost every subject but even the most long suffering and tolerant of them would justifiably boggle at the suggestion that I might contribute anything useful whatever to the subject of the science and practice of banking and finance.

That being the case, you are probably asking yourselves what on earth induced me to accept the invitation. The simple answer is that I too have a sense of humour. But that is not the whole answer.

It so happens that I have been Chancellor of the University of Wales for twenty five years and since 1967 this Institute has been a part of the University. I do not claim to be a very active Chancellor but the position has given me many opportunities to be in Wales and to be informed about Welsh problems and ambitions.

It was, therefore, inevitable that I should hear about the activities of the Hodge Group in Wales and its extremely valuable contribution to the development of banking and finance in Cardiff. For the same reason I became aware of the Jane Hodge Foundation and its wonderfully generous support of medicine through many projects, and of this University through the establishment of the Chair of Banking and Finance at this Institute. How could I possibly refuse to deliver this Lecture under those circumstances even if I know nothing particularly useful about the science and practice of banking and finance?

The only problem about practical jokes is that they are likely to misfire and, in this case, both Sir Julian and I have been had. He is not going to get a lecture about banking and finance and I had all the labour of thinking of a subject and then the even greater labour of preparing a lecture on it, and that, I can assure you is no joke at all.

After much cogitation, I decided to call this Lecture 'Dilemmas in Conservation'. I am not going to try to relate conservation to banking, although the financial aspects of conservation are very important indeed. My main purpose will be to explore some of the contradictions and complications which the concept of conservation poses in this rather critical period in the world's history.

To begin with, I always think it is a good idea to present a definition of the subject under discussion. The word conservation can be used in many connections but I am going to use it in the context of the conservation of the environment. By this I mean the creation of a satisfactory state of existence for all living things on this earth. It includes the protection of the best of what we have inherited, the correction of the worst mistakes, and the considerate planning of future development.

However, the word environment can also be made to refer to all sorts of situations, but for the purposes of this Lecture I am only concerned with two. First, there is the human environment which is really a reflection of mankind's egocentric view of the world as his exclusive home and playground. This includes all aspects of culture, folklore and architecture. Secondly, there is the natural environment which is where all other living things attempt to exist, with the exception of those which have been domesticated.

I have made an assumption that it is, in fact, desirable to create a satisfactory state of existence for all living things. There is obviously no question about creating a satisfactory state of existence for Homo Sapiens and those animals and plants which serve his needs, but the conservation of the other forms of life is rather a different issue. The problem arises because in the majority of cases involving the conservation of nature it is the needs of mankind which pose the greatest threat, and therefore, decisions have to be made between the claims of man and the claims of nature.

Inevitably the decisions are liable to go in favour of man because we are both the claimant as well as the judge, we make the rules of evidence, we call the witnesses and we have to pay the costs. This means that we have to establish good reasons for admitting that nature has some claims in its own right.

Many people feel that the pleasure and relaxation, which undisturbed nature and wildlife give to mankind, is sufficient reason for its conservation. But this is treating nature as if it was part of the human environment. It is an entirely self-centred argument.

Then there is the scientific argument that everything in nature is inter-related and the product of an immensely long process of development and evolution. Our whole world and everything on it and in it is, therefore, scientifically interesting. This makes the earth into a laboratory and all living things so many specimens. This point of view does at least suggest that nature has some claims to consideration and continued existence in its own right.

Then again there is what might be described as the religious argument. This says that everything was created by God and, therefore, each creation must have some value or it would not have been created. The fact that mankind has become the most powerful and influential of God's creatures merely means that it has a correspondingly greater responsibility for the welfare of its fellow creatures. This may strike

some people as rather old fashioned but again it gives nature a very definite claim to consideration.

Perhaps the most telling argument can only be put in the negative sense. Is it really conceivable that we should sit idly by either in ignorance, indifference or greed and simply allow one life form after another to disappear from the face of the earth? Furthermore, this is not a question for mankind in general, it is a question for our generation in particular because unless the decision to admit that nature has a genuine claim to continued existence is taken in our time, the pressures of human expansion will lead inevitably to an irreversible decline and ultimate elimination of wild populations.

This is a very oversimplified statement of the most relevant arguments, there are obviously others, but I hope I have established that the claims for the conservation of the natural environment have some validity.

Although I would consider that to be a step in the right direction it has only really established that a problem exists, it does nothing to help solve the problems. This is only where the dilemmas begin.

In an effort to present the dilemmas caused by the desire to conserve nature in some coherent sequence I have arbitrarily divided them into five categories:—

1. Agriculture versus nature.

This is probably the most awkward category because agriculture is a controlled natural process in itself and its activities have a direct bearing on the development of human material standards of living.

Agriculture has made immense demands on nature. I do not need to remind you of the figures of the increase in world population which by its sheer physical size occupies an ever growing proportion of the earth's surface. I do not need to remind you that every mouth wants to be fed, therefore, the demand for the production of more food and the search for new resources of agricultural land is encroaching at an increasing rate on the so far natural and undisturbed areas which are the homelands of wild populations of animals and plants.

Clearing bush and draining marshes brings new land into production but it also destroys the habitats of wild animals or it drastically interferes with the natural food chains. The critical problem here is to make sure that certain species are not dispossessed altogether in the process and threatened with extinction as a result.

Once an area has been brought into agricultural production the machinery takes over and woe betide any animal which is bold enough to try to exist in an environment of ploughs, farrows, cutters, harvesters, sprayers, fertilisers and the burning of straw.

It is well known that certain chemical pesticides, herbicides and fungicides can make a significant contribution to productivity, but a great many of them are acknowledged to be very toxic to wildlife. A typical example is the present locust plague which is affecting large areas in eastern Australia. Even the official booklet states 'Stock should be kept off lindane treated pastures for three weeks after spraying. Pastures, forage or chaff contaminated with lindane should not be fed to dairy animals or to stock being finished for slaughter. Needless to say it makes no mention about keeping

birds and other wild animals off the areas affected. Neither does it say what happens when the stuff gets into the rivers.

The locust plague has to be controlled but it is not easy to balance the penalties against the advantages. There is a very real dilemma between the claims of food production for a hungry world and the survival of wild populations. (Incidentally, I shall be using a number of Australian examples because I am currently serving as President of the Australian Conservation Foundation which is trying to cope with this sort of dilemma.)

Most of our food is produced from domesticated plants and animals, but not all of it. The fish and whales in the oceans are wild stocks which we exploit for food and other purposes. These wild populations are considered to be to all intents and purposes both unlimited and free for anyone to take. Modern techniques have made it possible to over-fish and in many areas this has been achieved.

The problem of over-fishing is reflected in the recent dispute with Iceland. The obvious difficulty here is how to relate the quantity of fish taken to the stocks available. It might be done by one nation assuming the responsibility for a given area of ocean or it might be done by some form of international agreement. This same problem is also reflected in the demand for a ten year total moratorium on whale fishing which was accepted at the Stockholm conservation conference. At present any restriction on taking whales is achieved by voluntary agreement to proposals made by the International Whaling Commission.

One alternative is to estimate the maximum sustainable yield which each of the desired species of whales can tolerate and then only fish to those limits. The snag is that it is obviously very difficult to arrive at accurate figures on which to base catch limits. The other alternative is to attempt to stop all whaling. The danger of this course is that some countries may simply ignore the moratorium in which case the situation could well be worse than before.

The other natural resource exploitation which creates a serious dilemma is forestry. Commercial planting and cropping of trees which are frequently of an exotic species, creates particular problems. First because if it is exotic it is unsuitable for indigenous species. Commercial forestry tends to be a monoculture with all the attendant risks of pest infestation, and also because the normal cycle of regeneration, maturity and decay is not allowed to take place. However, from the point of view of wild animal populations, the clear felling of a natural stand of timber for conversion into wood-chips for paper, board or cellulose manufacture is far more serious because the whole ecological structure disappears and only the hardiest and most adaptable species succeed in lingering on or in rare cases to take advantage of the new conditions and so to become a pest.

A good example is certain species of kangaroos which have taken full advantage of pasture improvement and water supplies and multiplied exceedingly.

Not directly related to agriculture but involving the processes of nature is the provision of fresh water supplies to the growing demands of domestic and industrial consumers. The present system appears almost totally irrational. Water is abstracted before it gets into the rivers and is then stored in reservoirs which have to be taken

from agricultural, common or even national park land. The water is used for industrial or domestic purposes, treated by the best technological means available and then pumped back into the rivers, in many cases with a sufficient proportion of dissolved nitrates to create the phenomenon known as eutrophication. It does not need much imagination to appreciate the damage this does to terrestrial and aquatic animals which exist in marshes, rivers and swamps. The only compensation is that those reservoirs which are not simply concrete lined tanks do support a lot of wildlife.

2. Industry versus Nature.

Agriculture uses natural processes to produce food but industry depends on inert raw materials which it converts into capital and consumer goods. The impact of industry on nature is therefore quite different, but the conflict with conservation is just as real.

It begins with the extraction of raw materials. Underground mining may not have a direct impact on nature but the processing activities on the surface are quite significant particularly if they involve slag heaps, land subsidence and noxious effluents in the rivers. Opencast mining on the other hand has a very obvious impact on nature although modern methods of rehabilitation greatly reduce any lasting damage unless, of course, it destroys some rare ecological system or habitat.

The main influence of the manufacturing phase lies in the pollution caused by noxious effluents into the air and into water courses or the sea. The problem with this is that any attempt to control these effluents adds an extra cost to manufacture which is inevitably passed on to the consumer. The problem is compounded if some countries apply stricter controls on effluents than others. The situation becomes quite ludicrous if authorities on opposite banks of an international waterway, or whose rivers drain into a restricted sea, apply different regulations. The efforts of the conservation conscious authority on one side are then totally defeated by the profit conscious authority on the other.

Having got through the manufacturing stage it may well happen that the product itself causes pollution or otherwise interferes with the natural environment. Motor cars are accused of the former and once any product becomes waste it interferes with the latter.

One product which seems to have upset a large number of conservationists is the supersonic transport aircraft Concorde. I am not going to go into all the detailed arguments but I think it is important to remember that the cause of any problems is not one particular aircraft but all supersonic aircraft. Almost every air force of any consequence in the world has been operating supersonic fighter or bomber aircraft for the last ten years at least. It would be patently unreasonable and unfair to apply restrictions to Concorde while allowing all other supersonic aircraft to operate without restriction.

The impact of modern methods of transport as a whole on the natural environment causes immense problems. Roads, railways and airfields can all have directly devastating effects. Modern highways and motorways cut right through previously undisturbed areas and act as virtual barriers to the movement of wild animals. In

Germany, for instance, it is suspected that hares have been almost wiped out by being killed on the roads.

Perhaps the most direct impact of industry on the environment lies in the disposal of worn out products. The irony is that disposal is even more significant than the original extraction of the raw materials. Extraction creates a hole, disposal fills a hole but unfortunately not necessarily the same hole.

In principle, the useful materials from articles for disposal should be extracted and recirculated. However, this is a relatively expensive and awkward process which is unlikely to be generally adopted until the price of raw materials rises to equal the cost of recirculated materials. We shall then witness the edifying spectacle of waste tips being mined for rare and expensive raw materials and the long overdue construction of waste segregation and recirculation plants.

3. Human Pleasure and Leisure versus Nature.

Certain people like a natural wilderness and they will go to great lengths to get particular areas of natural beauty, scientific interest or containing particular forms of wildlife, protected from any kind of development or commercial exploitation. The difficulty here is that these national parks and reserves are hard to justify unless they allow human access for leisure and pleasure. The moment this happens they are no longer wilderness areas and while some animal populations, as in the great African parks, can accept this type of human penetration many other areas are much more vulnerable. One solution might be to allow only limited access but this is very difficult to achieve in practice as the areas are usually quite large without any physical barriers on their boundaries. We have not yet come to accept the idea that some areas should be kept either wholly or partially undisturbed by human activity for the direct benefit of wild populations.

The other area in which human pleasure conflicts with conservation is in the taking of wild animals for sport. Some species may be described as pests, and I will come back to this point, some are a source of food, but there are others which need to have their numbers controlled if only to ensure that they do not destroy their artificially limited habitat. In the latter case, the problem lies in whether it is better to pay someone to do the killing or whether to accept the fact that amateurs can do it just as well. As far as the amateur is concerned he is obviously going to make sure that his quarry is not exterminated, while the professional is torn between making the best profit and doing himself out of a job if he succeeds too well.

The taking of game is a very old established pursuit and in this country it involves the employment of game keepers. The function of these people is to see that game, and in most cases this means wild populations, can flourish. However, their dilemma is that in order to conserve the game species they are required to control the predator species and from the conservation of nature point of view this may well be very destructive. On the other hand the control of predators means that many more non-destructive birds can survive in greater numbers.

In many other countries the idea that game should belong to the land holder or that rights to take game should be let by the owner is considered to be very undemocratic. Game is wild, therefore it is God's gift to every man. This system either results in the

disappearance of all animals or in a bag limit for each species of game. The difficulty is that as more people go out after the game the bag limit has to be reduced until it is so small that cheating is inevitable. Strangely enough the control of game is far stricter in most communist countries than it is in several European countries.

Man is certainly the most effective predator the world has ever known, but not always as a killer. A most important clash between pleasure and conservation occurs in egg collecting. Collecting is a compulsive habit and unfortunately the more rare a particular specimen may be the more it is valued. So much so that some people find it possible to make a living by collecting and selling the eggs of rare species. Even the famous ospreys' nest at the Boat of Garten has not been spared.

Similar to egg collecting is specimen collecting. This applies to research workers and particularly to big game. Under controlled conditions this does no harm but the indiscriminate taking of specimens from wild populations whose statistics are not properly understood is quite indefensible.

Much the same applies to big game fishing but particularly to underwater spear gun fishing or lobster catching which is not at all easy to control and which can pluck an area absolutely clean in a very short time. The pernicious point about any free-for-all system is that even quite responsible people will take what they can because they know that if they do not get it someone else surely will. Perhaps the most satisfactory solution to the problem of the free-for-all situation is by mandatory membership of a club or association with exclusive rights in particular areas. The Wildfowling Association of Great Britain and Ireland is an excellent example of what can be achieved. Furthermore, the Association is co-operating actively with the Nature Conservancy to establish sanctuaries and protected breeding areas so as to ensure a continuing stock.

There is a different form of specimen collection which involves the capture of wild animals for display in zoos and for commercial exploitation in the so-called safari parks. It is unfortunately inevitable that the rarer the species the more desirable it is. However, I am glad to say that most of the zoos of the world have come to recognise the dangers and their own responsibilities. The taking of rare wild animals is discouraged while at the same time the zoos have been making great efforts to encourage the breeding of rare species already in captivity. In some cases such as the Hawaiian Goose and the Australian Oryx the species have been saved from extinction by setting up breeding groups far from their native homes.

4. Human Need versus Human Pleasure.

This does not appear to involve nature at all and in most cases there is no particular threat to any rare species involved. On the other hand it represents a real dilemma in that it requires someone to make a choice for or against some form of development. There are several very relevant cases in Australia at the moment. Perhaps the most famous and intractable is the case of Lake Pedder in south west Tasmania.

The Lake lies in an area which until recently was almost impenetrable and which had been declared a reserve. The gist of the problem is that the Hydro Electric Commission designed a very ambitious scheme which involved building a dam and creating a vast storage reservoir. Unfortunately Lake Pedder was included in the reservoir area

which meant that the original lake was to be flooded under an extra 30 feet of water. Biologists pointed out that certain insects and plants were unique to the peculiar beach structure of the original lake and were liable to be exterminated, but it is much more difficult to stir up emotion about an insect than some appealing furry animal or spectacular bird. The main objection therefore is that the development has seriously modified an area of untouched natural beauty.

Fundamentally, this is a clash between the human desire to preserve a certain area in an undisturbed form on the one hand and the determination to harness natural resources to human needs on the other.

This particular case demonstrates more clearly than any other the terrible dilemma of conservation where both protagonists are utterly convinced that their attitude is the right one. This type of dilemma although not in such an acute form is well known in this country. It is an extremely difficult matter to decide when the so-called national interest should over-ride the purposes of national parks and reserves.

The dogma of economic growth is hard to resist but that is not the only consideration. I think most people would recognise the need for the defence services to use land for training or other purposes.

5. Conservation versus Nature.

This may sound like a contradiction but the problem arises simply because it is no longer possible to ensure large enough undisturbed areas in which the natural balances of nature can operate satisfactorily in keeping the various wild populations under control.

A very typical example is the Tsavo National Park in East Africa where natural and human predation of the elephant stock was suddenly stopped with the result that the elephants suffered a population explosion and were well on their way to changing the whole ecology of the Park. It was, therefore, proposed that the population should be controlled by cropping, but this was not universally acceptable for a number of reasons. In the end the problem was solved by a very severe drought which drastically reduced the number of elephants in the Park.

A slightly different problem has developed on the Great Barrier Reef off the north east coast of Australia. Vast areas of the living coral is being attacked and killed by a plague of a species of starfish rejoicing in the apt name of 'crown of thorns'. At the moment no one seems to be certain whether this is simply a natural eruption of a population or whether the starfish have been encouraged to multiply in some way by human agency. The main predator of the starfish is the Triton shellfish and one theory maintains that so many Tritons shells have been collected by or for sale to tourists that they have lost their control over the starfish population.

Probably the most dramatic problem in Australia is due to the introduction of exotic animals. The original settlers brought in many domestic animals and while they remained domestic it was all right. Unfortunately, pigs, goats, donkeys, horses camels and waterbuffalo have all managed to escape and now exist in the wild state and in competition with the indigenous animals. The worst case was the rabbit which reached major plague proportions before the myxomatosis disease brought it under control.

This method of using diseases or natural predators as a deliberate means of controlling wild pest populations, otherwise known as biological control, can be very successful but it can also create almost more problems than it solves. The mongoose was introduced to the West Indies sugar plantations in an effort to control the snakes, it is now a problem by itself. In Queensland a particular species of toad was introduced to control beetles in the sugar plantations but the toads discovered that life was much easier under the village street lights at night as the beetles flew into the lights and then conveniently dropped into the mouths of the circle of toads waiting on the ground below.

Altogether the control of pests whether by shooting, trapping, poisoning or artificially induced disease or sterility and predation is a very difficult issue. In most cases pests are simply wild populations which we do not like for one reason or another and it is a strange quirk of human morality that while some object to the killing of some animals and many abhor the use of so-called inhumane methods of killing others, no one seems to mind how pests are controlled. Furthermore, there is an entirely irrational concern based on the size or the appeal of the animal. The rule is that the smaller or the uglier the animal the less concern about its fate.

Inevitably, the conservationist is most concerned with those species which are in danger of extinction and their habitats, but what no one knows for certain is whether the species would be dying out for natural causes or whether it is due to human interference.

Perhaps the most difficult problem is to decide to what extent conservation measures are themselves interfering with the process of evolution and natural selection. A wild population will have evolved to its present state as a result of the conditions and pressures under which it has tried to exist. If those pressures are suddenly removed or changed the selection of those strains which are most suitable for the conditions is also changed and it is quite possible to lose important characteristics within a relatively few generations.

6. Money versus Nature.

This is the only bit which will have anything to do with finance. The point is that failing a moral argument for or against conservation the economic argument is always decisive. The assessment of any industrial or technical development project is based on a cost benefit analysis.

If the economic benefits can be shown to be greater than the economic costs the plan goes ahead. The dilemma for the conservationist is to quantify the cost to the natural or to the human environment in economic terms so that it can be compared with the figures of the economic benefits. This is of course very unfair because it simply is not possible to quantify the value of nature.

In some cases it would be possible to quantify the losses in economic terms due to degradation and pollution of the human environment. Say, for instance, a gravel pit is wanted for the purpose of tipping waste. It could be argued that tipping waste is the cheapest solution and a gravel pit is only a hole in the ground, and therefore, of no other economic value. However, if there is a fishing club, waterski-ing club, and perhaps a bird watching group all based on the gravel pit, it should be possible to work

out the amount of money which this gravel pit causes to be spent on the activities simply because it is there.

However, it might also be possible to stand the problem on its head. Perhaps it might be possible to use the conservation criterion rather than money in the cost benefit analysis. In other words, instead of trying to make conservation justify its case in money terms, it might be an idea to make the developer justify his case in conservation terms. Indeed, this is beginning to happen and in Australia it is now obligatory to prepare an 'Impact Statement' for any development setting out exactly what the anticipated consequences to the natural and human environments will be.

7. The Dilemma of Conservation Organisation.

The first dilemma is to find a generally acceptable reason for conservation which is not entirely based on the pleasure, convenience and economic demands of the human population. Without that it is very difficult to put a case which is not suspected of being due to prejudice, emotion, sheer crankiness or self interest.

Then there is the recurring dilemma between control and preservation. There is a very strong body of opinion, mostly I suspect of urban origin, which is against the killing of animals for any reason, except domestic animals, as a source of food. It is almost impossible to establish the idea that there is a very great difference between killing individual animals on the one hand and exterminating a whole species by not allowing it anywhere to exist on the other. It is equally difficult to establish that conservation also involves keeping wild populations down to a number suitable to the habitat which is available for it.

By far the most difficult problem for conservation bodies is to decide how to put their case. Some believe in persuasion and compromise and the use of legal and legislative methods to achieve their ends. Others find this approach does not get the results they hope for. In consequence, they are driven to confrontation and outright opposition by all possible means. This can achieve results but it has its dangers because it can lead to personal abuse and even violence.

It is also possible for conservation bodies to be too successful. For instance, there is a growing feeling that part, at least, of the energy supply problem at present afflicting the United States is due to the activities of conservation bodies. They are said to have delayed the construction of an oil pipe line from Alaska and the construction of both conventional and nuclear power stations because of the effluent and waste disposal problems. This is not to suggest that these bodies were mistaken, but success can be bought at too high a price. If the price, in this instance, is a popular backlash against conservation bodies because of the inconvenience they are deemed to have caused it would be counter-productive and set things back a long way.

Conclusion.

I have tried to describe some of the difficulties of conservation. It is by no means a complete catalogue of all the places where the conservation shoe pinches the development foot, but I hope I have made it clear that anyone who plunges into some conservation issue needs to be very sure of his facts, very sure of his motives and quite clear in his aims.

My personal conviction is simply this:—We are part of the world's biosphere, we are one of a mass of living organisms and whether we like it or not we have more in common with a mouse than with a motor car. It so happens that mankind has become by far the most powerful of all the living things and my belief is that we, therefore, have a clear responsibility for all life on this planet. We know only too well what happens when men acquire power without a sense of responsibility. I am convinced that it would be a major disaster for all future generations of mankind if we who are alive at this critical point in history were to condemn to extermination by exploitation or indifference any animal and plant which was of no direct benefit to us for food or pleasure.

I am firmly of the opinion that it is practically possible to meet the legitimate needs of the human population without destroying the chances of the remaining wild populations. However, if we are to achieve that it will need sympathy, restraint, understanding and very careful planning by governments, industries and conservationists.

Most important of all is that conservation demands the allocation of financial resources both to protect the human environment from our own greed and exploitation and the natural environment from being slowly squeezed out of existence. I hope I have made it clear that the allocation of adequate resources for conservation is both in the long term interest of all mankind and a duty which we owe to all life on earth.
