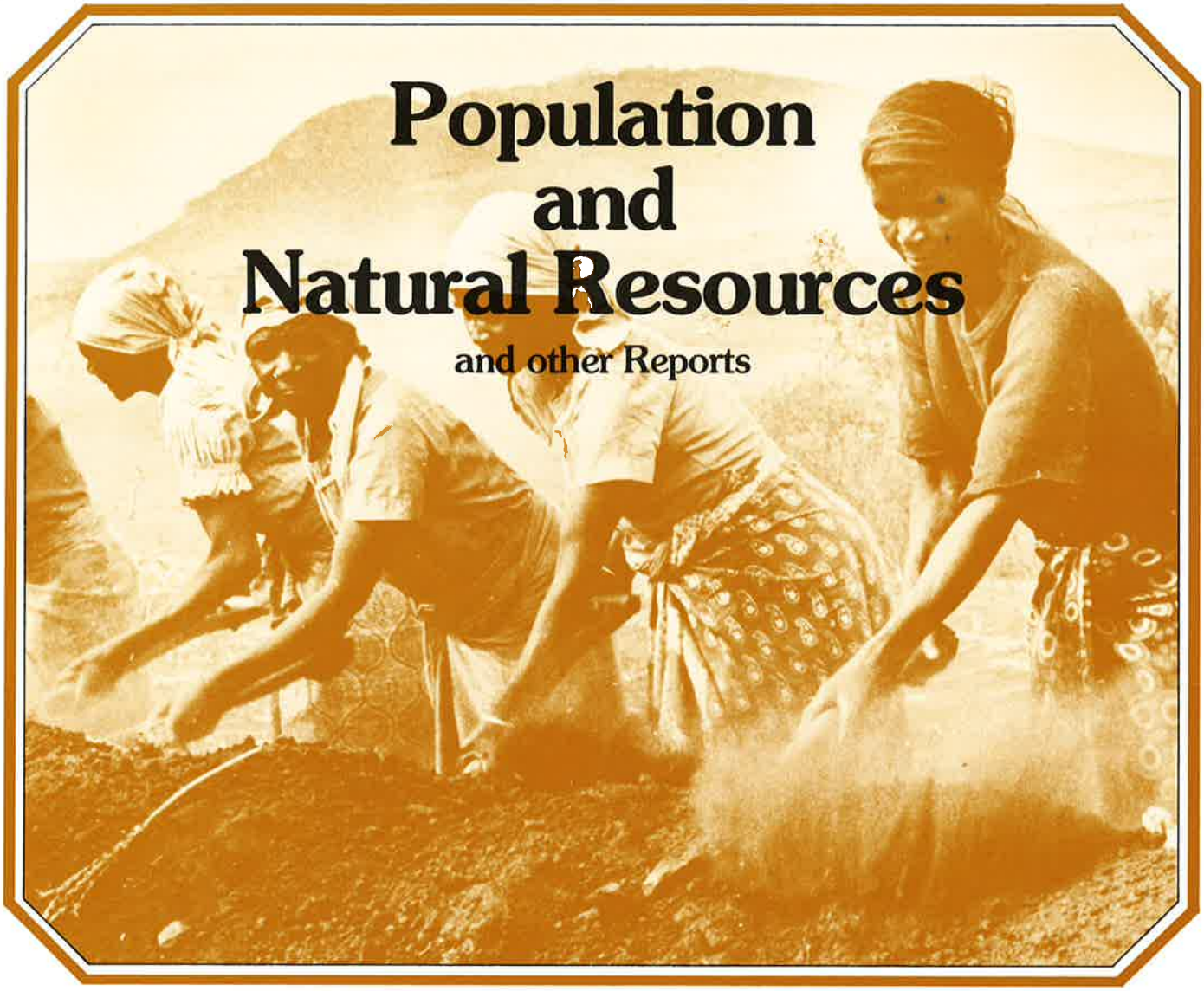
Population and Natural Resources

and other Reports



Commission on Ecology Occasional Paper Number 3

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and Natural Resources

1984

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The following papers of the IUCN Commission on Ecology have been published:

No. 1 **Ocean Trench Conservation**
by Dr. M. V. Angel, Chairman of the Working Group on Ecology of the Oceans of the IUCN Commission on Ecology.

No. 2 **Ecological Mismanagement in Natural Disasters**
by Prof. L. D. Pryor of the IUCN Commission on Ecology in cooperation with the League of Red Cross Societies.

No. 3 **Global Status of Mangrove Ecosystems**
edited by Dr. P. Saenger, E. J. Hegerl and Dr. J. D. S. Davie of the Working Group on Mangrove Ecosystems of the IUCN Commission on Ecology in cooperation with the United Nations Environment Programme and the World Wildlife Fund.

No. 4 **Impact of Oil Pollution on Living Resources**
by Dr. J. M. Baker, Chairman of the Working Group on Oil Pollution of the IUCN Commission on Ecology in cooperation with the World Wildlife Fund.

No. 5 **Ecological Structures and Problems of Amazonia**
Proceedings of a Symposium organised by the Department of Biological Sciences of the Federal University of São Carlos, and the IUCN Commission on Ecology at São Carlos, Brazil, the 18th of March 1982.

No. 6 **Future Hazards from Pesticide Use**
by Ir. F. Balk and Prof. Dr. J. H. Koeman, Chairman of the Working Group on Environmental Pollutants of the IUCN Commission on Ecology in cooperation with the World Wildlife Fund.

Commission on Ecology *Occasional Papers:*

No. 1 Changes and Development in the Science of Ecology and other Reports.

No. 2 Precipitation and Water Recycling in Tropical Rain Forests (with Special Reference to the Amazon Basin) and other Reports.

IUCN Commission on Ecology

The Commission on Ecology of the International Union for Conservation of Nature and Natural Resources (IUCN) is a scientific commission of an independent, international, non-governmental organization. IUCN was founded in 1948 at a conference convened by Unesco and the French Government. The Union comprises today 58 governments as state members, 119 government agencies, and 316 non-governmental national and international organizations. This membership represents 114 countries.
The Commission on Ecology was established in 1954 and reconstituted in 1979. At present it has 160 members from 46 countries in all the continents, carefully selected for their national and international scientific status and expertise.
IUCN's Commission on Ecology provides scientific information and advice to ensure that action directed towards the sustainable use and conservation of natural resources, i.e. the implementation of the World Conservation Strategy, makes the best use of current ecological knowledge. The World Conservation Strategy, launched in 1980, provides an overall plan for action in this direction.

Through its Working Groups, the Commission gives particular attention to:
ecological problems of the open oceans,
continental seas,
coastal areas,
mangrove ecosystems,
coral reefs,
inland waters,
arid lands,
tropical rainforests.

It is concerned with problems relating to:
oil pollution,
environmental pollutants,
ecological assessment,
(re)introduction, animal migrations,
mountain and river basin management.

The Commission is also active in the field of human ecology, particularly in rural development and traditional life styles.

For further information please contact: Executive Officer, IUCN Commission on Ecology, Av. du Mont Blanc, 1196 Gland, Switzerland.

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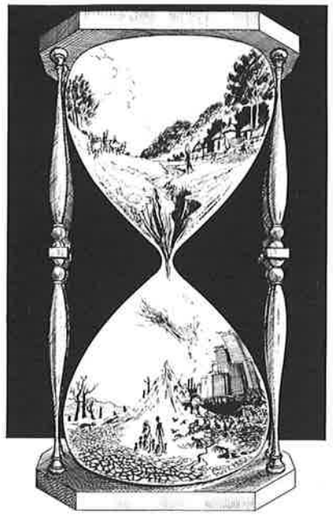
Population and Natural Resources



In November 1983 the Council of the International Union for the Conservation of Nature and Natural Resources (IUCN) and the Members' Assembly of the International Planned Parenthood Federation (IPPF) approved an historic Statement on Population and Natural Resources.

This Statement, published here in full for the first time, was drawn up at a meeting of experts from the IUCN Commission on Ecology and IPPF held at Oxford University earlier in the year.

It marks the partnership which now exists between the world's leading environmental body and the leading non-governmental organization concerned with population and family planning. This paper was prepared in collaboration with People Magazine, the IPPF Journal.

Introduction

The World Conservation Strategy provides a guide to sustainable development through the careful use of natural resources. However, it does not explore the complex inter-relationships between populations, natural resources and social and economic conditions. This statement attempts to make good that omission and suggests appropriate action.

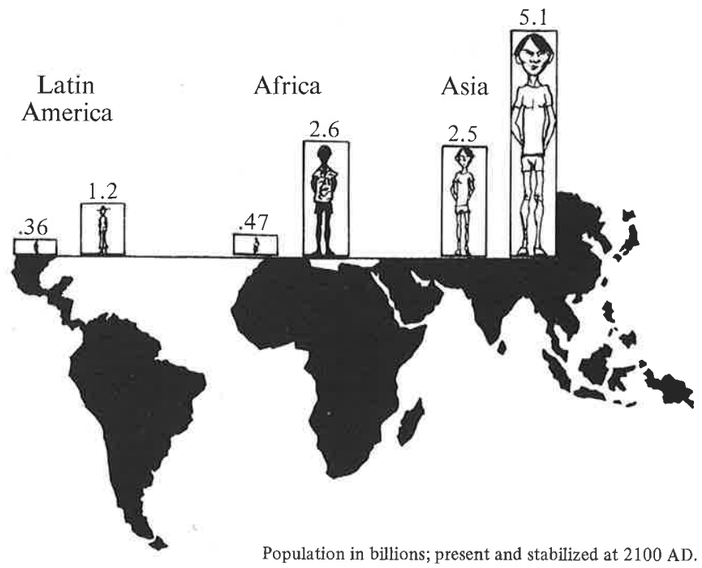
People everywhere share basic needs for food, water, fuel and shelter. Among the poorest groups, even these are far from adequately met at present. Frequently, rapid growth or maldistribution of population undercuts efforts to meet elementary needs. But a high quality of life entails much more than the simple provision of physical necessities. Continuing rapid population growth may force societies to take measures that limit social and environmental options, thus reducing the quality of human existence.

The links between human numbers and natural resources, then, must be analysed in terms of overall social goals—what type of society do people want, and what natural environment is needed to support it? Neither population policies nor resource conservation strategies are ends in themselves. Population and conservation policies must be part of broader efforts to evolve ecologically sustainable patterns of development in countries at all economic levels.

Population Trends

World population doubled three times between 1650 and 1975 when it approached 4 billion, and is projected to double again by 2025 to over 8 billion. It will increase by about 80 million in 1983 and, according to United Nations projections (1), this annual increase will itself keep growing until it peaks at close to 90 million—roughly equal to the present population of Bangladesh—around the year 2000.

The current global rate of population growth of some 1.7 per cent masks great differences among regions. Populations have nearly stabilized in the more developed countries but are growing at 3 per cent in Africa. One African country is growing at 4 per cent—a rate which, if it continues, will result in a doubling of population every 18 years. Maintained for a century, this rate would result in a 51-fold increase. According to medium-range UN projections (2), the population of Africa as a whole, where environmental degradation is already widespread, is projected to increase its 1980 popu-



Population in billions; present and stabilized at 2100 AD.

lation nearly six times before it stabilizes. Latin America is projected to increase from 360 million in 1980 to 1200 million, and Asia from 2.5 billion to over 5 billion before levelling out. The same UN projections show the world population surpassing 10 billion before stabilizing in about 2100 AD.

In many countries, a tremendous demographic momentum exists because of the current youthful age structure. Actions taken today to reduce birth rates—or failure to act—will have a magnified effect decades hence. The projected increases in population are not inevitable, but significantly reducing future human numbers will require early and sustained action.

scarcity of land now severely limits this option.

Some communities have adopted ways of life that involve high levels of resource consumption. Waste is prevalent. Others, by trading manufactures and skills in exchange for primary products, are able to support higher numbers than their primary resources would warrant. At the other extreme, some poor communities, where numbers are increasing rapidly, can meet their basic needs only by overexploiting their resources, sometimes with irreversible consequences. The situation is exacerbated by inequalities, problems of land tenure, misallocation of land, and lack of clear responsibility for the management of resources shared in common. Worldwide, the future demands of a rapidly growing population and rising consumption may together exceed human capacities to safely extract the necessary goods and services from the land and the sea.

In most countries, no serious attempt has yet been made to introduce measures for the joint management of population and resources. The following paragraphs describe critical areas where it is vital to take these interdependent factors into account.

Safer water from a cement-lined well in Niger. Drought has made water even more precious in the Sahel.

Resource Challenges

The links between human numbers and natural resources are seldom simple or direct, moreover there are great regional differences. Historically, even when numbers were low, resources were sometimes damaged by over-exploitation, but people could often escape the consequences of their actions by migration. The

Biological Diversity

We share the Earth with at least 5 million other species (3) all of which have a right of survival. Of these, at least two-thirds occur in the tropics. Almost entirely through loss of habitat, which in turn reflects the upsurge in human numbers and consumption, species are becoming extinct at a rate of hundreds and perhaps thousands each year—the majority of these extinctions occurring in the tropics. Within the coming few decades, the extinction rate is likely to accelerate rapidly. This represents an irreversible loss of unique genetic materials. Such extinction means a loss of crucial ecological services such as the control of pests. Increasingly species are contributing to agriculture, medicine, industry and energy. Human survival depends on far more than crop and livestock species. The demise of an obscure wasp or fungus could prove as harmful to humanity's material welfare as the elimination of the blue whale. Unfortunately, no one knows which species may prove to be of particular value to mankind. It makes sense to take out an 'insurance policy' by trying to preserve as many species as possible.

Cropland Resources

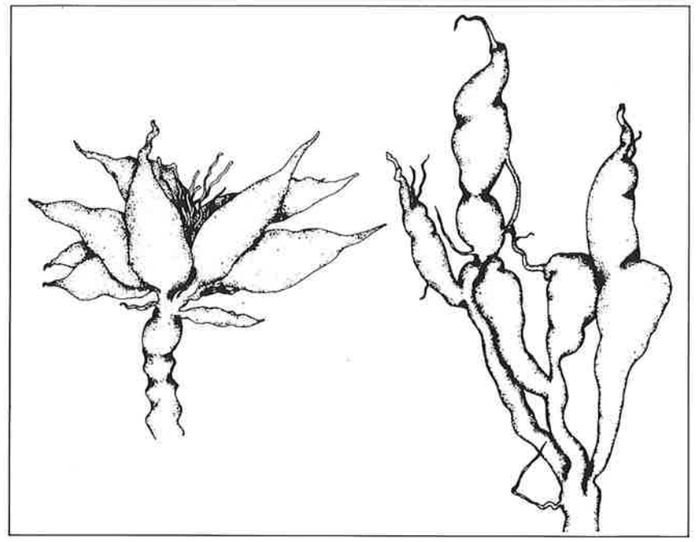
Throughout the world, the quality of arable land is being impaired by a combination of urbanization, desertification, erosion and salinization, and in most countries the rate of soil loss from croplands is far in excess of the rate of soil formation. Expensive efforts to bring new lands under agriculture are partially offset by the loss of croplands to dehydration. In the early 1970s, one hectare of arable land supported an average of 2.6 people, but by the year 2000, with present population projections, one hectare will have to support 4 people (4).

Only moderate additions to the global arable land areas will be economically feasible. The projected demand for agricultural products must be met through the intensification of agriculture on existing farmlands, underscoring the vital need to protect them. Raising yields on lands well suited to farming is also vital to sound overall land use, reducing pressures for encroachment of farming onto lands that must be retained for grazing, forestry, nature reserves, and other uses.

The combined effects of agricultural stagnation, unequal land tenure, unemployment, and population growth are forcing large numbers of the rural poor onto marginal lands—hillsides, desert fringes and rainforests—where farming is often not sustainable. This extensive spread of agriculture is the major cause of deforestation and its many consequent ecological stresses. Improved technologies are not generally available to subsistence farmers, and as their numbers increase, traditional fallow cycles are declining, reducing the productivity of soils.

Food Resources

Although more food is being produced than ever before, more people are malnourished than at any time in history. The reasons for this are complex. They relate to the ability of people to buy food, to unequal land holdings, to urban bias by governments and the neglect of rural development, and to unfair trading relationships. But they are also connected to rapid population growth, particularly in regions where difficult soil and climatic conditions are allied to traditional methods of farming. Many countries are increasingly reliant on food imports. In developing countries as a whole food imports increased by 9 per cent a year during the 1970s while exports increased by only 2.2 per cent a year (5). Today only 10 out of 150 nations are net food exporters. In one continent, Africa, per capita food production has declined by 11 per cent since 1970 (5). According to a recent FAO study, 65 countries will not be able to feed their projected population from their own lands by the end of the century if farming methods remain at their present low levels (6).



The wild cassava (*Manihot glaziovii*) (left) is the only known source of resistance to the two most serious cassava diseases in Africa. Transfer of its genes to cultivated cassava (right) has increased yields of new cultivars by up to eighteen times.

Water Resources

Demand for water is growing several times faster than population, as agricultural, industrial and domestic uses increase. (Irrigated rice production in California, for example, requires about 5000 tons of water to produce 1 ton of rice (7).)

According to one estimate, by the year 2000 half of all the earth's annually renewed water—precipitated on land—will be used by man (4). Unfortunately, because the actual availability of water bears little relationship to the distribution of population and demand, local shortages will become increasingly frequent as population and related consumption increase. This will cause special problems for some rapidly growing cities. In addition to problems of supply, the reliability of water flow is being disrupted in many areas as watersheds are deforested. More than half the population of developing countries, excluding China, lacks convenient access to safe water supplies. The resulting poor sanitation, in combination with undernutrition, accounts for the daily deaths of 40 000 infants and small children (8). In the face of population growth many developing countries are unable to reduce the numbers who are lacking adequate water supplies.

Energy Resources

For some 200 years, humans have harnessed fossil fuels to improve their quality of life. But global output of the most convenient fossil fuel, petroleum, has peaked, and the per capita

supply will continue to fall as the global population rises. Coal is more plentiful, but large increases in its use will contribute to severe environmental problems such as acid rain and the build-up of atmospheric carbon dioxide which may alter the climate. All nations, but especially the more developed nations that account for such a disproportionate share of fossil fuel consumption, face urgent challenges of energy conservation and development of alternative energy sources.

As the industrial world struggles with the end of the petroleum era, the poorest half of mankind still relies on wood and agricultural residues for cooking and home heating. This too is unsustainable, since in many regions the cutting of firewood, which is increasing with human numbers, outpaces new wood growth, contributing to deforestation, desertification and soil erosion. In developing countries the efficiency of wood burning must be improved and tree planting must be increased drastically. But economic advancement will also require large increases in the use of commercial energy. Where affordable energy supplies will be found to meet these needs for burgeoning populations is not clear.

Modern food production and processing rely heavily on fossil fuels. Growing and packaging of food for the average European and North American uses the energy equivalent of 10 barrels of oil per capita per year (9). If the present world population were all fed in this manner, the equivalent of proven world petroleum reserves would be exhausted in a mere 11 years (9). A serious consequence of rising prices and scarcity of fossil fuels will be increases in the costs of food production.

Conclusion

Unless the present high rates of population growth are substantially reduced, it will not be possible to accomplish the goals of the World Conservation Strategy (even allowing for all foreseeable improvements in technology, distribution, organization and land productivity).

It is the view of IUCN, therefore, that all nations, and the world community, should take steps to stabilize populations at levels which will permit improvements in the quality of life, in ways which do not unduly damage biological and physical support systems.

IUCN Action

IUCN in cooperation with IPPF and other agencies intend to:

– Actively promote policies designed to attain a balance between population and resources, within national conservation strategies and through field activities to preserve nature and natural resources.

– Take into account the fundamental issues of population and resources in its policies, programmes, resolutions and public statements, where appropriate.

– Keep trends in population and resources under review and report back to each IUCN General Assembly.

– Encourage non-government organizations, including local conservation groups and family planning associations to work together to spread awareness of the links between population, resources, and the environment. These bodies will also be encouraged to develop demonstration projects which link community action to conserve local ecosystems and develop wise use of natural resources with family planning programmes.

– Encourage governments to undertake periodic assessments of population trends, natural resources, and likely economic conditions, their inter-relationships and the implications for the attainment of national goals. In doing so, governments should take account of the international impacts of population size and resource consumption.

– Encourage governments to establish a population policy, including goals for the stabilization of population at a level that will permit sustainable management of resources and a satisfactory quality of life for all their people.

– Encourage governments and development agencies to take into account the special environmental problems of the urban and rural poor and to promote sustainable rural development. Conservation and family planning should be an integral part of all rural development programmes, with the total participation of the community in the planning and implementation of such programmes.

– Encourage nations to take effective action to secure the basic right of all couples to have access to safe and effective methods of family planning, as established in the World Population Plan of Action. In making this recommendation IUCN believes strongly that provision of contraceptive information and services is essential for humanitarian and health reasons, quite apart from the effect on fertility levels. In facilitating the practice of responsible parenthood it is essential that women have the right of choice about pregnancy. Such a choice is important in the stabilisation of population and in improving the status of women, a prerequisite for the achievement of development and conservation goals.

– Generally encourage national and international development policies which help create the conditions in which human population can successfully be brought into balance with carefully conserved natural resources.

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Population and Natural Resources First Working Meeting of IPPF and IUCN

Representatives of the International Planned Parenthood Federation (IPPF) and the Commission on Ecology of the International Union for Conservation of Nature and Natural Resources (IUCN) met at the Commonwealth Forestry Institute of Oxford University, UK, from 4 to 6 July 1983.

In follow-up to the IUCN Council decision of November 1982, they discussed the linkage between human populations and the conservation of natural resources, established a position statement on population, conservation and development and provided the guidelines for a supplement to the World Conservation Strategy.

The World Conservation Strategy provides general guidance to sustainable development through the careful use of living natural resources.

Prof. Duncan Poore (left) and Erik Eckholm (right). Photo credit: Dr M. Bijleveld.

Although the Strategy identifies the actions needed to improve the use of living resources and to integrate their conservation with development, it does not address the complex interrelationships between human populations, natural resources, and the related socio-economic and environmental problems.

The first working meeting between IPPF and IUCN/COE made an attempt to make good that omission and suggest what actions should be taken. Prof. David Pimentel chaired the Meeting in which also participated Mr Vernon Aluvihare, Dr Maarten Bijleveld, Mrs Frances Dennis, Mr Erik Eckholm, Prof. John Hanks, Miss Barbara Hermen, Dr B. H. Kiew, Dr Norman Myers, Prof. Jack Parsons, Prof. Duncan Poore, Prof. François Ramade and Mr John Rowley.

A second meeting of the group is foreseen to review the supplement to the World Conservation Strategy now under preparation, and to plan further activities.

Left to right: Prof. Jack Parsons, Mrs Frances Dennis, Prof. David Pimentel, Prof. François Ramade, Prof. John Hanks and John Rowley. Photo credit: Dr M. Bijleveld.

COE Meetings in Lima, Peru

The Commission on Ecology (COE) met from 6–9 April 1983 in Lima, Peru, where it was hosted by the Universidad Nacional Agraria.

Symposium on Arid Lands of the America's

In the framework of this meeting a symposium was organised jointly with the Universidad Nacional Agraria on Arid Lands in the America's on 7th April 1983. Eleven scientists from North, Central and South America and members of the Commission contributed. Dr C. E. Lopez Ocana, Director of the Center for Research of Arid Zones, Lima, Peru and member of COE acted as the Moderator of the Symposium.

After the opening addresses by Dr C. E. Lopez Ocana and Ing. M. Zapata T., Rector of the Universidad Nacional Agraria, Dr F. Duhme, Hon. Secretary of COE's working group on Arid Lands, gave an introductory contribution on Strategies for Arid Lands Development.

This was followed by a contribution of Ing. R. Braun, Director of the Instituto Argentino de Investigaciones de las Zonas Aridas, Mendoza, Argentina, on Arid Zones of Argentina.

Dr S. Matteucci of the Universidad Nacional Experimental Francisco de Miranda, Coro, Venezuela, spoke about Las Zonas Aridas del Estado de Coro, Venezuela and Prof. D. Contreras, Director of the Centro de Estudios en Zonas Aridas, Universidad de Chile, talked about the Arid Zones of Chile.

They were followed by Dr F. Medellin-Leal, Director of the Instituto de investigación de Zonas Desérticas, Universidad Autonoma de San Luis, Potosi, México, on the Arid Zones of Mexico, Prof. H. E. Dregne, International Center for Arid and

Semi-Arid Land Studies, Texas Tech. University, Lubbock, USA on the Arid Lands in the USA, and Dr P. J. Salinas, member of COE, on Estudios sobre Métodos Biológicos para la Conservación de Suelos en las Tierras Semi-áridas de Venezuela.

The Symposium on Arid Lands in the America's. Photo credit: Dr M. Bijleveld.

The Mangroves of the arid zones was the subject of a contribution by Dr F. Pannier, member of COE and Dr C. E. Lopez Ocana spoke about the rehabilitation of cloud forests in the coastal desert of Peru.

The closing address was given by Dr M. Dourojeanni, Professor at the Universidad Nacional Agraria and IUCN Regional Councillor for Latin America. The Symposium was followed by a reception given by E. Kwint, Bsc, LL.M., Counsellor of the Royal Netherlands Embassy.

The April 1983 Meeting

Held from 5–9 April in Lima, Peru, the Commission on Ecology meeting was opened with addresses from Prof. Dr W. Engelhardt, Deputy Chairman of COE, Ing. M. Zapata T., Rector of the Universidad Nacional Agraria, Dr M. Dourojeanni, IUCN Regional Counsellor and Dr C. E. Lopez Ocana, who, together with Ing. C. Ponce del Prado, was host of the meeting.

The Commission discussed draft IUCN Position Statements on mangrove ecosystems and salt marshes, which had been prepared respectively by the COE working groups on Mangrove Ecosystems and Coastal Ecology.

The report on the Impact of Oil Pollution on Living Natural Resources prepared by Dr J. Baker with the COE working group on Oil Pollution had reached its final stage and was expected to be published in the course of 1983.

The meeting studied an interim report on human population and natural resources and welcomed the holding of a workshop in Oxford,

Participants of the Lima meeting. Photo credit: Dr M. Bijleveld.

4–6 July 1983, in cooperation with the International Planned Parenthood Federation. This meeting would endeavour to establish a position paper as well as a draft additional chapter to the World Conservation Strategy on the subject.

The meeting congratulated Dr J. Davidson, Deputy Chairman of the COE working group on Tropical Rainforests and the participants to the workshop held in Bandung, October 1982, on the resulting paper entitled "Economic Use of the Tropical Moist Forest". It recommended publication as soon as possible.

The Commission took note of a report by Dr M. Angel who represented COE/IUCN at the February/March meeting of GESAMP in Geneva. It recommended that COE/IUCN should also be represented at future GESAMP meetings.

Dr T. Antezana presented an outline for an IUCN position on Conservation of Antarctica, which was welcomed by the Commission. The draft paper will be further developed by the COE working group on Ocean Ecology.

The Commission recognized the desirability of a Spanish Text Book on conservation in Latin America and considered an outline for a plan for Environmental Education in relation to Tropical Rainforests on which the IUCN Commission on Education had asked for advice.

Prof. F. E. Wielgolaski presented a first preliminary draft of an overview report on acid rain, a problem that now also receives attention in South America. The Commission resolved that the next version should go to the COE membership for further comments. It also decided to establish a task force, the members of which would consult other experts so that a broad overview could be created incorporating the economic aspects and necessary measures as well as a future perspective on soil, forest and water in the event that acid rain was brought to an end at a given time. Following the establishment of the various reports, the task force would aim for an international workshop on a world strategy on acid rain.

Recent meetings of COE members took place in the Netherlands and in the United Kingdom and the Commission encouraged members in other countries to follow these examples.

The Commission considered and accepted a report of an ad hoc Commission meeting that took place in Oxford, 12–14 January 1983, which advised COE to publish a series of short papers concerning the various ecosystems and the problems they face instead of preparing voluminous books, as the former were far more apt to convey the conservation message to decision-makers.

Another report considered was that of a meeting between COE and staff members of the Conservation Monitoring Centre (CMC Kew/Cambridge) to identify opportunities for cooperation in the field of collecting and processing ecological data. The Commission was grateful for the efforts undertaken and welcomed the elaboration of a project for presentation at the Kuala-Lumpur meeting in September 1983.

The Commission took note of reports of the COE working groups on Arid Lands, Continental Seas, Ecological Aspects of Re-introductions, Environmental Pollutants, Inland Water Ecosystems, Mangrove Ecosystems, Mountain and River Basin Management, Ocean Ecology, Oil Pollution and Tropical Rainforests. It was informed that a meeting of the chairmen of the Marine working groups would take place in Godalming, UK on 26–27 May 1983.

The next COE meeting was announced to take place at Forest Research Institute, Kepong, Malaysia, 29 August–5 September 1983 and would include a workshop on degraded lands once under tropical rainforests in South East Asia.

After the meeting the Commission went to Southern Peru at the request of the Peruvian authorities to give advice on the rehabilitation of the Coastal Lagoons of Mejia, one of the important stepping stones for migratory birds on the Eastern flyway. The Mejia Lagoons were drained unintentionally in the course of the execution of a development project. The Commission came to the conclusion that the situation could be remedied and provided the guidelines to do so.

IUCN Commission on Ecology Workshop on Tropical Rain Forests

The Commission on Ecology (COE) met from 29 August to 6 September 1983 in Kepong, Selangor, Malaysia, where it was hosted by the Forest Research Institute.

From 29–31 August, a workshop of the COE Working Group on Tropical Moist Forests was held to produce, at the request of UNEP, a position paper on the rehabilitation of degraded lands once under tropical rain forest cover. The workshop was opened by Dr Salleh Mohd Nor, Director of the Forest Research Institute and chaired by Dr Thomas E. Lovejoy, Chairman of the COE Working Group on Tropical Moist Forests. It was attended by twenty members and invited specialists including representatives from Unesco, International Council for Research in Agroforestry (ICRAFT), the Arnold Arboretum of Harvard University, the Agricultural University of Wageningen, the University of Hamburg and the Forest Research Institute of Malaysia.

Barren lands, grasslands, secondary vegetation and forest highly disturbed by logging were among the subjects discussed by the workshop.

IUCN/COE International Symposium on the Future of Tropical Rain Forests in South East Asia (1 - 2 September 1983; Kepong, Malaysia)

As one of its contributions to the IUCN/WWF conservation programme for Tropical Rain Forests, the IUCN Commission on Ecology organised two symposia on Tropical Rain Forests. The first symposium, with the theme "Ecological Structures and Problems in Amazonia", was held in São Carlos, Brazil in March 1982. The second one on "The Future of Tropical Rain Forests in South East Asia" took place at the Forest Research Institute in Kepong, Malaysia on 1–2 September 1983. This Symposium addressed itself to the rates of change of forest cover, the economic and other values of rain forests, rain forest conservation and the management of modified rain forests. It was addressed by scientists and decision-makers from ten Asian and other countries.

In his opening address Datuk Amar Stephen Yong, Minister of Science, Technology and the Environment of Malaysia, emphasized the importance of educating and disseminating information to the public, particularly the younger generation, on conservation and its relation to human well-being. He pointed out that people at large do not understand the actual role the tropical rain forests play, for instance in regional and global weather patterns.

After the opening addresses given by Prof. J. I. Furtado, Moderator of the Symposium and Prof. J. D. Ovington, Chairman of the IUCN Commission on Ecology, Dr Soedjarwo, Minister of Forestry of Indonesia said, among other things in his key-note address, that with regard to nature conservation in accordance with the

Bali Declaration, the Government of Indonesia recognises the importance of natural systems in maintaining ecosystem stability, preserving diversity of species and genetic variations, maintaining productive capacities of ecosystems, including the safeguarding of inhabitants, and providing opportunities for research and educational activities.

Dr M. Hadley of Unesco, read subsequently the contribution by Mr J. Lanly of FAO, Rome, on the FAO Assessment of Tropical Forest Resources in relation to South East Asia. This was followed by Prof. Dr E. F. Bruenig's contribution on "Deforestation and its ecological implications for the rain forests in South East Asia."

Dr W. Knowland spoke about the rates of change of forest cover in South East Asia and implications for national economies and Prof. K. T. Joseph talked about the impact of rural development, with notes on soil conditions, on tropical rain forests. They were followed by Dr Peter Ashton on "Timber and minor forest product values in South East Asia", Dr W. Y. Brockelman on "Nature and importance of plant–animal relations for pollination and dispersal, and the necessity of stepped-up rain forest inventory" and Mr K. M. Kochummen on "The Second Round Table Conference on Dipterocarps".

Mycorrhiza and Dipterocarp rain forests were the subject of a contribution by Ir. W. Smits. Dr L. J. Webb spoke about the influence of gap-phase successions on the size, nature and organisation of isolated forests in relation to tropical rain forest conservation and Prof. L. S. Hamilton on some soil-water consequences of modifying tropical rain forests.

Dr K. Kartawinata dealt with Silvicultural Management of the logged natural Dipterocarp forest in Indonesia, while Dr Salleh Mohd Nor and Mr N. Kwapena lectured, respectively, on silvicultural practices in Peninsular Malaysia and tropical rain forests and plantation forestry in Papua New Guinea. Dr J. Davidson talked about plantation forestry in relation to tropical moist forest in South East Asia and Prof. H. Haeruman on the future of Indonesia tropical forests, resolving land-resources conflicts. Mr Mok Sian Tuan gave a presentation on "Resource allocation in primary industries for future development of Malaysia", while Dr N. Tuntawiroon lectured on "Public perception of tropical rain forest and its future in Thailand".

As a result of the general discussion led by the Moderator of the

Left to right: Dr Soedjwaro, Prof. J. I. Furtado, Prof. J. D. Ovington, Datuk Amar Stephen Yong and Dr M. Bijleveld.

Symposium, Prof. J. I. Furtado, a set of recommendations was adopted to be submitted by him to Ministers, Authorities and others concerned. The closing addresses were given by Prof. J. D. Ovington and Dr Salleh Mohd Nor, Director of the Forest Research Institute.

Recommendations

The International Symposium on the Future of Tropical Rain Forests in South East Asia held on 1–2 September 1983 at the Forest Research Institute, Kepong, Malaysia, adopted the following recommendations:

Realising and regretting the inadequacy of detailed knowledge of the structure of tropical rain forests in this region, and the lack of integration of the social system with the resource system.

Concerned at the lack of sufficient effort to translate existing knowledge for application to the management of these forests, and the rapid rate of transformation of tropical rain forest lands for other uses.

Commending the initial steps taken to implement the World Conservation Strategy in some countries in this region.

Recommends the further implementation of the World Conservation Strategy in this region, in particular:

- Promote a fuller understanding of the potential of genetic resources in these forests for their better utilisation for human well-being.
- Increase the understanding of ecological processes for defining the ecological limits at which areas of disturbed rain forest become non-renewable and for maintaining representative samples of parks and protected areas on a sustainable basis; and the then utilisation of this understanding for integrating resource systems with social systems.
- Develop a comprehensive system of parks and protected areas in the region for conserving representative tropical ecosystems for their intrinsic value to mankind.
- Develop better systems of management of natural forests for productive uses, such as by:

  redesigning extracting techniques to minimise damage to residual forest, to regeneration, to soil and to water flow and quality;

  promoting better regeneration techniques (e.g., mycorrhizal inoculation);

  integrating traditional agro-forestry techniques for production of food and wood products in a sustainable manner.
- Implement rapidly plantation forestry and agro-forestry programmes on other lands to provide quickly sustainable benefits of many kinds for people in order to reduce pressures on tropical rain forests and to rehabilitate degraded lands.
- Develop systems approach methodologies in solving problems related to poor forest management and integrated resources development.
- Support the development of techniques to assign values to tropical forests for all purposes.
- Encourage the implementation of procedures to promote public participation in decisions affecting the future of tropical rain forests in South East Asia.
- Strengthen national forest research institutes and provide linkages between them for more effective regional research activities.
- Increase regional and international cooperative research and training programmes to achieve a better understanding of the dynamics of the tropical rain forests for the purpose of efficiently managing them.
- Draw attention of IUCN/WWF to support specific field activities in South East Asia leading to the conservation and sustained use of tropical rain forest ecosystems in the region.

The COE September 1983 Meeting

Held from 3–6 September in Kepong, Malaysia, the Commission on Ecology Meeting was attended by 23 members and observers from UNEP, Unesco, the U.N. University and the Ministry for Population and Environment of Indonesia.

In his opening address the Chairman commemorated Dr Marius Jacobs, Hon. Secretary of COE's Tropical Rain Forest Working Group, and Prof. Gordon Williams, organiser of COE's meeting in Christchurch, New Zealand, who died respectively in April and June 1983.

Prof. H. Haeruman, Assistant Minister of Population and Environment of Indonesia told the meeting that a decision to set aside 3 000 000 hectares for transmigration purposes, had been taken, but not where this should take place. This aspect is going to be studied by a commission on Environmental Management, which is in the process of being set up with the task to develop guidelines and management planning for the transmigration operations. One of the tasks would be to set up nature conservation guidelines for all Indonesian swamplands and the design of buffer zones. The Commission designated Dr L. J. Webb and Dr J. D. S. Davie to develop a project in consultation with Prof. Haeruman to involve COE in finding practical solutions to environmental problems at a selected study area.

Prof. Haeruman regarded the document entitled "Why Conservation" as very important as it constitutes the only attempt in existence to answer the questions posed by Dr Emil Salim, Indonesian's Minister for Population and the Environment, to H.R.H. the

Commission on Ecology on visit to a logging site in the Jengka Triangle, Peninsula Malaysia. Photo credit: Dr M. Bijleveld.

Prince of the Netherlands in 1979. The document was accepted and approved by the meeting and its distribution would be pursued with Dr Salim and Prof. Haeruman.

A number of position statements were accepted and approved for submission to the IUCN Council Meeting, November 1983. These position statements concern Tidal Flats, Salt Marshes and Mangrove Ecosystems and were respectively prepared by the COE Working Group on Coastal Ecology and Mangrove Ecosystems. Statements on the Use of Pesticides, Oil Pollution and Ocean Trenches had been prepared, respectively, by the Working Groups on Environmental Pollutants, Oil Pollution and Ocean Ecology. The latter Working Group was also in the process of finalizing a position statement on Conservation in Antarctica.

As a follow-up to COE's earlier proposals to the IUCN Council to develop a position statement and an annexed chapter to the World Conservation Strategy on Population and Natural Resources, a workshop was held in Oxford, 4–6 July 1983. The Commission took note with great appreciation of the result of the workshop, which was held in cooperation with the International Planned Parenthood Federation (IPPF) and chaired by Prof. David Pimentel. It accepted and approved the document entitled "Position Statement on Population and Natural Resources" to be submitted to the IUCN Council at its meeting in November 1983. Upon acceptance by the IUCN Council the position statement would then be submitted to the IPPF Members' Assembly for consideration and approval at its meeting in Nairobi, November 1983. The Commission decided to invite Prof. John Hanks to work on the first draft of the annexed chapter to the World Conservation Strategy and the Chairman undertook to write to Professor Hanks.

The new COE Working Group on Island Ecology was to be chaired by Dr Nigel M. Wace as from 1 January 1984, while it was decided to merge the Working Groups on Rural Development, and Conservation and Traditional Knowledge under the chairmanship of Prof. Otto Soemarwoto with Dr Graham Baines as Deputy Chairman.

The Commission approved of an initiative to develop a pilot project on Oceanic Islands with the IUCN Conservation Monitoring Centre (CMC) at Kew and Cambridge. This project was to demonstrate that ecological data could fruitfully be collected and stored in support of those of species and protected areas. Dr Morton Boyd was nominated as the liaison between CMC and the Commission. A further detailed project proposal would be worked out in cooperation between ICBP and Dr Nigel Wace, the new Chairman of COE's Working Group on Island Ecology.

The Scientific Committee for Antarctic Research (SCAR) as a part of ICSU had decided to accept IUCN/COE's proposal to have a joint Symposium on the Scientific Requirements for Antarctic Conservation, which would concentrate on reviewing scientific knowledge and the present situation particularly with a view to identifying potential future problems.

The preparation of the Directory of African Wetlands in cooperation with ICSU's Scientific Committee for the Protection of the Environment (SCOPE) was well underway and now being followed by the preparation of a South American Wetlands Directory by the International Wildfowl Research Bureau (IWRB) in cooperation with COE.

Dr John Davidson presented the third draft of the position paper dealing with the utilization of the Tropical Rain Forest, developed at the Workshop in Bandung, Indonesia, October 1983. Eleven major contributions had been received and incorporated in the third draft, which will now be distributed to all COE members and submitted to UNEP.

Regional conservation issues discussed by the Commission concerned the rate of deforestation in the Solomon Islands and the ecological consequences of the Nam Choan Dam on the upper Kwae Yai River in Thailand.

Central loading point for logging operations in the Jengka Triangle, Peninsular Malaysia. Photo credit: Dr M. Bijleveld.

Logging activities in the Jengka Triangle, Peninsula Malaysia. Photo credit: Dr M. Bijleveld.

COE had been asked to make a major contribution to the technical Conference of the Parties of the Convention for the Protection of Wetlands of International Importance (Ramsar Convention) to be hosted by the Netherlands Government in Groningen, May 1984. Dr R. G. Noble and Dr W. J. Wolff, respectively Chairmen of COE's Working Groups on Inland Water Ecosystems and Coastal Ecosystems, were preparing a paper on "The Ecological Significance of Wetlands and the Basis for their Conservation".

A workshop for the preparation of the Handbook for Mangrove Managers in cooperation with Unesco and the East–West Center was going to be held in Hawaii at the end of September 1983. This publication was expected to become available in 1984.

A paper basic to the World Conservation Strategy entitled "Conservation of Ecological Processes" was reported to have been finalized by a COE task force consisting of Prof. Robert Ricklefs, Prof. Eugene Turner, and Prof. Zev Naveh.

The meeting discussed a memorandum by Prof. K. H. Voous for the benefit of the Commission of National Parks and Protected Areas (CNPPA) on biogeographical classification in National Park and Protected Area Planning and urged that discussions on this very important subject be continued.

Dr Robert Boden undertook to prepare, in cooperation with Prof. Lindsay Pryor and Prof. Lawrence Hamilton, an audio-visual programme "Ecological Mismanagement in Natural Disasters".

So far COE papers on "Precipitation and Water Recycling in Tropical Rain Forests" and the "Global Status of Mangrove Ecosystems" had been published in 1983, respectively as a reprint from and as a Supplement to *The Environmentalist*. "Ecological Structures and Problems of Amazonia" and "Impact of Oil Pollution on Living Resources" were reported to be both in press. In 1984 "Future Hazards of Pesticides" and "The Conservation of Ecological Processes" among others would be published.

Commission Visit to the Jengka Triangle, Peninsular Malaysia

The Commission on Ecology paid a one day visit organised by the Forest Research Institute to the Syarikat Jengka Forest Concession Area in the centre of Peninsular Malaysia on 4 September 1983 to obtain a first hand impression of selective logging operations and their ecological consequences.

In this forest area of 121.488 ha comprising the Tekam–Tekai–Berkelah forest reserve the Government of Pahang State has granted the rights of forest exploitation to the Syarikat Jengka Sdn Bhd (SJSB) Company.

Through an agreement with the Company, the Forest Research Institute, has set up a number of long term studies on logging damage, forest inventory, hydrological and vegetation studies in the concession, where a small number of elephants still roam about. Current researches concern enrichment planting trials, studies on growth and yield of logged-over forests and on the comparison of soil fauna (litter decomposers) between logged-over and virgin forests and studies on the effect of logging on the aquatic fauna. The Commission saw various methods for the extraction of timber in operation. The giant, mainly Dipterocarp, trees concerned are 50–70 meters high and estimated to be several centuries old. Such trees have an average value of US$ 4000. The construction of all weather road networks to allow for the heavy loaded trucks was looked at and some sites replanted with Eucalyptus were visited.

Erosion caused by logging in the Jengka Triangle, Peninsular Malaysia. Photo credit: Dr M. Bijleveld.

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