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IUCN Viewpoint

Exponential Impacts

Among the most characteristic phenomena of recent times are the exponential impacts of man's use and abuse of natural resources. Many people find these extremely difficult to understand and evaluate, and, accordingly, to shape policies to deal with them.

The classic example of an exponential phenomenon is a water lily growing in a pond with the area covered by its leaves doubling each day. If the pond is completely covered by leaves in 20 days, then only half the area is covered in 19 days and only a quarter in 18 days. In many cases in the use of the world's resources we fail to see that we are already at the 19th day and the end is rushing towards us.

Because these phenomena are at the root of man's present dilemma, it is essential that everyone should be aware of them and their implications, and this means education. As H. G. Wells has said: "Human history becomes more and more a race between education and catastrophe." IUCN is fully aware that while fire-brigade actions are essential at present, the only possible long-term solution lies in education – not only of children and students, but also of Governments and all adult decision-makers. To this end IUCN is expanding its educational work, and recently held a highly successful Conference at Rüschiikon in Switzerland at which the exponential impact on the environment of man's activities was implicitly the pivot.

One of the best-known exponential phenomena is the growth of world population which at the present rate would double about every 35 years. However, in some countries, particularly those with a very low *per caput* income, such doubling may take place every 20 years. Corresponding demands for energy, water, paper and transportation, increase even more quickly, and this feature is not restricted to developing countries.

It would be interesting to have data on exponential impacts including the rate of forest clearing in tropical humid regions, the increase in ocean and fresh water deterioration, the loss of wild habitats and the rate of extinction of species. One might also speculate on the exponential spread of 'Western' values connected with material standards of living and land tenure to populations which have hitherto been little exposed to these influences, and among whom tribal or local customs and behaviour patterns are quickly breaking down. Data on the ability of a sizable majority of mankind to comprehend these basic exponential phenomena would be among the most interesting of all. Such understanding, which ought to be the most 'exponential' of all growth patterns, seems to be operating at a rate far below most of the other exponential processes.

For many of the exponential phenomena mentioned above, the doubling time is not constant. It is actually becoming shorter. In a world where resources are finite,

it is absolutely clear that such exponential increases can only lead to an impossible situation ending in a crash – a major 'ecocatastrophe'. The causal agent, in this case man (because of his impact on resources and ecosystems), will be so reduced in numbers that his impact is drastically reduced for a long period. Of course, his populations may exponentially build up again and give rise to long-term cycles. These are the trends that Jay Forrester and his computers have been indicating.¹ They are also the underlying reasons for the message spread throughout the world by the "Club of Rome"; by the article, "A Blueprint of Survival" published in Great Britain by the Ecologist, and by many organizations in the United States, Europe and other parts of the world.

But how much are these concerns being shared by the great majority of mankind? By the masses of people who are in day-to-day contact with wild plants and animals, tropical forests, marshes, sea-shores, oceans, sub-desert environments, fragile circumpolar lands, and so on? By the smaller numbers who control most of the wealth and make most of the decision? How do these concerns affect land-use policies and environmental planning? Unfortunately very little, and it can hardly be expected to be otherwise.

Much of humanity's knowledge – and the basis for decision-making – is drawn from an appraisal of the past and its projection into the future. Often this has been transmitted from generation to generation by traditions which originally may have had excellent "raisons d'être" but which are now obsolete or quickly becoming so. (This is true, too, of the present basis of 'material growth' generally prevalent in both capitalist and socialist systems.) The force of inertia, or of 'doing things the way they have always been done', is tremendous.

Can men's natures change so drastically over a short span of life as to keep pace with these exponential alterations? How can many of the European farmers, the affluent Americans, the 120 million Indonesians, the fast-growing and mostly rural populations of Latin America and, above all, the Chinese and Indians, react rapidly enough to make any change – imbued as they are with rising material expectations and as members of systems which all postulate exponential impact on the environment? From the overriding principle of national sovereignty, are we moving – even slowly – toward an overall planetary concern? Will this planetary concern be the primary basis of the forthcoming United Nations Conference on the Human Environment to be held in Stockholm in June 1972? We must hope so.

IUCN's policy, and indeed the justification for its existence, is closely linked with all these problems. Its main objective is best demonstrated by its concern for the maintenance (and whenever possible enhancement) of the diversity of life, and above all, for the preservation of options. If man can only bridge the 'incomprehension gap' and keep options open for the future, wiser policies for planetary management may prevail. Such management must be capable of maintaining a dynamic and healthy balance between man and his environment. Not all the answers are known, of course, but we can already go a long way toward this goal by providing the best possible scientific advice and legislative techniques, to show how natural areas and their wild animals and plants can and should become tools to achieve a better quality of life. Our forthcoming book, produced jointly with the Conservation Foundation, on ecological principles for economic development, has been written for this purpose. We believe it will contribute to the education of decision-makers in environmental awareness. Together with the World Wildlife Fund (WWF) we are engaged in an ever-increasing action programme of conservation projects throughout the world. The theme of our next General Assembly and Technical Meetings to be held in Banff, Canada, 10–16 September 1972, is conservation as a tool for development. Development, in this sense, means not further exploitation of resources but rather the uni-

¹ See review of "World Dynamics" in IUCN Bulletin 3 (2) 1972.

(Continued on next page)

versal recognition of ethical standards for their use, in all the diverse cultures and societies, so that a decent quality of life for all people can become a reality – one that provides for essential physical needs and for the maintenance of the existing diversity and options.

This is the philosophy that has pervaded our programmes. The survival of species, a most important and traditional concern of IUCN, is increasingly dealt with through the preservation of habitats, and of species of animals and plants not at present in danger but which have recently been heavily depleted and have now been added to our monitoring activities. We cannot delay action until a species becomes endangered; we must act before the exponential curves of depletion become too steep.

Education has become of ever-increasing importance in our programmes. It aims not only at demonstrating how easily environmental appreciation can be incorporated in all formal and out-of-school programmes, but goes much further. At the recent Rüsclikon gathering on education attended by official delegates from over 20 countries¹, Resolution No. 5c went so far as to suggest that "governments should make it possible for individuals to give service to the community in the form of work in the environmental field as an alternative to compulsory military service."

Unusual? Perhaps... if you merely extend IUCN's past philosophies into the present. But certainly appropriate and, indeed, essential when you consider the exponential impacts of today.

¹ Special supplement to IUCN Bulletin 3 (2) 1972.

Union Business

Proposals to amend Statutes distributed to IUCN members

The Executive Board of IUCN has recommended that the Statutes be amended for the following purposes:

- (1) To provide for rescission of membership, to introduce a new class of "Affiliate Member", and to clarify certain other matters relating to membership.
- (2) To limit the number of votes that national organizational members from any one country can exercise to a maximum of ten percent of the voting rights in the non-governmental category.
- (3) To enlarge the membership of the Executive Board and to provide for a greater geographical spread of representation, to rationalize the provisions for staggering the terms of office of members of the Executive Board, and to provide for the possibility of extending the term of office of a member of the Executive Board who is to be re-elected as Vice-President.
- (4) To provide for the constitution of the Executive Committee.
- (5) To provide for the election by the General Assembly of Vice-Chairmen of Commissions.
- (6) To change the designation of the chief executive officer of the Union from "Secretary-General" to "Director-General".

To accomplish these purposes requires substantial amendment of Article II – Membership, Article IV – General Assembly, and Article V – Executive Board (it is proposed that these Articles be redrafted to clarify certain points and to achieve a uniform style of drafting consistent with the Statutes as a whole), as well as amendment of Articles VI, VII, IX, X, XI, XIV, and XV.

The proposed amendments have been formally communicated to all members of the Union by mail as required under the provisions of Article XIV – Amendments. Members needing additional copies of the text of a draft resolution proposing amendments to the IUCN Statutes to be considered by the 11th General Assembly at Banff, Canada, in September 1972, and explanatory notes, may obtain them from the Secretariat at Morges.

Members' comments or suggestions on the proposals should be sent to the Director-General before 31 July.

Revision of the Rules of Procedure of the General Assembly proposed

The Executive Board of IUCN recommends that a revised set of Rules of Procedure of the General Assembly be adopted. This recommendation is made partly because the present Rules require amendment in the light of the proposed amendments to the Statutes and partly because they have found them to be inadequate in that they do not cover many important issues.

Text of the proposed revised rules, together with the text of the present rules, and a draft resolution proposing adoption of the revised rules to be considered by the 11th General Assembly, have been sent to all Members. Additional copies of these documents may be obtained from the Secretariat.

Members' comments or suggestions on the proposal should be sent to the Director-General before 31 July.

IUCN Resolutions

At each General Assembly a large number of resolutions making recommendations about conservation matters are considered by a Resolutions Committee. The Committee has the task of coordinating and editing the resolutions and selecting those which are to be proposed for adoption by the General Assembly.

It will be recalled that at the 10th General Assembly (New Delhi, 1969) dissatisfaction with the procedure for handling such resolutions was expressed, and subsequently the Executive Board gave consideration to this important matter.

The Executive Board has decided that in connection with the 11th General Assembly in September 1972, action should be taken to prepare in advance as many as possible of resolutions of the kind mentioned above which are to be considered by the General Assembly. The Executive Board believes that only a limited number of important resolutions should be considered for adoption since otherwise the impact of such resolutions is greatly reduced. Accordingly, the Executive Board has asked that Member Organizations submit any draft resolutions or notes for resolutions as soon as possible and *not later than May 1972*. The Secretariat will then process these drafts with the view to facilitating the work of the Resolutions Committee. The processed material will be circulated to Member Organizations so that they may consider it and instruct their delegates before the General Assembly.

The Executive Board has indicated that it does not intend this action to preclude the acceptance by the Resolutions Committee of other important resolutions arising from the deliberations of the General Assembly, the Technical Meetings, and related activities at Banff.

General Assembly information

Several changes in accommodation and programme plans for the General Assembly in Banff have been made as a result of further conversations with the Canadian planning group.

Use of the Banff Springs Hotel was recommended for accommodations for General Assembly delegates. There are ample reasons supporting that recommendation but it is now clear that a wider spread of lower-cost accommodations in Banff is necessary even though this will present a number of difficulties for individual delegates as well as for IUCN.

It has therefore been decided to hold a smaller number of rooms at Banff Springs, since it appears many delegates prefer to stay elsewhere. For delegates who do not wish to book into the Banff Springs Hotel, five other hotels and a number of motels are available. These can be booked directly through:

P. Lawson Travel Ltd.
Room 230, 407-8th Ave., S.W.
Calgary, Alberta/Canada

Prices per person per day range from \$ 24 to \$ 28 for de luxe class, \$ 16 to \$ 22 for first class, \$ 10 to \$ 15 for second class, and \$ 7 to \$ 11 for third class.

Tour No. 7 cancelled

Because the dates for the Second World Conference on National Parks have been changed to September 18–27, it has been decided to cancel post-General Assembly Tour No. 7, since it is not possible to travel by bus from Banff to Yellowstone in the time between the close of the General Assembly the opening events of the Park Conference. Airline transportation for delegates attending the Parks Conference will be available from Calgary to West Yellowstone by Western Airlines Flight 25.

Programme Activities

April meeting of Survival Service Commission to be held in Jersey

The next meeting of IUCN's Survival Service Commission will be held in Jersey, Channel Islands, on 29 and 30 April. It will immediately precede a conference on captive breeding as an aid to survival organized by the Fauna Preservation Society and the Jersey Wildlife Preservation Trust.

An important item on the SSC agenda will be discussion of a policy statement on the role of captive breeding in the conservation of animals in the wild state, for presentation at the subsequent conference.

Whilst the ultimate aim of captive breeding is the provision of a pool of genetic material from which to replenish suitable parent habitats, rather few attempts at rehabilitation have been made. It is anticipated that SSC's role will be one of co-ordinator of bona fide captive breeding programmes from the capture stage, through actual breeding to eventual release in a biologically and politically stable habitat.

The conference on breeding of endangered species will concentrate on examining the essential requirements and optimum conditions under which endangered species should be kept in captivity, that is, the second phase in the three-phase operation described above. The meeting will provide important guide-lines on the technique of breeding endangered species with the ultimate objective of returning them to the wild. Mr. Peter Scott, Chairman of SSC, will also chair the conference which is to be held in the Hotel de France, St. Helier, Jersey, 1–3 May.

Functions and structure revised for Commission on Environmental Planning

The Executive Board, as previously noted, has decided that the Commission on Landscape Planning should be given wider terms of reference and that accordingly the name of the Commission should be changed to Commission on Environmental Planning (see IUCN Bulletin 3(1) p. 4). The revised charter is set out in the following paragraphs.

Functions

Within the framework of IUCN's main objective and in cooperation with other Commissions (particularly the Commission on Ecology and the Commission on Environmental Policy, Law, and Administration), the Union's policy and programmes in the field of environmental planning and management are guided by the Commission on Environmental Planning.

The Commission is concerned primarily with the applied aspects of the impact of man on the environment, particularly the impact on fragile ecosystems, impacts arising from "development projects", increased tourism, and the expansion of industry.

It will be involved with the urban/rural development cycle, land use planning, planning of human settlements, and the application of ecological principles to development and to concrete action programmes.

Within this broad framework, the Commission will devise and act as a clearinghouse for specific projects chosen according to assigned priorities, and will monitor any such projects included in IUCN's work programme.

Organization

It is proposed that the Commission will divide whenever necessary into two main Committees:

- (1) Committee on Environmental Management, which will be concerned primarily with the evolution of management techniques for enhancing diversity as well as forestalling or reducing the environmental disturbances resulting from man's activities and related topics; and
- (2) Committee on Landscape Planning, which will be concerned primarily with topics relating to the planning of areas not set aside as parks or reserves, including the planning of human settlements, conservation of cultural landscapes and related topics.

The Commission held its first meeting of 1972 at Morges on 24 March. In addition to discussions of the revised functions and structure, the agenda included review and discussion of eight projects which the Commission monitors or in which it has an interest, proposals for three new projects, and preparations for the September meeting in Banff.

Swedish agency grants \$50,000 to support IUCN/Conservation Foundation project

The Swedish International Development Authority has decided to grant IUCN and the Conservation Foundation (USA) a total of \$50,000 in support of the project on ecological principles and economic development.

The generous grant will be used to cover staff work for completion of the manuscript of the book which is tentatively titled *Ecological Principles for Economic Development* (see IUCN Bulletin 2(17) p. 141), for preparation of a shortened version of the manuscript for wide distribution, and for the preparation of more extensive monographs on specific topics covered by the book.

Four Working Meetings on Education now scheduled

Four Working Meetings on environmental conservation education are being organized or sponsored by IUCN during the June–September period.

These are:

- (1) International Seminar on Environmental Conservation Education in the School Curriculum in East-European Countries, to be held in the border National Park "Pieniny", Poland–Czechoslovakia, from 22 to 28 June 1972. Languages will be German and Russian.
- (2) International Northwest-European Training Course for Teachers in the Methodology of Environmental Conservation Education to be held at "Buitencentrum Wilhelminaoord" in the Netherlands, from 11 to 21 July 1972. The course fee, including all expenses, is 200 Guilders (about £24.00). The course will be conducted in English, and will deal with nursery through secondary school levels.
- (3) International Course for Teacher Training in Environmental Conservation and Education, to be held at The Drapers' Field Centre – Rhyd-Y-Creiau, Betws-y-Coed, Caernarvonshire, North Wales, UK, from 2 to 12 August 1972. The course, in English, will be concerned primarily with techniques, methods and approaches which should be transferable to other physical and teaching situations. The fee is £27.90, plus transport.
- (4) International Workshop on Environmental Studies in Higher Education and Teacher Training, to be held at the Althouse College of Education, London, Ontario, Canada, from 5 to 7 September 1972, as a pre-General Assembly meeting. English and French. Information on all of these courses may be obtained from the Education Executive Officer, IUCN, 1110 Morges, Switzerland.

World Wildlife Fund News

Conservation Programme for 1972-73

World Wildlife Fund in late February published its Conservation Programme for 1972-73. It lists 104 projects for World Conservation, for which WWF has a fund-raising target of \$5,686,000.

IUCN provided scientific advice on these projects, and originated many of them.

Biotope projects include conserving cloud forests in Guatemala and Panama; delta regions in France and Spain; virgin forests in Nepal, Indonesia, Peru and Brazil; wetlands in Czechoslovakia; Lake Nakuru in Kenya and islands in the Galapagos and Seychelles.

Tigers, polar bears, vicuña, turtles and eagles are among the species covered by other WWF projects.

As part of the effort to control the devastation of wild cat populations by the fur trade, the WWF is financing scientific studies of leopard, cheetah, ocelot and jaguar in the wild. Efforts are also being made to improve the security of a sanctuary for the tiger in Nepal.

Copies of the 32-page programme may be obtained from the World Wildlife Fund, 1110 Morges, Switzerland.

Conferences and Meetings

The Mexico City Conferences

Conservationists from throughout the Americas gathered in Mexico City for the week March 9-16, highlighted by the 37th North American Wildlife and Natural Resources Conference sponsored by the Wildlife Management Institute of Washington, D.C. Associated with the Central Conference were a large number of related meetings sponsored by other organizations, most notably the 36th annual meeting of the National Wildlife Federation. IUCN was broadly represented by Director-General Gerardo Budowski, Vice-President I. McT. Cowan, Executive Board Member Lee Talbot, Senior Ecologist R. F. Dasmann and a number of members of IUCN Commissions and Committees.

The theme of the main conference: *International Cooperation and Resource Needs* was developed by speakers from Mexico, Canada, USA, and Venezuela and through papers concerning the wildlife and natural resources problems of many other areas of the world. It is difficult to select highlights from a meeting characterized by star performers; however the following presentations deserve special attention from those who purchase the conference transactions:

Garrett Hardin: Preserving quality on spaceship earth.

Howard and Eugene Odum: Natural areas as components of life support systems.

Kenneth S. Norris and G. Carleton Ray: Managing marine environments and their occupants.

Margaret Owings: In defense of natural systems.

John McEachern and E. L. Towle: Research and management programs for oceanic islands.

Durward Allen: Need for a new North American wildlife policy.

IUCN/WWF supported projects that were presented at the Conference included William Riney's and Peter Pritchard's review of sea turtle research and management in the Caribbean and Alvarez del Toro's work on crocodiles.

The natural resource problems of Mexico came in for special attention. While progress toward their solution could be claimed in some instances, the rate of population growth, technological development and land degradation combine to defeat the best efforts of such dedicated professionals as Enrique Beltran, Director of the Mexican Institute of Natural Renewable Resources, and Bernardo Villa R., General Director of Wildlife. One sees, however, an awakening of public interest in the environment of Mexico which may strengthen the programmes for wildlife conservation, establishment of natural reserves and

Conservation Notes

USA to regulate use in three National Parks

A small-scale, experimental effort to regulate public use of wilderness sections of National Parks in the USA will be initiated this summer in areas of Great Smoky Mountains National Park, Rocky Mountain National Park, and Sequoia-Kings Canyon National Parks.

The parks chosen are experiencing substantial visitor use of remote areas — use which threatens to destroy the very resources which attract the backcountry visitors.

Studies of the experimental programmes in these three park areas may serve to guide future planning to provide optimum use of the National Park System without degrading the natural environment.

USA, Japan sign Convention for protection of migratory birds

On March 4 the Governments of the United States and Japan signed a Convention in Tokyo designed to assure the protection of birds which inhabit both countries.

The Convention marks the culmination of several years of international conservation effort. Following extensive consultation between experts of both countries, the Government of Japan, in June 1968, proposed meetings to the Government of the United States to explore the possibility of a bilateral agreement for the preservation of migratory birds.

The agreement provides that each country develop programmes for the preservation of the habitat as well as of the birds themselves.

Studies undertaken toward this objective have shown that almost 200 species of birds are found in both countries and that 30 or more species move between them. Many species dependent upon Alaskan habitats are seen in Japan, emphasizing the worldwide importance of protecting Alaska's land and waters. Among those species in both countries threatened with extinction are the short-tailed albatross, the peregrine falcon, and the Aleutian Canada goose.

The Convention, which is subject to verification, will enter into force when instruments of ratification are exchanged at Washington. The agreement has an initial duration of 15 years, but it will remain in force indefinitely unless terminated by either party on one year's notice.

This effort emanated from the 12th Meeting, in 1960, of the International Council for Bird Preservation. At that meeting a resolution by Japan, unanimously supported by other Asian nations, proposed that countries of the Pan-Pacific area conclude conventions for the protection of migratory birds.

Timely Quotes

"Pleas for environmental conservation made by the highly industrialized nations are regarded with considerable suspicion by the less developed countries, which see in such concern merely a threat to their industrialization and 'development'. Developed countries cannot adopt a missionary attitude, vis-à-vis the conservation of the environment in the under-developed tropics. Such conservation must be desired and achieved by the peoples of the tropical world themselves. There is indeed great urgency in developing cadres of ecologically-oriented scholars in the tropical countries, capable of taking upon their shoulders the task of promoting the proper use of the environment. One of the aspects envisaged by OTS in its plans for the next ten years is that of helping in the formation of such cadres."

Extract from "OTS News" (Organization for Tropical Studies, Inc.) No. 71-4, July 1971.

rational land use as well as halting the appalling increase in pollution of air and water. Unfortunately, the options for choice are closing rapidly as Mexico's 52 million people increase toward a disaster level.