

WCU **bulletin**

A QUARTERLY JOURNAL OF
THE WORLD CONSERVATION UNION

VOLUME 22
NUMBER 3

SEPTEMBER 1991

***WAR, LAW
AND THE
ENVIRONMENT***



**Bulletin of
The World
Conservation Union**

A quarterly publication
of the International Union
for Conservation of Nature
and Natural Resources,
Avenue du Mont-Blanc,
CH-1196 Gland, Switzerland

Telephone: (41 22) 649 114
Telex: 419605 iucn ch
and 419624 iucn ch
Telefax: (41 22) 644 615
and 642 926

Editor: Nikki Meith
Contributing editor: Peter Hulm
Contributing editor, centre section:
Susan Casey-Lefkowitz
French edition: Danièle Devitre,
Catherine Lokschin
Spanish edition: ICONA, Spain
Design: Maximedia

Published primarily as a service to
the IUCN network
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organizations,
1991

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publication do not necessarily reflect
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Annual subscription to non-members
is US\$50 or equivalent in other
convertible currencies (includes
airmail rate postage).

INSIDE

Editorial	2
Headquarters	3
Caracas Congress	6
Awards	7
Commissions	8
World roundup	12
Special report: War, law and the environment	16
People	31
Calendar	32

Cover: Aerial photo of the oil slick
on the Gulf coast of Saudi Arabia, by
Michael McKinnon, McKinnon
Films, 205 Royal College St.,
London NW1 0SG (UK); tel: 4471
267 5530. Michael McKinnon's
book on the environmental damage
caused by the Gulf war, *Tides of
War*, has just been published by
Boxtree (UK).

Restraining the dogs of war

The hostilities over Kuwait marked a new stage in the history of environmental organizations. Almost immediately after fighting broke out, IUCN and WWF came together with United Nations agencies concerned with the environment and the region's own marine environment organization to draw up a plan for monitoring damage caused by the war and promoting rehabilitation. This was a rare example of coordination among groups that have all too often acted separately in times of crisis.

Whether the rest of the world follows up this initiative (and as of now, the plan is drastically short of funds), the environmental organizations have put the world community on notice: simply crying havoc in the face of war is no longer enough. The world must take steps to anticipate, avert and avoid environmental destruction in time of war – and just as importantly, recognize that environmental degradation and its consequences pose major threats to national and regional security.

The \$900 billion per year currently spent on the military does nothing to protect countries from the threats of land degradation and soil erosion, deforestation, global warming, competition for water or human population growth. In many regions military activity only increases the destabilizing flood of refugees.

It has been estimated that a progressive reduction in military expenditure to something like 80% of the current level by 2001 would pay for all the major steps we need to create a sustainable global society. Much can also be done directly to move away from a world whose peace is based on the terror of war. International agreements can limit trade in weapons and spending on military personnel. Codes of conduct can put the brake on international assistance for military spending.

Caring for the Earth, the IUCN/UNEP/WWF follow-up to the 1980 *World Conservation Strategy*, will spell out many of the options when it is published on 21 October. But there is no shortage of good ideas about diverting the military economy into channels that conserve the environment rather than seeking to destroy it: Switzerland uses military units as a disaster relief corps; naval vessels could become scientific research ships.

As this special section of the *Bulletin* makes clear, though, we cannot expect to keep the peace without security, and here the environment is a major factor in the equation. Development is the third side of the triangle. The demands of development are as imperative as those of military security and conservation of the environment. Satisfying these demands, as *Caring for the Earth* underlines, cannot be dissociated from our efforts to promote harmony between people and within nature.

– Sir Shridath Ramphal
President, IUCN



Countries throughout the world, both developed and developing, squander their national wealth in the interest of military "security" but at the expense of social, economic and environmental security. Photo: Edward Girardet.

New Council meets

The Union's new Council held its first meeting at IUCN Headquarters on 8-10 April. Opening the meeting, the President, Sir Shridath Ramphal, gave a special welcome to Don Person, the new Treasurer, who had been unable to attend the Perth Assembly.

The first business was the cooption of additional Councillors chosen to broaden the skills represented around the table. Two new members were added: Huguette Bouchardeau, a former Minister of Environment for France, and Yolanda Kakabadse (Ecuador), now a member of the Secretariat for the UN Conference on Environment and Development (UNCED). Other cooptions were deferred for further consultation. Council also appointed Professor Pierre Goeldlin as representative of the Swiss Confederation.

Four Vice-Presidents were elected: Syed Babar Ali (Pakistan); Jan Cerovsky (Czechoslovakia); Yolanda Kakabadse (Ecuador) and Liberty Mhlanga (Zimbabwe). Elections to the Bureau followed, and Vladimir Flint (USSR), Jay Hair (USA), Mohamed Khan Bin Momin Khan (Malaysia) and P.H.C. (Bing) Lucas (New Zealand) were elected.

Finally, Council appointed Hans Lundberg (Sweden) as Deputy Chair of the Commission on Ecology (see page 8), and approved lists of members for all six Commissions.

Three committees set up

A number of Councillors expressed concern over the difficulty of reviewing issues in depth in the general meeting, and it was agreed to appoint three committees

of the Council to consider particular topics.

These were:

- **Membership and Nominations** (Chair, Yolanda Kakabadse);
- **Finance and Development** (Chair, Jay Hair);
- **Conservation Programmes** (Chair, Liberty Mhlanga).

Council noted with great pleasure a telex from Nikolai Vorontsov, Minister of Environment of the USSR, confirming the State membership of his country. Council noted the readmission of the US Forest Service and two changes in membership categories, and decided to admit 12 new members. Four applications to which objections had been raised were referred to an *ad hoc* Membership Committee. Following its report, the Canadian Association for Humane Trapping was admitted, while three other cases were deferred to the new Membership and Nominations Committee.



IUCN Councillors and friends. First row, left to right: François Doumenge, Chair COE; Pierre Goeldlin, Councillor for the Swiss Confederation; Sir Shridath Ramphal, President; Martin Holdgate, Director General; Yolanda Kakabadse, Vice-President; Perez M. Olindo (Kenya); Vladimir E. Flint (USSR); Parvez Hassan, Chair CEL; Antonio Machado (Spain). Second row: Enikő Szalay-Marzso (Hungary); Aldo Antonietti, contact for Swiss State membership of IUCN; Pamela J. Eiser (Australia); Jaap B. Pieters (The Netherlands); George Rabb, Chair SSC; Mankoto ma Mbalele (Zaire); M. Partha Sarathy, Chair CEC; Veit Koester (Denmark); Juan Carlos Navarro (Panama); Abdulwahab Mohammad Jameel Dakkak (Saudi Arabia). Third row: Catherine C. Wallace (New Zealand); Jay D. Hair (USA); P.H.C. (Bing) Lucas, Chair CNPPA; Charles de Haes, Director General, WWF. Fourth row: Elizabeth Holdgate; J. David Runnalls (Canada); Ted Tryzna, Chair CESP; Liberty Mhlanga (Zimbabwe); Jan Cerovsky (Czechoslovakia). Last row: Satoshi Kobayashi (Ramsar Bureau); Tatsuya Furuya, Deputy Mayor of Kushiuro, Japan (visitor); Mohamed Khan Bin Momin Khan (Malaysia); Li Wenhua (People's Republic of China); Michael Cockerell, Assistant Director General; Wolfgang Burhenne, Legal Adviser; Yves Renard (St Lucia); and José Pedro de Oliveira Costa (Brazil). (Missing Councillors: Syed Babar Ali (Pakistan); Vili Fuavao (Tonga); Kamel S. Abu Jaber (Jordan); Ashok Khosla (India); Juan José Montiel Rocha (Nicaragua). Photo: Claude Berger.

HEADQUARTERS

Among other matters, the Council:

- noted the Union's satisfactory financial position;
- welcomed excellent progress with the new Headquarters;
- accepted proposals to explore how a dialogue might be established with the business sector;
- reviewed lessons learned from the General Assembly;
- authorized the Director General to complete a policy statement based on papers approved by the Assembly;
- reviewed follow-up to Assembly Resolutions and Recommendations;

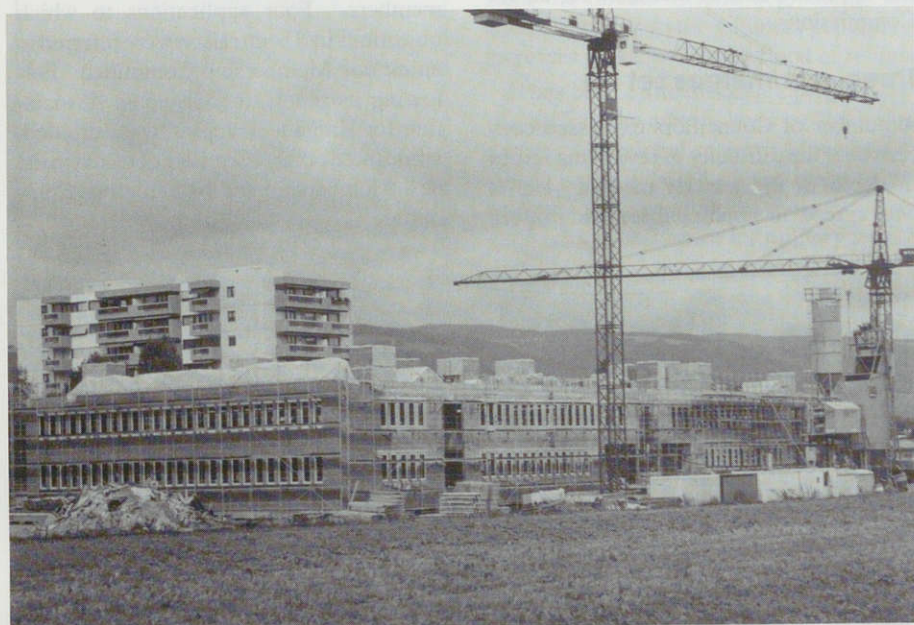
- received reports from partner organizations and from the Commissions;

- noted progress in the completion of the follow-up to the World Conservation Strategy (entitled *Caring for the Earth: A Strategy for Sustainable Living*);

and

- received reports on preparations for the IVth World Congress on National Parks and Protected Areas and the UN Conference on Environment and Development.

Finally, Council decided to hold a second meeting in 1991, on 25-27 November. The first day will be devoted to meetings of the new Committees.



The new IUCN headquarters building is progressing rapidly. Photo: IUCN/Nikki Meith.

A cornerstone of conservation

The first stone of the new World Headquarters of IUCN (actually a concrete block containing a capsule of documents) was laid on Tuesday morning, 9 April.

The keynote speaker at the ceremony was IUCN's new President Sir Shridath Ramphal, former Secretary General of the Commonwealth. Other speakers included Martin W. Holdgate, Director General of the Union; W.B. Gyger, Minister of the Swiss Confederation; W. Stern, Chancellor of the Canton of Vaud; and J.C. Christen, Syndic (Mayor) of the town of Gland. Swiss Council Member Professor Pierre Goeldlin acted as master of ceremonies.

"We are all familiar with the clock in the United States set to indicate that humanity is only a few minutes away from nuclear disaster," Sir Shridath said in his remarks to the gathering of officials and IUCN staff. "In the past year we have been reminded again of the ways in which human conflict can bring misery to millions and, through the devastation of our environment, a threat to future generations. Perhaps on this building we should have another clock, showing how close we have come to environmental disaster. But it is not IUCN's job tamely to observe the seconds ticking away. It is our job to turn that clock back. As an organization that unites in membership governments, government agencies and some of the world's most outstanding and committed non-governmental organizations, we shall speak for the earth, and be a champion of its cause."

Progress with the new headquarters, which will stand just off the Route Suisse, near the shores of Lake Léman, has been rapid. On 30 August the completion of the shell of the building was celebrated with a party on-site. It is hoped that the building will be ready for occupation around October 1992.

New members

At the 31st meeting of Council, 8-10 April 1991, the USSR was welcomed as a State Member of IUCN. In addition, the re-admission of one Government Agency, the US Forest Service, was confirmed. The following 14 national non-governmental organizations were also welcomed:

Fundación Ambiente y Recursos Naturales

Monroe 2142,
1428 Buenos Aires,
Argentina



Founded in 1987, FARN is a technical NGO dedicated exclusively to study, communication and training, and to giving advice in environmental policy, law, economics and institutional organization.

Australian Littoral Society

P. O. Box 49,
Moorooka Q 4105,
Australia



ALS was founded in 1965 and is a national organization for the study and conservation of the aquatic life of Australia's coastline.

Total Environment Centre

18 Argyle Street,
Sydney 2000, Australia



The TEC is an independent, non-profit community organization founded in 1972, which aims to involve members of the public in environmental action, education, research and fundraising.



Canadian Association for Humane Trapping

Suite 200, 142 Davenport Road, Toronto,
Ontario M5R 1J2, Canada

Founded in 1954, CAHT is a humane organization dedicated to reducing and eliminating the suffering of trapped animals. It works through direct communication with trappers, the fur industry, governments and other animal welfare organizations.



Herencia Verde

Fundación Herencia Verde

(Green Heritage Foundation) Calle 4a Oeste No.3, A-32, A.A. 32802, Cali, Colombia

Founded in 1983, the FHV is dedicated to the conservation of natural resources through participation in environmental education programmes, planning and management of nature reserves within the context of social and sustainable development and conservation of biological diversity.



Asociación para la Conservación de los Recursos Naturales de Costa Rica

(Association for the Conservation of the Natural Resources of Costa Rica) Apdo. 8-4330, San Jose 1000, Costa Rica

ACORENA is a private conservation group founded in 1990 whose main aim is environmental education in rural areas and the protection of tropical forests.



"EL ÁRBOL ES VIDA"

Asociación Amigos del Arbol

(Friends of the Tree) Calle Los Granados #9, Col. Las Mercedes, San Salvador, El Salvador

This organization was founded in 1990 with the aim of developing sustainable activities in the areas of conservation of natural resources, using appropriate methodologies to "encourage and promote an ecological culture in people to produce a new man living in harmony with his fellows, Mother Earth and Father Tree".



ASACMA

Asociación Salvadoreña de Conservación del Medio Ambiente

Calle Maquilishaut 208, Urb. Buenos Aires 3, San Salvador, El Salvador

ASACMA works for the conservation of wildlife, restoration and management of natural areas and the implementation of environmental education in El Salvador.



Magyar Természetvédők Szövetsége

(National Society of Conservationists - Hungary) Kolto u. 21, Budapest 1121, Hungary

Founded in 1989, the Society is an umbrella organization for activities of local nature conservationists and environmental groups, regional and national societies.



Environment Camp for Conservation Awareness

P.O. Box 3923, Kathmandu, Nepal

The primary aim of this organization is to provide Nepali children with a broad environmental programme geared to raising their level of awareness about the need for conservation and better management of resources.



CLEVELAND ZOOLOGICAL SOCIETY



King Mahendra Trust for Nature Conservation (KMTNC)

P.O. Box 3712, Sakya Kunj, Jawalakhel, Lalitpur, Nepal

The King Mahendra Trust was founded in 1982 for the purpose of conserving, preserving and managing nature and its resources in order to improve the quality of life of the human population.

Nepal Heritage Society

P.O. Box 1041, Kathmandu, Nepal

An NGO formed in 1982 by a group of people dedicated to the social activities of conserving the rich cultural and natural heritage of Nepal, the Society acts as a public awareness forum, a pressure group and a catalytic agent.



Asociación Española para el Ecodesarrollo y la Defensa del Medio Ambiente

(Spanish Association for Ecodevelopment and Environmental Defence) Rio de la Plata 4, Plaza Giraltillo 3, 41003 Sevilla, Spain

Founded in 1989, AEMA is dedicated to the investigation, promotion, communication and implementation of ecodevelopment planning, and the conservation of Spain's natural and cultural heritage.

Cleveland Zoological Society

P.O. Box 609281, Cleveland, Ohio 44109, USA

The Society is a philanthropic organization whose membership dues and gifts primarily support the projects and programmes of the Cleveland Metroparks Zoo.

CARACAS CONGRESS

Countdown to Caracas

The IVth World Congress on National Parks and Protected Areas, hosted by the Government of Venezuela and organized by IUCN, will take place on 10-21 February 1992, in Caracas, Venezuela. It will bring together over 1000 of the world's leading conservationists.

"These Congresses are held once a decade," reports Secretary-General Jeffrey McNeely. "All the participants are specially invited. The Congresses are working meetings, and this one will look at how protected areas contribute to the welfare of society. We shall of course focus on the role of parks and protected areas, but we shall look much more widely and involve all groups who depend on natural areas and wildlife – for genes, pharmaceuticals, water, building materials, recreation, tourism, and so on."

Funds still needed

The Congress will only succeed if there is a strong attendance of specialists from developing countries. This is the first Congress to be held in Latin America and it is particularly important to have a good representation from that region, as well as from more distant Africa and Asia. For this, funds are needed to support travel and hotel costs, and IUCN is appealing to a wide range of possible donor organizations.

Come prepared!

Over the two-week period, participants will take part in plenary sessions, symposia, workshops, training courses, demonstrations, field trips, exhibitions, and cultural events. The meeting is designed to produce a number of specific outputs, re-

quiring that all participants come prepared to contribute actively to the workshops and other events.

Results expected from the Caracas Congress include a large number of publications, an action plan, a declaration for the United Nations Conference on Environment and Development (UNCED), a set of recommendations and a protected areas investment portfolio.

Getting technical

The Congress will be a technical meeting which concentrates on how protected areas can better contribute to sustaining societies at local, national and international levels. It will seek to bring those concerned with professional management of protected areas together with a larger audience of potential supporters.

There will be three plenary sessions and four parallel symposia designed to involve this larger community, and 49 technical workshops – the core of the Congress.

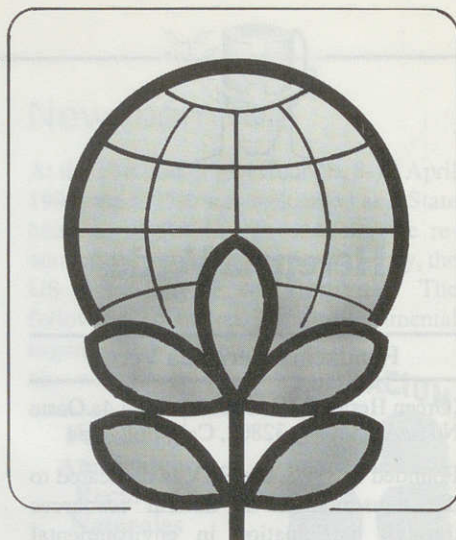
Four major themes will pervade the whole programme:

1. **How protected areas meet society's needs**, addressing the political, social, and economic issues.
2. **Protected areas in a changing world**, focused on ways that science can contribute more effectively to protected area management.
3. **Regional planning and protected areas**.
4. **The challenge within**, aimed at strengthening protected area management.

Sideshow

Training courses for senior protected area managers, NGO leaders, the media, and ecotourism operators will be provided during the Congress. They will be held in the evening, each addressing a relatively small audience on topics of particular concern to senior professionals involved with protected areas.

In addition to the formal sessions of the Congress, a series of parallel exhibits and events will be held. They will include demonstrations by manufacturers of recreational equipment, computers and computer software, radio equipment and solar cells; by ecotourism companies and



architectural and landscape design firms; evening cultural entertainment; an exhibit on National Parks and Protected Areas of the World by IUCN; on-line computer applications to protected area issues; a festival of films on protected areas and biological diversity; posters, displays, book exhibits, and videos.

The Congress will also offer field trips to several of the Venezuelan national parks and other protected areas, such as Henri Pittier, Guatopo, Laguna de Tacarigua, Morrocoy, El Avila, and Isla La Tortuga. The trips will be conducted by knowledgeable guides who will have the assistance and support of workshop coordinators, so that this on-site experience will be an extension of the Congress programme.

Helping hands

An international Steering Committee has been working on organizing and planning the Congress for well over a year, having held meetings in Caracas, Perth, Washington, Gland, and London. At the local level, strong support is being given by the Venezuelan Organizing Committee, headed by the *Ministerio del Ambiente y de los Recursos Naturales Renovables*.

Co-sponsors of this event include the governments of The Netherlands, Sweden, Canada, USA, Germany, Australia, and Spain, WWF, The MacArthur Foundation, The Nature Conservancy, FAO, the World Bank, UNEP, UNESCO, and many others. The Congress is seeking involvement and support from all parts of the IUCN Network.

PLEASE NOTE:

Participation in the Congress will be **by invitation only** from IUCN's Director General.

For more information please contact: Jeffrey A. McNeely, Secretary-General, or Héctor Ceballos-Lascuráin, Congress Coordinator, IVth World Congress on National Parks and Protected Areas, IUCN headquarters.



Kayapo with a medicinal plant from the Brazilian rainforest. The Congress is seeking participants from communities which depend on natural products.
Photo: WWF/Darrell A. Posey.

Awards for conservation

A number of leading figures in the IUCN family have been honoured for their contribution to world conservation.

The Tyler Prize, America's foremost environmental award, has been given to **Dr M.S. Swaminathan**, former President of IUCN, jointly with Dr C. Everett Koop, former U.S. Surgeon General.

The 1991 UNEP International Environment Prize has been jointly awarded to **Wolfgang Burhenne** and **Françoise Burhenne-Guilmin**.

The Goldman Environment Prize, often described as the Green Nobel Prize, has been awarded to IUCN Regional Councilor **Catherine Ceinwen Wallace** of New Zealand.

The John C. Phillips Medal, IUCN's own highest award, was formally presented on 12 July to **Professor Mohamed Kassas** at a ceremony at IUCN headquarters.

UNEP's Global 500

Fourteen individuals connected with IUCN and a member organization were on this year's UNEP Role of Honour for Environmental Achievement, known as the "Global 500" Awards. They are:

H.R.H. Prince Bernhard of The Netherlands; **Keith Frederick Corbett** (UK); **Malin Falkenmark** of Sweden's Natural Science Research Council; **Philip Martin Fearnside** of Brazil's National Institute for Research in the Amazon (INPA); **I.T. Frilov**, head of the Scientific Council on Philosophical and Social Problems of Science and Technology, USSR Academy of Science; **Parvez Hassan** who chairs the Commission on Environmental Law; **Donald James Henry** of WWF-Australia (an IUCN member) and President of the Australian Committee for IUCN; **Yolanda Kakabadse**, an IUCN Vice-President; **Geoffrey Palmer**, former Prime Minister and Minister for the Environment of the New Zealand Government; **Roger Payne** President of the Whale and Dolphin Conservation Society; **Nicholas Polunin** of the Foundation for Environment Conservation in Switzerland; **Jonathan Porritt** of Friends of the Earth (an IUCN member); **M. K. Ranjitsinh** of UNEP's regional office for Asia and the Pacific; **Sir Crispin Tickell**, President of the Royal Geographical Society (an IUCN member); and **The Malayan Nature Society** (an IUCN member).



Environmentalism vs conservation

After accepting the John C. Phillips Medal from Professor Pierre Goeldin (above), former IUCN President Mohamed Kassas directed some heartfelt remarks at the assembled IUCN staff members and friends:

"We have to recognize there is a distinction between the work of the environmentalist and the conservationist. Certainly this is true from the scientific standpoint. The environmental scientist and environmental manager are concerned with safeguarding natural resources and studying the functioning of environmental systems. The conservationist is concerned to safeguard the richness of nature. The two are closely related but not identical.

"Consider a tropical forest as an example. The environmental manager is concerned to protect it as a sink for atmospheric carbon dioxide, a regulator of the hydrological cycle, an influence on local climate, and a stabilizer of the soil. He or she is also concerned with it as a source of timber and perhaps other products. But the majority of these vital functions can be fulfilled just as well by a eucalyptus plantation as by an old-growth forest dominated by many hundreds of species. The main concern is total area protected and the plant cover.

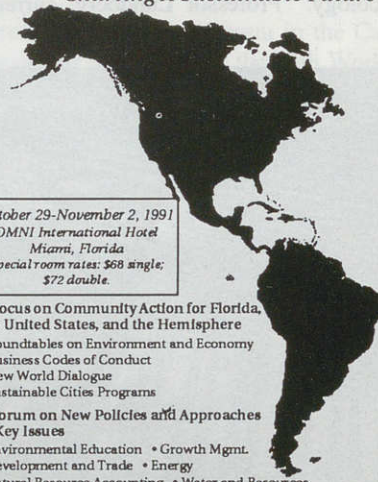
"For the conservationist it is quite different. The very richness of the natural forest is the attribute most to be prized and safeguarded. For the conservationist, all species merit respect regardless of their usefulness to humanity. The main concern is protecting sufficient area and biodiversity.

"Today's world has become increasingly dominated by the environmental manager. There are of course very good practical reasons for this. We must safeguard the world's environmental resources on which the future of humanity depends. But the conservationist has been, I think, too liable to submerge the distinctive identity of his or her viewpoint in the wider environmental cause. IUCN and WWF should be careful about this. They should stand up for conservation in the true sense, recognizing that this will only be achieved within action that protects the environment. That is the thought I want to leave you with this evening."

New Publications Catalogue

The new IUCN Publications Catalogue for 1990-1992 is now available. For a free copy, write to: IUCN Publications Unit, 181a Huntingdon Road, Cambridge, CB3 0DJ, UK.

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Commission on Ecology (COE)

Getting on the right track

The new Steering Committee of the Commission on Ecology, 1991-1993, met at the *Musée Océanographique* in Monaco on 19-20 June.

"The Committee agreed that IUCN must use the ecological expertise harnessed by the Commission in the major activities of its triennial programme," says Professor François Doumenge, COE Commission Chair. "This means that Commission members must work closely with Secretariat staff, particularly in the wetlands, forest conservation, marine and coastal conservation and global change programmes."

The Steering Committee reviewed Commission participation in forthcoming events, including the IVth World Congress on National Parks and Protected Areas. It also discussed COE participation in the review of the Biodiversity Strategy and Action Plan, and interagency collaboration on a new global synoptic vegetation classification system.

Appointments

The Council appointed **Hans Lundberg** as Deputy Chair of the Commission on Ecology. Professor Lundberg, currently

Environmental Secretary of the Royal Swedish Academy of Sciences, holds a doctorate in ecology from the University of Stockholm. A member of the IUCN Commission on Ecology since 1985, he is also President of the International Centre for Alpine Environments (ICALPE) and National Secretary of the International Geosphere Biosphere Programme (IGBP) and of the Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU).

Ghilleen Prance, Director of the Royal Botanic Gardens at Kew (UK), has agreed to serve as COE Vice-Chair for forests. His first task is to fulfil the General Assembly mandate of conducting an independent review of the Forest Conservation Programme, with the help of an evaluation team. **Tundi Agardy**, Conservation Scientist at WWF-US, is Commission Vice-Chair for Marine Conservation, and **Edward Maltby** of the Department of Geology at Exeter University (UK) is Vice-Chair for Wetlands. **Elaine Dickinson**, Programme Assistant for the Ecology Division, will be the Secretariat's principal link with the Commission.

COE and wetlands

A workshop on rehabilitation of *Melaleuca* forest in the Mekong Delta was held in An Giang Province, Vietnam (13-18 May), as a joint venture of the Provincial authorities, the University of Hanoi and IUCN. It was led by Peter Burbridge, Alastair Fraser, and Edward Maltby.

Dr Maltby reports: "Restoration of *Melaleuca* will play a vital role in the

improvement of the welfare of local communities in the delta – a remote region damaged by war and ill-advised agricultural operations which have led to abandonment of land on acid sulphate soils. The people desperately need products which the forest can provide on a sustainable basis – such as firewood, charcoal, timber and honey. *Melaleuca* plantations offer more than improvement in socio-economic conditions; they are probably the only means of utilizing these severely acidified and degraded lands."

Dr Maltby adds, "Following the workshop, IUCN will help the Vietnamese authorities to establish pilot projects which test the feasibility of rehabilitating *Melaleuca* in different soil and hydrological conditions. This will lay the basis for long-term investment by the aid community in this work over larger areas of the delta."

COE and global change

An international symposium on the impacts of climate change on ecosystems and species will be held on 2-6 December 1991 at the Euroase Congress Centre, Amersfoort, The Netherlands. The symposium is being organized by the IUCN Global Change Programme in collaboration with WWF International, the US Environmental Protection Agency (EPA), and the RIVM in the Netherlands. The objective is to identify key factors and processes governing responses to climate change; identify the possible directions and main features of ecosystem and species responses; and determine the maximum rates of change different ecosystems can withstand.

For further information, contact the COE Secretariat Office in Gland.

COE and marine conservation

The Pacific Science Congress met in Honolulu on 26 May-2 June. Nearly 500 people participated in workshops and sessions relevant to marine ecology and conservation, including a stimulating session on coral reefs and environmental change, and others on ecotourism and traditional marine tenure in Asia/Pacific environments.

The Environmental Department of the World Bank has asked for assistance in developing criteria by which to evaluate proposals for the marine component of the Global Environmental Facility. This effort will culminate in an October 1991 workshop involving members of the Commission on Ecology.

Following the IUCN conference held in Monaco in October 1990, COE is continuing to tackle the issue of Large Marine Ecosystem (LME) management by developing a project which will identify critical processes in a selected LME system.



Planting salt-tolerant trees may be the only way to restore severely acidified and degraded wetlands. Vietnam is showing the way (see page 24). Photo: Elizabeth Kempf.

Commission on Education and Communication (CEC)

Setting priorities

At the well-attended first Steering Committee of the reconstituted Commission, held in Nairobi, Kenya, in early June, three priority areas were identified for action in the coming year. These include projects on education and communication issues arising from *Caring for the Earth*, the follow-up to the World Conservation Strategy. The first of the Commission's monthly newsletters will detail the projects developed by the Committee.

The Parks and Protected Areas Congress in Caracas, Venezuela, next February will also be a priority. Commission Chair Partha Sarathy, Robert Beeton from Australia and Chris Maas Geesteranus from the Netherlands will lead workshops at the Congress.

The third priority area is the United Nations Conference on Environment and Development (UNCED) taking place in Brazil next June. The Commission plans to be involved in the NGO side of the Earth Summit.

The Steering Committee also pledged to further build the regional presence of the Commission, particularly in southern Europe, Central and South America and the Far East.

IUCN has begun interviewing candidates for the post of full-time Programme Coordinator. An officer will be on board by November.

Communicating

A Members' Guide and Newsletter are being produced for the reconstituted Commission. Joanna Boddens-Hosang, the acting Programme Coordinator, has gathered information which is now being printed for distribution.

Deputy Chair

Frits Hesselink of The Netherlands (right) has been appointed Deputy Chair of CEC. Currently Director of the Institute for Environment Education, he studied law and was for some years a secondary school teacher of social studies.



Above: Bing Lucas transmits a traditional Maori greeting from the Ngati Tuwharetoa tribe of New Zealand to Jim Thorsell. Photo: IUCN/Nikki Meith.

Right: bust of the Chief who deeded Tongariro to the people of New Zealand and the world. Photo: IUCN/Jim Thorsell.

Commission on National Parks and Protected Areas (CNPPA)

World Heritage: Tongariro the Taonga

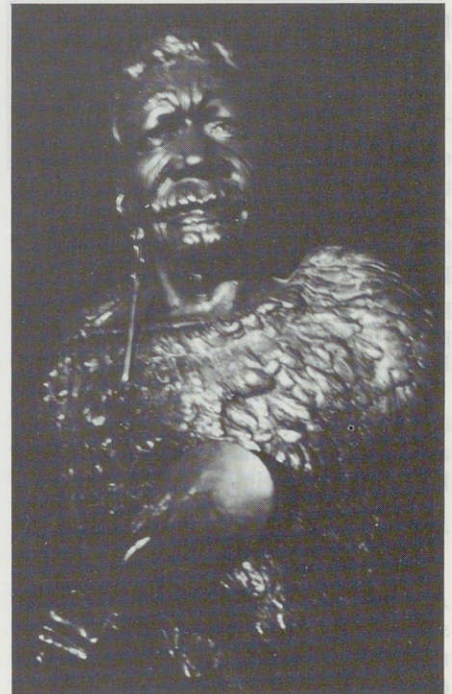
Tongariro National Park was the genesis of New Zealand's national park system when, in 1887, the nucleus of what is today a 76,500 ha park was given to the nation on behalf of his people by Te Heuheu Tukino, paramount chief of the Ngati Tuwharetoa Maori iwi (tribe).

The centennial of the gift, seen as a sacred trust, was honoured in 1987 with ceremonies in the shadow of Ruapehu, one of the park's volcanoes, in which the present leader of the iwi, Sir Hepi Te Heuheu, took part along with New Zealand's Governor-General, Prime Minister and Leader of the Opposition.

The New Zealand Government, with the blessing of Ngati Tuwharetoa, nominated Tongariro as a World Heritage site and the site was inscribed on the World Heritage list as "of outstanding universal value" in December 1990.

The inscription had its sequel at IUCN headquarters in Gland recently when CNPPA Chair P.H.C. (Bing) Lucas made a presentation at the request of Ngati Tuwharetoa to Jim Thorsell, IUCN's Senior Adviser, Natural Heritage, who had met iwi leaders when carrying out the field evaluation of the national park for the World Heritage Committee.

Tumu Te Heuheu, lineal descendant of the donor of the park and a member of the New Zealand Conservation Authority, had entrusted to Bing Lucas a pendant



carved in cattle bone in the traditional style of a fish hook which had been blessed on behalf of Ngati Tuwharetoa for presentation to Jim Thorsell.

Dr Thorsell said that he was touched by the gift because he appreciated the strong sense of stewardship the people of Ngati Tuwharetoa had for the national park as a taonga (treasure) of the people. "Now," he said, "Tongariro is identified as a taonga of the world community."

CNPPA in the Caribbean

Protected area management in the Caribbean was the subject of the 35th Working Session of CNPPA, which was ably hosted by the *Dirección Nacional de Parques* of the Dominican Republic, and held in Santo Domingo on 29 April-3 May 1991.

Commission Chair Bing Lucas was one of several IUCN representatives at the meeting. "We had 75 participants from the Caribbean islands sharing their experiences, presenting papers, participating in panels, and coming up with ideas about how the CNPPA network can best serve the needs of the region," he reports.

"Although the session couldn't decide everything at a single meeting, it needed to reach consensus on enough key issues to make it an effective preparatory meeting for the IVth World Congress on National Parks and Protected Areas next February. The session identified key people from the region to serve as workshop chairs and presenters, highlighted issues of particular concern to the Caribbean island countries, and outlined the main elements of the Caribbean regional overview."

Protected areas in Czechoslovakia

The first in a series of short working seminars organized by the Czechoslovak National Committee for IUCN was held on 25 April 1991 at the Slovak Nature Conservation School in Gbelany (Czechoslovakia). Entitled "International cooperation in protected areas and Czechoslovak participation in it," the seminar was organized by IUCN Regional Councillor Jan Cerovsky.

Fifty-five participants heard 12 papers and discussed how to develop the protected area systems of the Czech and Slovak Republics in their international context.

The role of science

A major task of the 1990s will be to bring scientists and managers together in the interest of protected areas, according to CNPPA Chair Emeritus Harold K. Eidsvik, who gave the keynote paper at the International Conference on Science and the Management of Protected Areas (Acadia University, Nova Scotia, 14-19 May 1991).

Some 220 protected area experts and scientists from 14 countries participated in plenary sessions, lectures and field trips aimed at strengthening the scientific base of protected area management. Jim Thorsell presented a paper giving CNPPA's guidelines for research in protected areas.

Proceedings published in September will provide background for the Caracas Congress (see page 6).

Deputy Chair

Adrian Phillips (below left), currently Director General of the UK Countryside Commission, has been the Deputy Chair of CNPPA since the 1988 General Assembly. A planner and a geographer by background, he has lectured and written widely on conservation topics, and has worked with the IUCN Secretariat in Switzerland and the United Nations Environment Programme in Nairobi. At the request of the Director General, he recently undertook a critical review of the Union's programme.



Filling chairs

Liberty Mhlanga of Zimbabwe (at left) has been named CESP Deputy Chair.

Dr Mhlanga is also a Regional Councillor for Africa and a Vice-President of the Union.



Hans Bibenreither, CNPPA Vice-Chair for Europe, looks out over Czechoslovakia's Sumava Protected Landscape. Photo: IUCN/Jim Thorsell.

Commission on Environmental Strategy and Planning (CESP)

The first 111

The Commission now has 111 members from 39 countries. In April, the Council approved 97 names; since then another 14 appointments have been made on an interim basis.

"This is only the first step in developing the Commission's membership," explains Commission Chair Ted Trzyna. "Over the next few months the Steering Committee is going to be recruiting key people from each country, all the major environmental NGOs and international agencies."

"Since our mandate cuts across many disciplines and professions, we don't have a ready-made constituency, but in some ways this gives us the advantage of relative freedom in building the strongest possible network of active and enthusiastic professionals."

Names are being entered into a CESP database, and a directory will be available later in 1991. A second round of nominations will be presented to the Council in November.

Chairs have been appointed to the four working groups of the Commission:

- Environmental Assessment and Resource Economics: **Rudolf S. de Groot**, Coordinator, Climate Change Research Centre, Agricultural University (Netherlands);

- Population and Resources: **Victor Morgan**, Executive Director of the Costa Rican Demographic Association;

- Strategies for Sustainability: **Robert Prescott-Allen**, conservation consultant (Canada);

- Tools for Sustainability: **Scott Slocombe**, Wilfrid Laurier University (Canada).

In addition, **William Y. Brown**, Director of Environmental Affairs, Waste Management, Inc., has been appointed Chair of the CESP Study Group on Business and Environment.

On the move

Chair Ted Trzyna has been devoting about half of his time to CESP, travelling from his base in California to meet Commission and IUCN members in the US, Central America and Europe for discussions on programme plans and project ideas.

In other news:

First steps were taken toward establishing a CESP Central American regional committee.

CESP produced its first newsletter. It invites members to send in their news and suggest candidates for membership.

The Commission has taken responsibility for several sessions at the Caracas Congress.

Plans are under way to form a Working Group on Environmental Impact Assessment.

Species Survival commission (SSC)

Kouprey survives!

Roger Cox reports that he is "convinced we have found an area in southern Laos which supports a small kouprey population."

The kouprey, or grey ox *Bos sauveli*, is one of the world's most threatened large mammal species. It is possible that only 100 animals still survive. "Current estimates of kouprey populations are crude because security problems make field surveys extremely difficult to carry out," explains Cox, a consultant for the Kouprey Conservation Trust and member of two SSC specialist groups.

Three previous surveys in Vietnam's Yok Don Nature Reserve found no convincing evidence of kouprey, so efforts shifted to the Lao People's Democratic Republic (Lao P.D.R.). In April and May 1991, Cox joined Sivannavong Sawathvong and Khamphay Louanglath of the Lao P.D.R. Department of Forestry and Environment in a survey for kouprey and other wild cattle in the southern provinces of Champassak and Attapeu. Their detailed report describes the physical characteristics, vegetation and human land-use patterns of the survey areas, as well as details of mammals recorded.

"We located fresh wild cattle tracks which resembled kouprey footprints more closely than the prints of either banteng or gaur," reports Cox. "Our guide recognized these tracks as belonging to a large adult male kouprey. Of course, since we did not actually see the animal, we cannot be 100% certain, but future surveys are quite likely to confirm our results."

Following up

"Action plans are at the core of the SSC's work," declares SSC Chair George Rabb. "Since 1986, SSC Specialist Groups have completed 16 and many more are in preparation. We now have to focus more on implementation," he says.

Representatives of the Fauna and Flora Preservation Society (FFPS) and SSC met in April to discuss how they could work together to implement the action plans. According to Mark Collins, Chair of the FFPS Conservation Committee, the FFPS sees its partnership with SSC working to promote Commission activities in a great many ways.

"The success of the Action Plan programme is going to depend on SSC work-

FAUNA & FLORA Preservation Society

Founded in 1903, the Fauna and Flora Preservation Society (FFPS) is the oldest international organization working in the conservation sphere, and has a long track record of field projects to save threatened species and their habitats. Its field activities include:

- the FFPS Conservation Programme, highlights of which are the Africa Programme (including the International Gorilla Conservation Programme) and preparation of SSC action plans;

- the Oryx 100% Fund, which has given money to over 200 projects in about 90 countries over the last 10 years; and

- the ICBP/FFPS Conservation Expedition Competition, which awards prizes to winners in four categories: tropical forests, wetlands, marine and islands, and threatened islands.

FFPS has been a member of IUCN since 1962.

ing more closely with partner organizations than in the past," said Simon Stuart, Head of IUCN's Species Survival Programme. "This meeting was a good start."

Deputy Chair

Arturo Gomez-Pompa (top photo below), Professor of Botany and Plant Sciences at the University of California, Riverside, has been elected Deputy Chair of SSC. Recognized internationally for his expertise in the conservation and management of tropical forests, Dr Gomez-Pompa has served as Chair of the Plant Advisory Group for IUCN and WWF. He recently co-edited a book, sponsored by UNESCO, on tropical forest regeneration and management. For SSC, he will guide the development of Action Plans for the conservation of threatened plants.

"The plant conservation side of SSC was considerably strengthened by Dr Gomez-Pompa's election," remarked SSC Chair George Rabb.



Commission on Environmental Law (CEL)

Convention progresses

Members of the IUCN Commission on Environmental Law and the Secretariat of the Environmental Law Centre have continued to contribute to the international negotiations for a new Convention on the Conservation of Biodiversity. They were among delegates from 76 countries at a ten-day negotiating session in Madrid (Spain) convened by the United Nations Environment Programme (UNEP).

Veit Koester, Director General of Denmark's National Forest and Nature Agency and an IUCN Regional Councillor, chaired a working group which dealt with substantively difficult articles on access to biological diversity or genetic material, transfer of technology, technical cooperation, financial needs and means, and funding mechanisms. "We agreed on six articles, and added two new ones," he reported.

Françoise Burhenne-Guilmin, Head of the IUCN Environmental Law Centre, who represents IUCN as an observer at the negotiating sessions and is a part of the Secretariat of the Negotiating Committee, commented: "It looks more hopeful that the Convention could be ready for signature in June at the United Nations Conference on Environment and Development. If so, it will be a feather in UNEP's cap and a tribute to the determination and hard work of the lawyers, scientists and environmentalists who are taking part."

Deputy Chair

Nicholas Robinson (lower photo), a Professor of Law at Pace University since 1978, is the new Deputy Chair of CEL. In 1965 he was named to the Legal Advisory Committee of the newly-created President's Council on Environmental Quality in the US. He currently chairs the Environmental Advisory Board to New York State Governor Mario Cuomo.

At Pace he established the largest programme in environmental law education of any university, and publishes the *Pace Environmental Law Review*. Dr Robinson also chairs the CEL Working Group on Environmental Impact Assessment. □



Conserving biodiversity in Central America

Several Central American NGOs and governmental organizations met in Costa Rica last June to examine the draft Strategy and Action Plan for the Conservation of Biodiversity, prepared as a joint venture by IUCN, UNEP and the World Resources Institute (WRI). The meeting was organized by the Costa Rican Biodiversity Institute (INBio), IUCN's Regional Office for Central America (ORCA) and WRI.

Some 25 participants, mainly from the tropics, also discussed how to initiate a process of consultation in their own countries and organizations, and named a Central American Commission for this purpose.

Representing IUCN at the meeting was Professor Vernon Heywood, Chief Scien-

tist for Plant Conservation, who gave an introductory overview on National Information Systems for Biological Diversity: a Taxonomy of Users. "It was highly appropriate that this workshop should be held at INBio," noted Dr Heywood. "Under its Director Dr Rodrigo Gamez, INBio has pioneered methods of handling the vast amount of biodiversity in tropical countries, including the training of people from local communities to become "parataxonomists", who now undertake many of the tasks of collecting and handling plants and animals that are usually the concern of skilled professionals."

Consultations on Caracas Congress

In June, ORCA organized a consultation in Honduras, Guatemala, Nicaragua and El Salvador to help prepare for the forthcoming Caracas Congress. "We invited representatives of the protected areas network in Central America, of national parks services, natural resource ministries, archeological institutes, tourism organizations, forestry services, private foundations, conservation associations, academic departments, and so on," said Juan Carlos Godoy of ORCA. "They were asked to identify subjects they wanted to discuss at the Congress, case studies to present, and follow-up mechanisms to propose to IUCN."



European Environment Ministers meet

A meeting at Dobris Castle, near Prague, on 21-23 June was attended by most of the Environment Ministers of Western, Central and Eastern Europe. The United States, invited as an observer, was represented by The Honourable W. Reilly, Administrator of the US Environmental Protection Agency (EPA). IUCN was invited specially by the host Minister, Josef Vavrousek, and represented by the Director General and by Jan Cerovsky, Vice-President, and Elizabeth Hopkins and Zbig Karpowicz of the Eastern European Programme Secretariat.

The meeting was positive and constructive, and the style of the new Europe was evident by the warm tone, free exchanges across old barriers, and active participation of the Baltic States, delegations from Moldavia, and several other Soviet Republics.

Addressing the Conference, Dr Holdgate recalled: "My organization, to which many of your States belong, has already undertaken detailed studies of the environmental needs and opportunities in central and eastern European countries. We have an active programme in those nations, and many active members in western Europe." The Director General pledged: "We stand ready to assist in the development of a continental environmental strategy. Within that process, we offer our particular expertise in ecology and nature conservation. We are eager to work with governments, NGOs and partner international organizations, particularly in the development of practical plans to safeguard the biological diversity and richness of our continent. I hope this need and opportunity can be reflected in the communiqué from this meeting."

The final communiqué committed the Ministers to the development of a European perspective in nature conservation, and IUCN has been identified as one of the organizations that the Commission of the European Communities and the Economic Commission for Europe will consult in preparing an overview of the state of the continent's environment. Switzerland will host the next Ministerial meeting and the Union will be invited to assist in preparations, particularly for action to conserve biodiversity. □



Biodiversity at its best: the Monteverde cloud forest of Costa Rica. Photo: WWF/Michèle Depraz.

There are great opportunities in this process for the World Conservation Union, with and through its members, to help create effective conservation throughout Europe," Dr Holdgate commented. "We have a strong membership in the continent. The need is there, the Ministers have created an excellent atmosphere. We must now move forward."

Water crisis looms

The management of water resources and natural aquatic systems will be one of the key problems facing humanity during the 21st Century, according to many experts – not because the earth lacks water, but because only a tiny fraction of it can be obtained economically using current techniques, and because water quality is deteriorating to the point where it is unfit for use, even by industry. This situation results in part from a fragmented approach to water resource management conceived without regard for the ecological characteristics of aquatic systems.

A workshop on "The ecosystem approach to water management" was held in Oslo, Norway, 27-31 May 1991, and organized by the United Nations Economic Commission for Europe (ECE). The workshop looked at work under way to improve water management giving more attention to the entire ecosystem – watersheds, underground rivers and aquifers. Participants, including government experts from 20 countries and representatives of the Ramsar Bureau, examined all aspects of the subject – ecological, institutional, legal, economic and financial. Their conclusions will constitute a contribution to the 1992 Rio Conference (UNCED).

Danube news

A second mission to the Danube Delta took place in May/June 1991, with the purpose of drawing up a long-term programme of international activities with the Danube Delta Biosphere Reserve authorities. The IUCN East European Programme, in co-operation with the Wetlands Programme, undertook the mission as part of the programme of activities agreed at the Second Steering Committee meeting for International Activities for Conservation of the Danube Delta.

The mission was joined by Jim Thorsell who was carrying out an evaluation for the World Heritage Committee, which will meet in December to consider the Danube Delta Biosphere Reserve, now a Ramsar site, for listing under the World Heritage Convention.



Children from a traditional whaling village in Indonesia beaching a pilot whale. Whaling by indigenous peoples and the status of small cetaceans were both major issues at this year's IWC meeting. Photo: WWF/Alain Compost.

Worries about Whaling

The Scientific Committee of the International Whaling Commission (IWC) met in Reykjavik, Iceland, on 7-20 May 1991, and the Commission itself then met on 28 May - 1 June. The most difficult tasks before the Committee were the completion of a Revised Management Procedure for whales and a global review of the impact of direct and incidental takes of small cetaceans.

A great deal turned on the first issue. Doubts about the adequacy of management procedures played a large part in the decision of IWC in 1982 to suspend commercial whaling. In 1991 the Scientific Committee reviewed five new alternatives, but decided that even the best (the so-called "C-procedure") needed further development to deal with the difficulties in defining whale stocks. When this issue came before the Commission itself, the C-procedure was adopted in principle, but the Scientific Committee was asked to continue its work for evaluation in 1992. Japan, Iceland and Norway voiced doubts about the new procedure, saying it was likely to lead to very low catch allocations, and Iceland said it would withdraw from the Convention after the 1992 meeting unless it was satisfied on this point.

It is clear that a serious debate lies ahead on whether enough is known to permit sustainable whaling – and whether this should happen, even if the scientific data indicates that it would be safe.

The IWC dealt with a number of other issues. The Scientific Committee concluded that current catching by indigenous people posed no threat to bowhead whale stocks. IWC rejected proposals to sanction the taking of minke whales in the north-east Atlantic and North Pacific or of fin whales in the north Atlantic.

More invertebrates!

Liechtenstein, with an area of 160 sq km, is one of Europe's smallest countries. Invertebrates are some of the smallest inhabitants of wetlands.

The link? The joint Berne and Ramsar seminar on "Conserving and managing wetlands for invertebrates" held in Vaduz, the capital of the Principality of Liechtenstein on 27-29 June 1991.

The Berne Convention, which covers European wildlife and natural habitats, maintains an expert group on invertebrates. The Ramsar Convention, which deals with wetlands worldwide especially (but by no means exclusively) as waterfowl habitat,

joined with Berne and the Liechtenstein conservation authorities (the Landesforstamt) to emphasize the importance of invertebrates in the wetland trophic web.

According to Ramsar's wetland assessor Mike Smart, "the seminar emphasized that invertebrates are a crucial link in the complicated food chain, whose well-being is an essential indicator of the health of a wetland. The seminar pointed out that a number of European invertebrates are endangered, that insufficient attention is paid to invertebrates and to training of invertebrate specialists, and that, if invertebrates disappear, the numerous other organisms which feed on invertebrates, fishes in particular, will disappear too."

WORLD ROUNDUP

Greek wetland centre

On 27 June 1991 the first meeting of the Advisory Committee of the Greek wetland centre was held at the Goulandris Museum in Athens. The centre, funded at the request of the Greek Government by the Commission of the European Communities, with a significant contribution from NGOs, especially WWF, will advise the Greek government on conservation matters, and in particular wetland matters.

As the seventh state to join the Ramsar Convention, Greece brought the Convention into force in 1975, and therefore plays a special role in its history. However the boundaries of the 11 wetlands designated by Greece at the time of accession (including such well-known sites as the Gulf of Amvrakikos, the Messolonghi lagoons and Lake Mikra Prespa) have never been clearly established, making it difficult to take conservation measures.

Stephanos Manos, the Greek Environment Minister, opened the meeting with a promise that one of his Ministry's highest priorities would be to define the boundaries of Greek wetlands – not only the 11 Ramsar sites, but 44 others identified by the 1989 Thessaloniki wetland seminar in its Wetland Action Plan for Greece.

Reintroducing plants

The problems of reintroducing plants into the wild as part of species recovery programmes are of increasing importance in conservation. A workshop to address these issues, and to consider the special role that botanic gardens play in them, was organized by the Botanic Gardens Conservation Secretariat (BGCS) in association with the SSC Reintroductions Group, and hosted by the *Jardin Botánico Viera y Clavijo*, Las Palmas de Gran Canaria on 9-11 April, with generous support from the Island Council.

The Director of the Garden, Dr David Bramwell, noted the vital importance of reintroductions in the conservation policy of the severely degraded habitats of the Canary Islands.

Other topics included the economics of reintroductions, technical problems, lessons to be learned from the forestry sector, reproductive and population biology, the role of seed banks and propagation techniques.

A report on the meeting was presented to an International Conference held at Kew, England, in September 1991, on the theme "From specimen to habitat management". A second workshop organized by BGCS with SSC and the Royal Botanic Gardens Kew will follow.



Training in wetland management

A major training effort is helping to strengthen the capacity of institutions in Guinea, Guinea-Bissau, Mali and Senegal to address wetland management issues.

With financial support from the Dutch Ministry of Foreign Affairs, the IUCN Wetlands Programme has recently organized two training courses for resource managers in the four countries.

The first training course was held at the Djoudj National Park in the Senegal delta (4-15 March 1991), organized in collaboration with Senegal's National Parks Service. The second was held in M'bour (Senegal) on 27-31 May 1991, in collaboration with the Ministry of Tourism and Environment. The Netherlands Ambassador to Senegal opened the course, which brought together 20 decision-makers and planners.

Both courses included lectures on ecological and management principles, field work including socio-economic studies in villages, the review of possible training manuals, and discussion of the context of future courses.

Building upon this experience, the Wetlands Programme is planning to organize three identical training courses per year over the next three years in West and Central Africa.

Centres of plant diversity workshop

Over 30 specialists in African botany participated in a Workshop on African Centres of Plant Diversity (CPD) during the XIIIth Congress of the *Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale* (AETFAT), one of a series of regional meetings convened by the IUCN Plants Project. This major international collaborative project is being undertaken with the financial support of WWF International, the Commission of the European Communities and the UK Overseas Development Administration, and aims to identify areas of plant species diversity and endemism which are of global significance for conservation. The result will be an IUCN-WWF publication to be called *Centres of Plant Diversity: A Guide and Strategy for their Conservation*.

The objectives of the Workshop in Malawi were to finalize the choice of sites to be included in the project for mainland Africa, to review a draft text of the Regional Overview chapter on Africa prepared by Dr Henk Beentje, and to review preliminary site data sheets.

After lively debate, participants short-listed 30 mainland African sites, out of a candidate list of more than 80, which will be treated in the CPD volume as detailed data sheets. Sites were rigorously selected on the basis that they contain in excess of 1,000 vascular plant species, of which at least 10% are "regional endemics" (i.e., restricted to one of the main phytogeographical regions of Africa).

For more information, contact Professor Vernon Heywood at the IUCN Plant Conservation Office, Descanso House, 199 Kew Road, Richmond, Surrey TW9 3BW, UK.



Training course participants in Djoudj National Park. Photo: IUCN/Jean-Yves Pirot.

Gambia case study completed

The Gambia is one of the smallest countries in Africa, with a high population density and fragile ecosystems. According to the latest of the Case Studies in Population and Natural Resources, it is also a country where "environmental conservation" and "population management" are high on the agenda.

The study was carried out in January and February 1991 by consultant Julia Dolly Joiner. She looked at the state of agricultural development and considered the Brefet Swamp Rehabilitation Project in some detail.

In an area where drought-induced salt intrusion was ruining the rice fields, this project uses simple techniques to block tidal intrusion and retain surface runoff. The report concludes that the project has brought environmental, economic, administrative and educational benefits to the affected village, largely because the villagers were involved at all stages.

Yet in spite of recovery of the rice fields and advances in natural resource conservation, family planning and health assistance were lagging behind.

In her report, Julia Joiner notes that "participation of local people in the design and implementation of their own projects creates a permanent infrastructure for future community action" and suggests that "environmental and population concerns could be addressed under the same project using the integrated approach to development."

Environment Ministers meet in Tunis

Environment Ministers and officials from some 40 francophone countries met in Tunis (22-23 April) to discuss the principles which will guide their cooperative activities over the next five years, and outline ways to promote environmentally sound development. The meeting was attended by representatives of IUCN and the Ramsar Bureau.

The Ministers issued a declaration setting out a series of fundamental principles – the need for preventive and precautionary measures, liability for environmental damage and resource use, and the "polluter-pays" principle. They incorporated these principles in an Action Plan which proposes the creation of national environmental action plans, reinforcement of rational management of natural resources, and instruction



Constructing a dike in The Gambia: often the simplest techniques can yield multiple benefits. Photo: IUCN/Julia Dolly Joiner.

in environment/development issues in schools and universities.

Participants from France, Canada and the Province of Quebec promised to help support the implementation of the plan.

For more information, contact: Agence de Coopération Culturelle et Technique, 13 quai André Citroën, 75015 Paris, France (tel. 331-44 37 32 50).

Linking disciplines in Southern Africa

Botswana's Vice-President and Minister for Local Government and Lands, the Hon. P. S. Mmusi, opened a regional wetlands conference held in Gaborone, 3-5 June. The meeting was convened by the Southern African Development Coordination Conference (SADCC) with the technical assistance of IUCN.

Some 60 participants from ten countries approved a report on wetland conservation in the region and adopted an Action Plan which linked the work of departments dealing with water management, fisheries, agriculture and wetland conservation. Both the report and draft Action Plan were prepared by IUCN consultant Harry Chabwela.

IUCN Wetlands Programme Coordinator Patrick Dugan described follow-up plans. "IUCN's role at this point is to help SADCC countries apply the action plan to the region's wetlands problems. We plan to convene a workshop for this purpose in Zimbabwe later this year. After that, SADCC will be in a position to promote the Action Plan to donors, with IUCN's technical assistance."



Forestry development in Sri Lanka

At the invitation of the Ministry of Lands, the Union recently initiated a project in Sri Lanka to introduce environmental management into forestry planning. For the five years of the project, IUCN will provide 150 working months of consultation services to the Forest Department (an IUCN government agency member).

The project is funded by the United Nations Development Programme (UNDP).

"This is the first major collaboration between a multilateral agency and IUCN," says Asia-Pacific Programme Assistant Chen Hin Keong. "Its purpose is to strengthen the institutional capacity of Sri Lanka's government agencies involved in the development of forest resources."

"The project has several aims," Chen continues. "It will establish an environmental management unit in the Forest Department, and prepare a three-year workplan for the Environmental Management Division (EMD). The project team will carry out a review of natural forest areas with a view to protecting selected sites, set up a computerized database for EMD, and prepare a training programme for EMD staff." □

SPECIAL REPORT

War, law and the environment

If truth is the first casualty of war, then the second must be, collectively, the millions of innocent human beings who are sacrificed yearly to the irrational ambitions of political and military leaders.

The third victim is nature itself; and with it the human environment on which war's survivors must depend for their recovery.

When the environment is made a direct target, war's senselessness reaches a new level, ensuring that everybody will suffer: the "victor" along with the victimized, neutral neighbours along with the belligerents, future generations along with today's children.

This special report shows how in modern conflicts, nature suffers increasingly from direct attack as well as "collateral" damage, and considers how the international community might respond.

A cruel history

Throughout history, people have fought one another for a better share of the environment. The long history of Europe, the Americas, Africa and Asia is one of people on the move, some impelled by famine and others by the quest for riches, seizing land from those who were there before them. Genocide often accompanied these invasions, even into our own times.

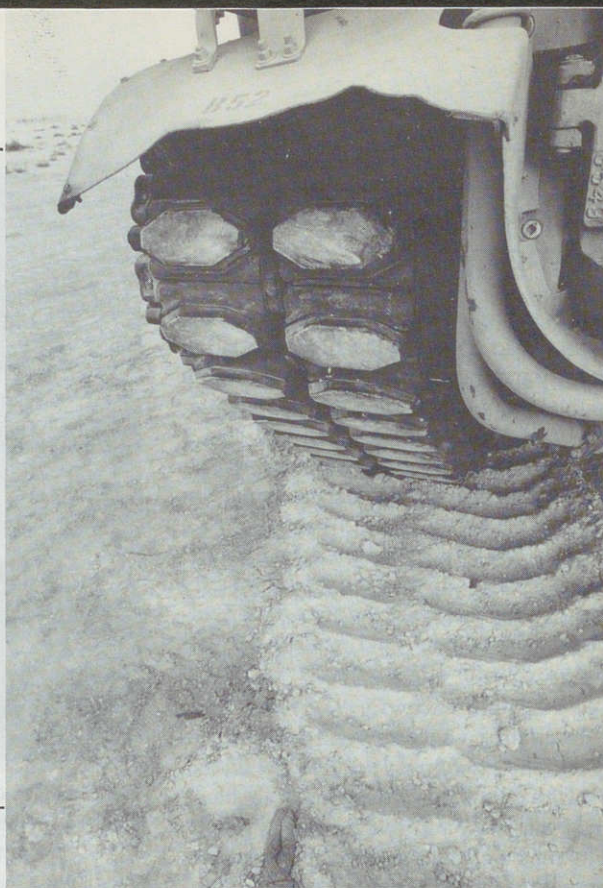
The whole world is divided between nations with recognized frontiers, and there are no empty lands left to settle. Yet the causes of migration remain, and some of the pressures are becoming more acute. Environmental stresses have demonstrated their capacity to provoke social breakdown, migration and war. Conversely, we have many demonstrations of how war brings social collapse, famine and migration. In 1991, the Gulf War and the events in the Horn of Africa brought these problems to the forefront of the world's attention and jarred the human conscience.

Land mines still remain in the Zambesi National Park of Zimbabwe, a reminder of the civil war. Photo: IUCN/Jim Thorsell.



There are four ways in which military activities impinge on the environment. First, preparations for defence or offence – especially training and weapons testing – withdraw land from other uses, sometimes for decades, and can have wider impact. Today, the health of all societies continues to be affected by long-lived radio-nuclides scattered by nuclear weapons testing in the atmosphere between 1945 and 1962.

Second, conflict itself brings direct damage to the environment. Scorched earth tactics were used in the American Civil War, and to harass Napoleon's and Hitler's forces in Russia. They have been used more recently in Vietnam, Afghanistan, Indo-China and Africa. The war over Kuwait brought damage from pollution of air and sea. The attendant social



"Collateral" damage: rich vegetation has been destroyed by the movement of troops and vehicles throughout the Gulf region of Saudi Arabia. Photo: WWF/Brent Occleshaw.

disruptions can all too easily spill across frontiers as displaced peoples seek a new place to live, and come into conflict with their neighbours.

Third, relics of past wars take an often unappreciated toll. In the North African desert, Vietnam, and many other areas forgotten unexploded mines continue to kill decades after the conflicts which led to their emplacement have ended. Much productive land cannot be used because of fears that it might contain explosives.

More profoundly still, war and the preparations for war siphon resources the world desperately needs for peaceful and sustainable development. The nuclear arsenals and expensive delivery systems built up by the superpowers over the past 45 years have not only been costly themselves, but will continue to impose costs: there is no absolutely safe way of storing or disposing of the nuclear materials of their warheads. The cost of armament – US\$ 900 billion a year at 1990 prices – is immense.

In *Caring for the Earth, A Strategy for Sustainable Living*, we calculate that if only 5% of the military expenditure in 1991 (rising to 18% in 2001), were redeployed, all the targets set for sustainability could be attained.

There is something of a taboo about discussing such matters in bodies like IUCN – doubtless because of their political sensitivity and because IUCN State members belong to almost all the world's major groups of nations. But should we – can we – shirk an issue so central to the prosperity of humanity and to our future on this planet?

This number of the *Bulletin* has been written in the belief that we cannot. It looks at examples of how war has impacted on the environment, and through it on society; it considers how international law has slowly grown in response; and it ends with some principles we urge nations to take seriously as they seek a sustainable future.

– Martin W. Holdgate
Director General, IUCN

I. Caught in the crossfire

It would be pointless (as well as intolerably depressing) to catalogue all the wars that have caused environmental destruction. This section gives a few examples, and a word is needed about how they were chosen.

We cover the war over Kuwait because it is most recent and led to enormous (and rather exaggerated) speculation about its environmental impact. A report on the Horn of Africa describes a different kind of conflict, long-running, with less publicized but no less devastating environmental stress.

A third illustration from Central America underlines the same point, and shows how the process of development can be undermined by strife. Both the Horn of Africa and Central America contain large tracts of naturally fertile land, whose production has been depressed by conflict. Famine, refugees and declining standards of living are all the direct consequences of human social decisions – often the decisions of minorities seeking their own ends regardless of the misery they cause.

IUCN's traditional areas of concern – such as protected areas – have suffered from these pressures, as the articles by Jim Thorsell and François Droz emphasize.

But there are grounds for hope. Devastated areas in Vietnam are recovering slowly, and IUCN is glad to be associated with Professor Vo Quy and his colleagues in helping this process. Frontier parks, established in Central America, are spreading to other areas as a demonstration of national desire for peaceful borders.

There are many lessons here. Those of the incredible waste of resources and hazard to sustainability that strife poses need no repetition. That we *can* restore devastation is also clear – but we should judge the cost against the progress that the affected areas could have achieved if the devastation had not taken place. Prevention is infinitely preferable to cure.

Disaster in the Gulf

Overt hostilities in the Gulf may be over, but the environmental price continues to be paid. The oil slick and smoke fires are yesterday's news, but they are real concerns for the people who still suffer their impact.

The consequences of the Gulf War may not present the global environmental catastrophe predicted by some in the media, but they are an unprecedented disaster for the afflicted countries. The region has been left with a serious environmental burden which it will have to bear for many years.

Even before the war, the Gulf was a highly disturbed ecosystem, partly for natural reasons (large temperature variations and high salinity), but primarily because of extensive coastal development and from the persistent release of oil and other toxic pollutants into a nearly closed sea.

No one knows how much more the Gulf can take.

Oil and water

How much oil was spilled? There is a great deal of uncertainty about losses and discharges from tankers and terminals and leaks from battle-damaged oil facilities, but MEPA (the Meteorology and Environment Protection Administration of Saudi Arabia) estimated that around six million barrels had been released as of mid-June 1991. This is more than any spill previously recorded.

As a result, thin slicks and sheen moved down the centre of the Gulf, where they are known to have reached some off-shore coral islands and the north-west coasts of Bahrain and Qatar. Heavy oil was washed ashore as a thick mousse along a 560 km stretch of Saudi coast, affecting salt marsh, mudflats and mangroves. As a result of the heavy oiling, desalination plants had to be protected by special booms.



Aerial photo of oiled salt marsh in Zwar Sulayq, Saudi Arabia, 16 March 1991.
Photo: Anthony Preen.

The slick has had significant impact on habitats in the intertidal zone, particularly in some areas along the Saudi Arabian coast. Salt marshes and mangroves are natural traps for oil, and recovery of these areas is likely to take several years or longer. Coastal assessments and clean-up operations along beaches are now under way and should help provide a clearer picture.

Total bird mortality is estimated at about 15-30,000, mainly offshore seabirds, although large numbers of migratory birds will also have died following contamination on passage. Dugongs have been sighted in the oil sheen, and a few turtles gathering off the region's nesting beaches have died. Localized fish mortality and oil-induced blemishes have been recorded, but the long-term effects on shrimp and fish productivity are unknown.

Another serious problem is posed by the surface oil lakes from gushing well-heads that are not burning. The largest of these is some 100 sq km in size and is beginning to flow towards the Gulf. While they are currently being held in check by sand barriers, the problem will escalate if the wells are not capped soon.

Oil and fire

Of the 1116 oil wells that were producing at the time of the Iraqi invasion of Kuwait, some 788 are thought to have been set on fire or otherwise damaged. Some fires have died naturally from water contamination of the oil reservoir, but most have been extinguished by professional fire-fighters.

The most environmentally damaging type of fire was the most common – the "dirty burns" producing dense black smoke caused by burnt carbon soot. The soot has been found in the snows of the Himalayas and in rain in southern Turkey and Oman, but the cloud cover is constantly shifting with the wind. Although it is unlikely that the soot cloud will have lasting impact on the wider Gulf Region, the land and sea area immediately beneath the cloud – and its human inhabitants – have suffered from a number of effects, including soot fallout, photochemical smog, acid rain, reduced solar radiation, lowered ambient temperature, disruption of agriculture and fisheries, soil contamination and chemical contamination of drinking water and food. The temperature of the headwaters of the Gulf has been about 2°C lower than the seasonal average, which could affect the marine productivity and coral growth.

The land itself has suffered from the war's physical assault, which has broken up the gravel and compacted sand surface of the desert, created vehicle ruts and tank tracks that could take decades to disappear, and compacted desert soils hampering the growth of vegetation.

Reconstruction

The most immediate steps to alleviate the environmental damage of the war to both Iraq and Kuwait were identified early on: control the oil fires, clean up the spill, assess the

contamination from bombing of weapons facilities, dispose safely of sewage, rubbish and toxic materials, and monitor water supplies. An impressive clean-up operation has been mounted through the Oil Spill Response Centre administered by MEPA, which is expanding as additional support comes in. IUCN, which undertook coastal surveys in collaboration with MEPA before the war, is repeating these surveys with WWF to assess the oil spill damage. UNEP, WWF, IUCN and other organizations have all joined together to make their expertise available to the Gulf States.

Longer-term reconstruction will require a regional approach, involving all the region's countries. This is being coordinated through the Gulf's Regional Organization for the Protection of the Marine Environment (ROPME). Its elements should include integrated environmental monitoring, coordinated regional water management, agricultural development through improved irrigation, and sustainable exploitation of the Gulf fisheries. An international Peace Park around the headwaters and north-west shore of the Gulf has been proposed as a symbol of the commitment of the war-weary states to rebuild their region.

– Robin Pellew
Director, WCMC

Gulf information

From the outbreak of hostilities in January 1991 through June 1991, the World Conservation Monitoring Centre (WCMC) produced a **Gulf War Environmental Information Service**, to provide facts on the war's ecological impacts on coastal, marine, terrestrial and atmospheric ecosystems. Today WCMC continues to provide information about the Gulf upon request, as part of its wider activity of monitoring the status and threats to global biological diversity. The most authoritative sources of information about continuing events are, for the oil slick: Oil Spill Operation Team, Meteorology and Environmental Protection Administration (MEPA), PO Box 1358, Jeddah 21431, Saudi Arabia. Tel: 966 2 651 2312, Fax: 966 2 651 1124; and for the Kuwait oil fires: The Kuwait Environmental Protection Council, PO Box 24395 (Safat), Kuwait 13104. Tel: 965 2 452 790, Fax: 965 2 421 993. Both agencies are IUCN members.

Fighting for survival in the Horn of Africa

Environmental degradation is a plague that upsets the traditional balance between people, their habitat and the socio-economic systems by which they live. Because environmental degradation disturbs a region's natural resource base, it promotes insecurity. Insecurity leads to strife. If allowed to degenerate, strife results in interclan feuding, cross-border raiding and military conflict.

Once established in a region, environmental degradation and insecurity continue to interact, swinging back and forth like a pendulum of destruction. A shrinking resource base breeds insecurity, while insecurity spreads conflict, and conflict causes environmental destruction.

Nowhere is this pattern more visible than in the environmentally fragile Horn of Africa. For the past 30 years, the Horn has been in a state of turmoil, devastated by drought and famine, and torn apart by civil war, uncontrolled banditry, and at least three regional conflicts, bringing death to millions.

As so often before in its lengthy recorded history, the Horn has reached a crossroads where events could tilt it toward peace and sustainable development, or into deeper turmoil, bloodshed and war. The environmental situation at present is so critical, and the region's natural resources so mismanaged, that in 1991 more than 20 million people – one in every four of the Horn's population – face starvation.

The IUCN's Sahel Programme is publishing a 200-page analysis of the problems of environmental degradation and

instability in the Horn. Entitled *Fighting for Survival – Insecurity, People and Environment in the Horn of Africa* – it will be the focus of an international workshop to be convened in the UK later this year.

The report marks a new departure for IUCN, whose Sahel Programme has been active in the region since 1988. "The reality of working in these countries is such that one cannot avoid looking at the link between a degrading environment and insecurity. And yet, virtually all existing relief and development work is carried out as if this reality did not exist. It is useless to address environmental problems without realizing why they came about. This report ties together the linkages between all the contributing factors, whether political or economic, cultural or environmental," explains Jip Ketel, the Sahel Programme's coordinator.

Fighting for Survival examines the situation in the three countries and one secessionist state most affected by environmental degradation and insecurity: Ethiopia, Somalia, Sudan and Eritrea. Each has its own set of problems, but the findings of researchers Bryan Spooner and Nigel Walsh demonstrate the common traits of environmental degrada-



In Ethiopia, a ravaged environment has been both a cause and a result of war. Photo: Mark Edwards/Still Pictures.

tion and insecurity that are so deeply etched against a background of mismanaged resources.

In Ethiopia, which has the largest population of the four countries, the drought of 1973/74 directly led to the overthrow of the emperor Haile Selassie and an intensification of the civil war in the north of the country. Seventeen years later, in the midst of a new famine, the northern insurgency ended with the overthrow of Mengistu Haile Mariam's government.

The report shows that in Ethiopia, periods of conflict and political instability invariably reached their greatest pitch during or following major droughts. For example, the report states: "In 1981 and 1982, the rains failed in Tigray and Wollo, leading to the 84/85 famine and the large refugee flows into Sudan. Over 10 million people were put at risk during this disaster and it may have killed as many as one million.

"The Dergue [the military junta led by Colonel Mengistu] chose this moment of chaos to intensify its military and political agenda. The most controversial policy was the resettlement programme initiated in 1984/85. It proposed to shift 1.5 million people from the drought areas of the north to more fertile valleys in the west and south. Using a combination of enticements and force, some 600,000 people were moved into areas where no prior settlement planning had been undertaken and where the settlers, nutritionally weak and suffering from the trauma of famine and fighting, had no immunization to lowland diseases of malaria, sleeping sickness and yellow fever. In 1985 the programme was halted by international protest. Some reports indicate that as many as 100,000 people perished from famine and disease during their relocation."

An eyewitness account of the suffering caused by the resettlement programme is given by Ato Gobena Balcha, at the time a second-year mathematics student at the University of Addis Ababa. The entire student roster was pressed into service during the summer of 1985 to build new villages

for the Government's attempt to resettle people from the major insurgency areas.

Gobena and his science faculty classmates were trucked to a site one hour's drive from Gambela, in Ilubabo province, 800 km west of the capital, and told to build houses for about 1,000 families that were being shifted to the area from the war-torn, densely populated northern highlands. None of the students had any carpentry experience.

"The land was flat savannah, with grass two metres high. There was a large variety of wildlife, including lions, elephants, buffalo, antelope and snakes up to six metres long. The temperature ranged from 42°C and 45°C and was very humid. The soil was sandy and local tribespeople told me that only once in every four years was there enough rainfall to grow crops. We had only one well; otherwise people had to walk 30 kilometres to find water," explained Gobena, whose father was a former director of the Ethiopian Wildlife Conservation Organization.

"The settlers were highland people and suffered from the heat. There was no real manpower among them. They were either very old or very young, mostly women with small children. Their men had been conscripted into the army or had joined one of the opposition movements. They had no livestock and no hand tools. The Government only supplied them with sacks of food," he said.

"As soon as the people came, the next day they wanted to leave. But soldiers with machine-guns forced them back. Most of them tried to leave. I don't know what happened to them. I heard some escaped into the jungle and became lost or were eaten by wild animals. Some of our students also died from dysentery; one went crazy."

In neighbouring Sudan, problems caused by environmental degradation are equally severe. Political and economic instability led to a civil war that in its latest phase has endured since 1983 and there is ethnic feuding in the west of the country, hardest hit by drought, with cross-border interference from Chad and Libya.

Four *coups d'etat* in Khartoum during the past 25 years have done nothing to alleviate the problems, which include a resurgence of slavery in southern Darfur province. But Sudan, if properly managed, could be the bread-basket of the region, supplying enough grain and cereals to feed all of the Horn's 80 million people. More recently, as both sides in the civil war have reached a military standoff, there is hope that interim negotiations could bring greater autonomy to the south.

In Somalia, clan disputes over grazing rights during times of drought, when rangelands become seriously degraded, have led to two wars with neighbouring Ethiopia, 21 years of ruthless dictatorship and, finally, a bitter civil war that plunged the country into total anarchy. But the expulsion of President Siad Barre earlier this year, and the declaration of a secessionist Somaliland Republic in the north, could open the door to a more rational dialogue, perhaps negotiations and eventually reconciliation between Somalia's warring clans.

The Sahel Programme's convening of an international workshop on the Horn of Africa comes at a time of hope and challenge. The meeting could lead to a breakthrough in ways of promoting sustainable development in the region.

Until now, governments have failed to take into account the important role environmental degradation plays in the region's insecurity. Little thought has been given to conservation and a more equitable allocation of the resource



Refugee camp in Ethiopia: one of the costs of conflict. Photo: Edward Girardet.

base as a means of defusing conflict, fighting famine and promoting greater security. This is the message contained in *Fighting for Survival*.

As the report points out: "Given peace and international cooperation, the Horn of Africa, with its rich and varied resource base, could emerge as one of the continent's major economic centres. As it is, unless international aid is

mobilized on a scale dwarfing anything previously known, one of the greatest human tragedies of this century may be in the making."

The report adds: "Little evidence exists to suggest that the resource base of the Horn cannot support its present population, or even a much greater population, given the right environment for production and resource allocation."

But the report offers no solutions. This is the task of the workshop participants, whose suggestions will be edited into a separate follow-up document. In concluding, *Fighting for Survival* states: "The costs of conflict have been high and the reconstruction of a viable society will be long and arduous. The basis for reconstruction can only come about

from a cooperative approach involving the people, their representatives in government and the international community."

— Robert A. Hutchison

Robert Hutchison is an investigative journalist and author.



War and environment in Central America

Apart from the brief "soccer war" between Honduras and El Salvador in 1969 (in reality much more a clash over land rights), Central America has not seen a formally declared war for several decades.

Nevertheless, the region has an estimated three million refugees, equivalent to roughly 10% of the population, according to refugee organizations. This shocking total has been produced by a series of ruthless internal wars between government forces and guerrilla movements that has been every bit as disastrous as traditional international conflicts for the local people and their environment.

These wars have had three main kinds of effect:

(1) Effects on the environment

This includes all the standard effects of warfare that spring to mind: deforestation and resulting erosion, the killing of wildlife, destruction of habitat, and the pollution of land and water by chemicals. In Central America, the damage is exacerbated by the vulnerability of the environment where much of the fighting has taken place. For example, the already endangered dry forests of El Salvador have been threatened by fires touched off by napalm and white phosphorus bombs used in the civil war.

(2) Effects on national policy

We can see the impact of war in national policy changes, blocking of conservation activities, a halt to outside-funded projects and a diversion of international donors' interest from social to military activities.

Often, internal hostilities have caused a dramatic redirection of a country's priorities and resources. For example, more than 40% of Nicaragua's national budget was reportedly allocated to defence during the contra war. When the national budget gives priority to security forces, this usually means a reduction in funds for such activities as

protected areas management, wildlife conservation, forest management and agricultural extension services. All this diminishes the State's ability to protect the environment.

Basic social services — health, education, communications and others — are invariably affected in the areas of conflict. Likewise, the tasks of conservation and management of natural resources cannot be carried out. Park wardens, extensionists and other conservation officers often become targets of one or the other side. Even in peaceful Costa Rica, access to protected areas in the northern region was restricted during Nicaragua's contra war (because the rebels were using the territory). This instability also affected tourism and foreign investment in Costa Rica.

Similarly, field projects and other conservation/development activities by private organizations (both national and international) usually come to a halt. A Swiss civil volunteer was ambushed and killed near Somotillo (northern Nicaragua) in the late 1980s. This incident, coupled with the killing of other Swiss workers, prompted the Swiss Government to set strict limits over the areas where its people could move.

International aid may be cancelled, reduced or deflected to military purposes. According to one report, US economic aid to Honduras remained steady at US\$40 million per year in the early 1980s, while military aid grew five-fold (to US\$140 million). During the civil war in El Salvador, military aid to that country grew exponentially while other types of aid lagged far behind.

(3) Effects on people

Leaving aside the obvious destruction of human lives and property, and the creation of large numbers of refugees, we can cite numerous examples from Central America's recent history where war's effects on people have increased degradation of the environment. Populations have been displaced from the highlands of Guatemala, the northern lowlands and parts of Petén, from almost all of El Salvador, and from areas affected by the contra war: south-eastern

Honduras, north and south-eastern Nicaragua, and (on a smaller scale) northern Costa Rica. The most popular destinations have been the bordering areas of Mexico and Costa Rica, the periphery of the region's major cities, and the remaining natural forests of the Caribbean basin.

These people are not counted as refugees unless they flee to other countries. But whether they are "displaced populations" or fully-fledged refugees, the result is a miserable life in the shantytowns around large cities, in refugee camps, or at the agricultural frontier where they may attempt to cultivate marginal lands. In each case their impact on natural resources, especially forests and wildlife, can be severe.

A time of recovery

Ironically, after the original period of destruction and emigration, the level of conflict in the original zone usually decreases significantly. This, linked to the loss of population, can stimulate a recovery of the natural resources – through the development of secondary forests, restoration of habitats and recovery of wildlife populations. In the Petén (Guatemala), the fight against insurgents resulted in a generalized emigration. The area remained almost uninhabited for many years. The forest ecosystems recovered visibly. The same happened in south-eastern Nicaragua, where people concentrated near Lake Nicaragua to keep away from the fighting. The result: deforestation ceased and degraded areas began to recover.

At such a cost in suffering and environmental destruction elsewhere, this is clearly not an acceptable method to rehabilitate ecosystems.

Back to normal?

The peace process that has reduced warfare in some parts of Central America has helped to promote dialogue between antagonists throughout the region. But for a conservationist, the end of war rarely means a return to "normal", for several reasons:

First, national priorities are hard to reorient. Security forces may not wish to revert to their previous status, with fewer personnel, less equipment and a smaller share of the national budget. Environmental service staff (park wardens and the like) may be reluctant to return to their posts, having found other jobs. The structure of basic services is often hard to restore in the conflict areas, and international assistance may be difficult to regain if donors have developed other priorities in the meantime.

For example, in Nicaragua, the general situation remains critical even years after the end of the war. There have been heavy cuts in military expenditure. But most of the savings

have been used to provide the health and social services once paid for by other governments (Cuba and the USSR).

Second, and more important, the refugees and displaced often face severe problems if they return, and may be persecuted as friends of the losing side. A large proportion may prefer to build new lives in their new homes.

Some examples:

- In the Petén and other areas of northern Guatemala peasants are returning from Mexico to find their lands now in the hands of others.

- Many Nicaraguans living in Costa Rica do not wish to go back but face growing pressure from the Costa Rican authorities (who have problems accommodating their own fast-growing population).

- In south-eastern Nicaragua, recently-declared protected areas (such the Indio Maíz Reserve and the Los Guatusos Wildlife Refuge) are in a chaotic situation: refugees returning from Costa Rica and from the shore of Lake Nicaragua are competing for land with ex-contras and army soldiers.

How we can help

Awareness of these problems will do little to prevent wars, but it can help to prevent some of their consequences.

- We can strengthen refugee organizations and encourage them to incorporate environmental considerations into their programmes. IUCN is taking some steps in this direction in Guatemala.

- We can help countries that receive people fleeing from war to plan ahead and settle refugees in a way that protects natural resources.

- Similarly, we can provide post-war support to countries so that they can resettle areas emptied by emigration, as IUCN is trying to do in the Petén and south-eastern Nicaragua.

– Alejandro Imbach

IUCN Coordinator for Latin America

A banana plantation in Costa Rica illustrates an agro-export model of development that "has been a greater cause of poverty, environmental destruction and loss of biodiversity" in Central America than war. Photo: WWF/Michael Major.



"War continues to have profound social and environmental impacts on the people of Central America. However, the agro-export model developed in recent decades has been a greater cause of poverty, environmental destruction and the loss of biodiversity in our region, even in areas free of conflict. Peace is not just the lack of confrontation. Peace will come when there are acceptable economic conditions for everyone. But under reigning development models, this can be attained only by exploiting all the remaining natural resources. When war ends, we face the hard work of restoring what has been destroyed by warfare, poverty and years of over-exploitation."

– Juan Carlos Godoy, Coordinator
IUCN Regional Programme for Biodiversity
and Protected Areas



Refugees trek the difficult route from Afghanistan to Pakistan (above), where they are crowded into camps (below), putting severe pressure on the land. Photos: Edward Girardet.



Afghan war refugees in Pakistan

As a result of the armed conflict in Afghanistan, refugees began to flow into Pakistan in 1978. At the beginning of 1990, UNHCR estimated that the country held 3.3 million Afghan refugees in more than 300 camps.

It is difficult to fairly assess the human dimensions of the problem when families are separated and most of the bread-winners are either at war or unemployed. Although the refugees have generally been treated sympathetically by their Pakistani kinsmen, tensions and conflicts are increasing as the influx is prolonged and as economic and environmental pressures multiply. The cost of caring for the refugees is estimated at US\$500 million per year, not counting the added military expenditure aimed at providing security. Some Pakistanis are beginning to resent the competition for jobs, declining agricultural productivity, rising prices for food and real estate, lowered wage scales, and inadequate compensation for land used as camps.

In the summer of 1980, one million lambs were born to the refugee's flocks, putting even more pressure on the sparsely vegetated grazing lands near the camps. The refugees have also deforested some areas for firewood. The 1982 report of the US Committee for Refugees suggests that denudation of these areas will be one of the most long-lasting impacts of the situation.

In such circumstances, everyone suffers. For the Pakistani people, the refugees represent a damaged environment and mounting social problems. For the Government, they represent a proportional drain on resources and services far greater than the 4% they add to the population. For the refugees, it means broken families, lost livelihoods, and shattered hopes.

— Ock-Kyung Kim
IUCN Social Sciences Division

Protected areas in the combat zone

Protected areas are not immune from the effect of liberation wars, political turbulence and civil strife. Periods of political instability and the breakdown of law and order have greatly affected many parks worldwide. In recent years, a number of protected areas around the world have been the scene of military disturbances.

For example, the Administrator and two Rangers of the Saslaya National Park in Nicaragua were kidnapped by the contras in 1983, forcing the national environment agency (IRENA) to abandon the management of the area. As a result of the recent Gulf conflict, two of Kuwait's proposed nature conservation areas, Al-Khiran Desert Park in the west and Jal al Zhor National Park along the escarpment on the north side of Kuwait Bay, have been seriously disturbed.

Other recent examples:

Manas Wildlife Sanctuary (India)

This area is critically threatened and is being suggested for the World Heritage in Danger list. The reserve is under the control of the Bodo resistance movement, whose supporters have burnt down buildings, destroyed bridges and looted most park facilities. A number of guards were killed. The remainder of the staff were evacuated in 1989. Rhinos, elephants, tigers and other wildlife have been poached. Many valuable trees have been removed and fish stocks in the Manas River depleted. WWF is undertaking a survey of the surrounding villages which may lead to a more cooperative approach in future. In the meantime, the Manas Wildlife Sanctuary has been seriously degraded.

Plitvice Lakes National Park (Yugoslavia)

This park has unfortunately been caught up in the civil unrest taking place in the Republic of Croatia. Park staff have abandoned the park after it was the scene of armed battles where several people were killed. Tanks are now present and some destruction of forests and facilities is occurring. Hunting of bears and dynamite fishing is also taking place in the absence of any control.

Wilpattu National Park (Sri Lanka)

Five years ago this park was the scene of an attack on its staff by Tamil rebels. Several were killed and facilities were looted and destroyed. Management was withdrawn and the army has since constructed a security road in the Park, but no conservation activities are being carried out and there are no reports on the status of wildlife populations in the park.

Simien National Park (Ethiopia)

In 1985 this World Heritage site was overrun during the civil strife that has raged over this region for more than a decade. The endangered Walia ibex population has certainly suffered and all park facilities have been reported destroyed.

Catastrophic impacts

The latter case is just one example from Africa, where entire park systems have been abandoned and looted, and rampant poaching and illegal occupation have ensued. In Mozambique and Angola the former magnificent park systems have been totally destroyed and many are littered with land mines that will make their restoration a long and dangerous process.

Wildlife Conservation International (an IUCN member) reports that in Ethiopia looting and destruction of facilities has forced the full-scale evacuation of staff from many of the country's wildlife conservation areas. Some of the worst-hit have been Abijatta-Shalla Lakes National Park, Yangudi Rassa National Park, and Senkelle Swayne's Hartebeest Sanctuary. Apparently the actions are not necessarily directed at the parks and sanctuaries, but result from a general breakdown in law and order.

The situation with the National Parks in Uganda is now improving, but in the period beginning with the military coup in 1971 these suffered catastrophic impacts. Millions were spent on restoration, only to have retreating armies eight years later lay waste once again to what was one of the finest park systems in East Africa. Only one of the previous National Parks is now under the control of the Uganda Parks Board. It is being rehabilitated.

As Walter Lusigi has observed, "Right across the (African) continent there are still vivid examples of military coups, border disputes, civil confrontations and internal political tensions. All these have affected the atmosphere in which most conservationists work and changed national priorities to favour heavy investments into military expenditure. National budgets have consequently shown only small allocations to conservation...."

Because of political uncertainty in some countries it has been difficult to make plans in the long term. As one director of wildlife conservation puts it, "you just never know what will happen tomorrow".

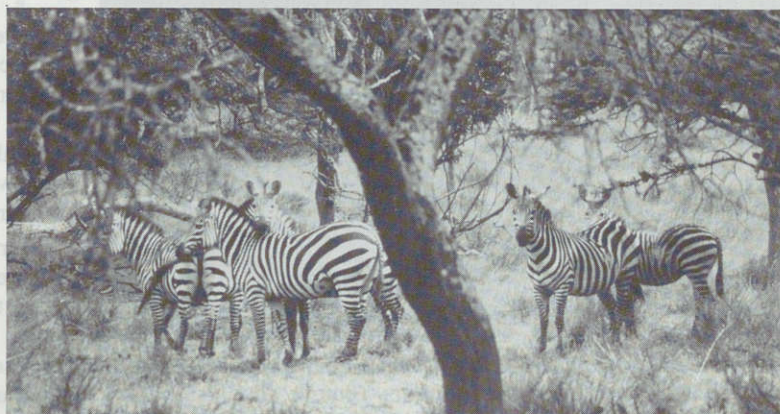
In the circumstances, it is quite possible that assistance or support earmarked for conservation finds its way into other unrelated activities. On the other hand, there can be a positive side. Some restricted areas that have been closed for military exercises have succeeded in protecting natural resources. Some examples are the Stanford Battle Area in the UK, the demilitarized zone between the two Koreas, the De Hoop Nature Reserve in South Africa and the Suffield Military Range in Alberta, Canada.

Many of the no-access/no-man's land zones along the old Iron Curtain are also now open. The conservation potential of this region has been reviewed and 27 areas have been identified as potential border peace parks. An NGO project, for which CNPPA is a co-sponsor, entitled "Ecological Bricks for our Common European Home" has been at the heart of this initiative.

IUCN has to accept that strife is a fact of life, and that national parks and reserves, because they are often islands of wild country in the midst of settlements, will be used as refuges by insurgents. It can help minimize such losses, first, by promoting sustainability in resource use, and the empowerment of local communities to manage their own environment, since both steps reduce stress and the risk of strife. It can work for the establishment of peace parks and urge that natural heritage areas, like cultural sites, are given special status under the international laws that seek to set standards for such warfare as the world cannot yet avoid (see box on Rwanda). Some of these issues will be addressed at the IVth World Congress on National Parks and Protected Areas in Caracas in February 1992.

— Jim Thorsell

IUCN Senior Adviser, Natural Heritage



Top left: the magnificent Plitvice National Park in Croatia, Yugoslavia, is reported to have been largely destroyed by warfare. Photo: IUCN/Nikki Meith.

Top right: a former tourist lodge in Murchison Falls National Park, Uganda, was looted and ransacked by guerillas during the civil war. Photo: IUCN/Jim Thorsell.

Middle: park facilities in Simien National Park, Ethiopia, have now been demolished. Photo: IUCN/Jim Thorsell.

Bottom: the zebra of Akagera National Park in Rwanda have become pawns in a war game. Photo: WWF/M. Bijleveld.

Politicizing parks in Rwanda

The Government of Rwanda has written to IUCN to inform IUCN about the degradation of two key protected areas — Akagera National Park and the Hunting Reserve of Mutara. They accused the *Front Patriotique Rwandais* (FPR) of participating in the systematic massacre of animals and in the destruction of habitats necessary for conservation of the country's most characteristic fauna — lions, leopards, buffalo, antelope, zebras, giraffes, rhinos and elephants.

The Government also spoke of the pillaging and destruction of facilities for tourists visiting the Park. They said that instead of understanding the importance of the country's natural reserves, the rebels considered maintenance of the parks to be unjust in light of the scarcity of arable land for the people, and that they intended to install refugees returning from Uganda in them. The Director of the Office for

SPECIAL REPORT

Tourism and National Parks asked that this news be printed in the *Bulletin* and elsewhere.

To get the other side of the story, IUCN contacted the FPR. They replied that they regret very much the human suffering, and that their mandate is to protect the environment and the richness of the parks. They denied responsibility for environmental damage, saying that the Government, together with French and Belgian troops, are carrying out large-scale bombing in the Parks.

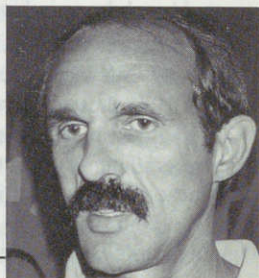
In a press release issued in Brussels on 18 February, the FPR also denied massacring animals and accused the Government of shooting indiscriminately in the Birunga forest, sanctuary of the last mountain gorillas, and of burning huge areas of forest in the Akagera Park in October 1990 in an attempt to locate the rebels. They reaffirmed their solemn pledge to assure the protection of fauna, and particularly gorillas.

Battle by press release

It is clear from this exchange that conservation is becoming a political issue in Rwanda, and is being used by both sides in the conflict. This is extremely dangerous as well as contrary to the spirit of international law.

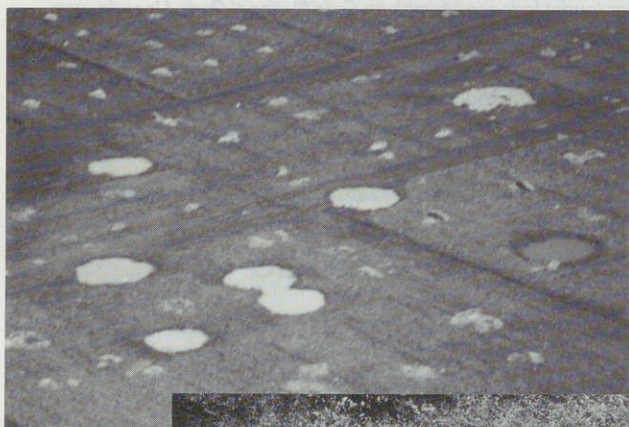
Both Akagera and Volcans National Parks are sites fully worthy of consideration for World Heritage status should Rwanda join that Convention. The solution we might foresee to this and similar situations is the declaration of all parks and reserves as zones of peace. It is forbidden to bomb the Eiffel Tower in Paris; belligerents should also agree not to bomb priceless natural sites.

— **François Droz**, Coordinator
IUCN Programme for Central
and Coastal Western Africa



Above: eastern sarus cranes are returning to the Mekong Delta. Photo: WWF/Sture Karlsson.

Below: a countryside pockmarked with bomb craters may take decades to recover, but one person's bomb crater is another's fishpond. Photos: Elizabeth Kemf.



Return to the good land

Nature is beginning to smile once again on the forests and floodplains of Vietnam. The sarus cranes, driven away during the Vietnam war by bombs, chemicals and napalm, have returned. The white-winged duck, the giant ibis, the white-shouldered ibis and the milky stork may also be coming back, to join the cormorants, egrets, pond herons and wild ducks who live here in the enormous wetlands of my country.

During the war, the resistance army established a base in the Plain of Reeds, which covers nearly 800,000 ha in the Mekong Delta. To force them out, the US army dug canals to drain the water from the plain. When the soil began to dry, sulphur rose to the surface producing sulphuric acid. The pH of the soil was lowered to 3.9 or less, and the residual water in the canals to around 2.8. People could no longer grow their crops or catch fish, and were forced to leave. Wildlife dependent on the wetland for food gradually disappeared.

Long before the war, many of the region's once-abundant forests of cajuput (*Melaleuca leucadendron*) had already been cleared for fuel and to make space for agriculture. US troops used toxic chemicals and napalm to defoliate the forests, destroying what was left of the cajuput. When the war was over, local people were determined to restore the Plain of Reeds to its former state. They dug canals to introduce fresh water, built 30 km of dikes around the Tram Chim Reserve to keep its water from draining into the canals in dry seasons, and planted cajuput on thousands of hectares of acidic soil.

Their work was slow, but successful. The trees are thriving even under the difficult conditions, and other plants as well as snakes, turtles and birds are gradually returning. Local people have fresh-water fish to eat once again.

The Tram Chim Reserve, which was established in the Plain of Reeds only four years ago for sarus cranes, is a monument to the enormous efforts of local people to restore their damaged wetlands. According to a Vietnamese saying, "birds only stay in good lands." The people of the Plain of Reeds have brought back their birds — they have made their peaceful land good once more.

— **Vo Quy**

Professor Vo Quy, one of Vietnam's most eminent ornithologists, is extremely active in the IUCN Species Survival Commission: he is a member of the Steering Committee, Chair of the Asian Wild Cattle Group, and member of the Cat Specialist Group. In 1988 he received the WWF Gold Medal.

II. The role of law

The Gulf War highlighted two problems which had been ignored for a long time: the destruction of the environment by modern warfare and the inadequacy of current laws and rules of war to deal with it. Calls are now coming from all sides for a new legal instrument – perhaps a fifth Geneva Convention.

In this section, Lothar Gündling of the Environmental Law Centre looks at existing laws, and Paul Fauteux considers their relevance to the Gulf War.

The state of international law

Those who are realistic when looking at human attitudes towards nature will not be astonished by the recent events in the Gulf. Even in times of peace, nature is called upon to accept all sorts of damage: how could one expect that in times of war, when collective reason has completely disappeared, respect for nature and the environment would prevail?

The problem of war and the environment has various dimensions. It is not only connected to atomic, biological or chemical weapons, with their clearly established capacity for massive and widespread damage to human beings and the environment. An enormous amount of damage to the environment may be brought about by relatively simple means: by the deliberate pollution of the ocean, by the burning of oil wells resulting in widespread poisoning of the atmosphere, or by the bombing of sensitive and hazardous installations such as chemical plants or nuclear reactors. Warfare is extended to targets which, by their very nature, implicate the environment, and modern society is particularly vulnerable to the effects.

Modifications and manipulations

Progress in science and technology has also made it possible to use the environment deliberately for military purposes; that is, to modify the environment for military purposes without actually damaging or destroying it. This "environmental warfare" may take a variety of forms. It is possible today to modify weather, climate and atmosphere, to generate clouds, fogs, rain and storms. It is also possible to manipulate the forces of the earth to generate earthquakes, volcanic eruptions, slides and avalanches. Since any technique to modify the environment may be misused for military objectives, it seems unavoidable that warfare should profit from scientific and technological progress.

What has been done so far?

Both the environmental consequences of war and environmental warfare are not entirely new subjects in international policy and international law. Various agreements deal with specific aspects of the problem. Other international instruments, such as the 1972 Stockholm Principles or the 1982 World Charter for Nature, address the problem in a more general manner.

There is no doubt that existing international law is not sufficient and that progressive development is needed. However, one should not overlook the fact that traps and ambiguities in the law are only part of the problem; equally



Kuwait's fires: a simple way to cause vast destruction. Photo: Michael McKinnon.

Relevant treaties

Several agreements deal with weapons of mass destruction and envisage some control over the development, proliferation and use of these weapons. For example:

- 1925 Geneva Protocol on Poisonous Gases;
- 1963 Nuclear Test Ban Treaty (provides only for a partial test ban);
- 1972 Convention on Bacteriological and Toxic Weapons.

These agreements were not specifically adopted for environmental reasons; however, since they contribute to the non-use of the respective weapons, they help protect the environment from massive destruction.

The following apply more directly to protecting the environment:

The 1977 Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (ENMOD) is a disarmament treaty, applicable in time of peace as well as war. It applies to "any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the earth". Parties undertake not to engage in military or any other hostile use of these techniques which have widespread, long-lasting or severe effects as a means of destruction.

The 1977 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) has two provisions that concern environmental protection. Article 35(3) states that "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." Article 55 contains a prohibition which is similar but linked to the health and survival of the population, as opposed to protection of the natural environment *per se*.

important is non-participation in the respective international agreements or non-compliance with the rules, even though accepted as binding.

Therefore, development of international law is a necessary step, but only a first one. The law has to be accepted and enforced by the states, particularly the most powerful.

In 1977 the first legal instrument concerning environmental warfare was adopted, known as ENMOD (see box). This treaty has been ratified by some 50 states.

Also in 1977, rules were adopted to control environmental consequences of warfare. The Protocol Additional to the 1949 Geneva Convention on the law of war – Protocol I, relating to international armed conflict – contains several rules applicable to environmental damage.

Although existing international law already provides for rules dealing with environmental consequences of warfare,



Lothar Gündling is Projects Coordinator at the IUCN Environmental Law Centre. He is responsible for the Environmental Law Services, a programme which provides legal and technical assistance to developing countries.

these rules are obviously very general. Major terms are not clearly defined; there are no specifications as to activities which are clearly prohibited. Therefore, existing law leaves much room for controversy as to what is prohibited and what is allowed. On the other hand, many states, particularly within NATO, had difficulty in joining Protocol I because they feared it could restrict the use of nuclear weapons. NATO does not want to abandon the option of using nuclear weapons. So Protocol I still lacks universal acceptance.

Where do we go from here?

There are gaps in existing international law which must be closed. ENMOD is a Convention with limited scope. It concerns the deliberate use of the environment for military purposes and, furthermore, relates only to techniques with "widespread, long-lasting or severe effects". There is a need for more specific provisions. The same applies to Protocol I. Its rules also need specification and, above all, universal acceptance.

Progressive development of existing law may take various forms. One option would be the improvement of existing instruments; the scope of their application may be enlarged, critical terms may be defined more precisely, specific activities may be prohibited. There are good reasons for taking this path; improvement of existing instruments is less time-consuming, and the degree of acceptance may be higher since existing frameworks may be used.

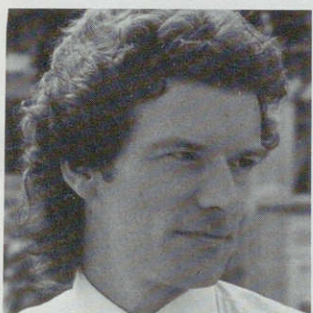
Another option would be the negotiation of a new Convention which may close the gaps in existing law or even provide for an integrated approach to the problems of war and the environment. The first of these alternatives would be easier, and probably more practical. A new and overall convention dealing with all aspects of the problem could be difficult to achieve, and there could be a risk that its provisions remain rather general codifying principles to which all states could agree anyway.

However, rules limiting environmental warfare or environmental damage resulting from warfare will be effective only if our attitude towards the environment changes. It is open to question whether we may hope for this as long as human beings resort to war. Respect for nature requires respect for life and, in times of war, life is devalued. The rationale of war is killing.

— Lothar Gündling

Environmental law and the Gulf War

On 21 January 1991, the US army accused Iraq of having deliberately caused a massive oil spill at the Sea Island terminal near Kuwait City. On 31 January the BBC reported a second voluntary oil spill at the Iraqi offshore terminal of Mina Al-Bakr. On 22 January US military sources stated that the Iraqi army had blown up oil wells and storage tanks at Al Wafrah in Kuwait. When the Emir of Kuwait returned from exile on 14 March, it was estimated that in the Burgan region alone 800 oil wells had been blown up and around 500 were still burning.



Paul Fauteux is First Secretary and Consul in the Canadian Embassy in France. He was responsible for environmental law from 1983 to 1985 and Head of the UN Human Rights, Peace and Security Section in 1987 and 1988 in the Legal Operations Division of the Department of External Affairs. The views expressed here are his own and do not necessarily reflect those of the Government of Canada.

Quantitative estimates of the oil spills varied widely but at least half of it evaporated in the first 10 days and the rest was broken down by the combined effects of climate and natural degradation. While 25,000 to 35,000 birds eventually died, fish, pearl oysters and shrimp seem to have escaped relatively unscathed. The absorptive capacity of the environment of the Gulf, one of the world's regions most heavily polluted by oil, substantially mitigated the damage caused by Saddam Hussein's attempt to use it as an instrument of war.

The oil fires, on the other hand, were and remain an ecological catastrophe of the first order of magnitude, probably the worst the world has ever seen since Tchernobyl. In early May the World Meteorological Organization estimated that 40,000 tonnes of sulphur dioxide, 3,000

tonnes of nitrogen, half a million tonnes of carbon dioxide and various other pollutants were emitted every day. Kuwait's sulphur emissions exceeded those of France, Germany and the United Kingdom combined. The annual rate of its fine particle emissions, around 18 million tonnes, was equal to or greater than global automobile exhaust emissions. In a year, the concentration of such particles in the atmosphere will have doubled.

Worldwide opinion was shocked by these deliberate attacks on the environment, and politicians reacted accordingly, often in legal or quasi-legal terms. President Bush denounced the first oil spill as an act of "environmental terrorism". OECD Environment Ministers called the second one a "crime against the Environment" and "a violation of international law". However, none of these statements specified which rule of international law had been violated. Was it a treaty rule or a customary one? Was it a rule taken from the law of peace or the law of war?

Environmental law

The obligation incumbent upon States to refrain from causing damage to the environment of other States or of areas outside the jurisdiction of any State (such as the high seas) is solidly grounded in traditional rules of international law. International judicial and arbitral decisions as well as State practice show that this obligation is recognized as a rule of customary international law.

In wartime, belligerent States remain subject to this obligation in their relations with non-belligerents. Relations between belligerents, however, are essentially governed by the international law of armed conflicts, also called humanitarian law. This is particularly true in respect of the environment, since the destruction of life and property is in the very nature of war. A certain degree of environmental damage being an unavoidable consequence of such destruction, it is the laws of war that determine when this particular type of damage ceases to be legally permissible.

Relevant treaties

Kuwait and a number of coalition countries are parties to the 1977 ENMOD Convention, but because Iraq is not, it did not apply to the Gulf war. Even if it had, it would not have been violated since an oil spill, even a deliberate one, is not an "environmental modification technique". Neither is the destruction of oil wells, refineries and storage tanks, since the extraction of oil is not a "natural process" and its "manipulation" by Iraq was not directed toward "changing the dynamics, composition or structure of the earth".

Iraq is not a party to the 1977 Protocol I and, contrary to some of its other provisions, it cannot be said of articles 35(3) and 55 that they codify pre-existing rules of customary international law binding on all States. Had it been a party, Iraq would not have violated the Protocol by spilling oil into the Gulf, since the resulting damage to the environment was not "widespread, long-term and severe". Conversely, the oil fires would have constituted such a violation because their effects meet the threshold of damage established by the Protocol.

Customary international law

Customary rules of the law of international armed conflicts, which came into being long before efforts were first made to codify them in the second half of the nineteenth century, coexist with treaty rules. The former apply both to belligerent practices not covered by the latter and to States which are not bound by them.

The rules of customary international law which have a bearing on Iraqi attacks against the environment in Kuwait can be summarized as follows:

- the purpose of military operations is the weakening of the enemy's military forces;
- there must be a direct link between a means of war and a military objective;
- belligerents do not have an unlimited right to choose the means of injuring the enemy;
- the destruction of enemy property is prohibited unless such destruction is imperatively demanded by the necessities of war.

These rules were included in the statute of the International Military Tribunal at Nuremberg and applied in its judgment of major German war criminals, rendered on 1 October 1946. In December of that year the United Nations General Assembly confirmed the principles recognized in the statute and judgement of the Tribunal, and entrusted their formulation to the International Law Commission (ILC). In 1950 the ILC submitted to the General Assembly a set of seven Principles of international law recognized in the statute of the Nuremberg Tribunal and in the judgement of that Tribunal. Principle VI lists the crimes which are punishable under international law: crimes against peace, war crimes and crimes against humanity. One of the war crimes it mentions is "devastation not justified by military necessity".

It has been said that the principle of necessity has been interpreted subjectively and that it has prevailed in practice over the principles of discrimination, proportionality and humanity which are the three other foundations of international humanitarian law. Nevertheless, the concept of military necessity is not infinitely extendible. Its limits were defined by the Nuremberg Tribunal in the Hostages Trial when it stated the following:

The destruction of property to be lawful must be imperatively demanded by the necessities of war. Destruction as an end in itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of enemy forces. (...) [Military necessity] does not admit the wanton destruction of a district (...).

No reasonable connection existed between the spilling of oil into the Gulf and the destruction of Kuwaiti oil facilities on the one hand and Iraq's desire to overcome coalition forces on the other. These acts were not "imperatively demanded by the necessities of war" but fell instead into the category of "wanton destruction", of "destruction as an end in itself" which military necessity does not allow and international law condemns.

Conclusion

The oil spills and fires created by Iraq in Kuwait are a violation of the prohibition of "devastation not justified by military necessity" within the meaning of the Nuremberg Principles. While this legal situation may be reassuring to those who thought that if such actions were not already prohibited by international law they clearly should be, it is not entirely satisfactory because of the weaknesses inherent in reliance on the norms of customary international law to uphold humanitarian principles. Such norms are formulated in general and abstract terms and are thus open to subjective interpretation and selective application. As a result they cannot provide sufficiently clear rules of conduct for political leaders and military commanders. Furthermore, their implementation is inhibited by a lack of procedural mechanisms, particularly with respect to authoritative determination of transgression and dispute settlement.

These weaknesses explain why efforts are currently oriented towards the possibility of developing additional treaty rules to better prevent and repress similar environmental aggressions in the future.

In May 1991 the Governing Council of UNEP adopted a resolution concerning the Effects of War on the Environment. A conference was held in London in June on a "Fifth Geneva Convention" on the Protection of the Environment in Time of Armed Conflict. Canada and the United Nations hosted a Conference of Experts on the Use of the Environment as a Tool of Conventional Warfare in July.

Whatever the results of these and similar initiatives, they are unlikely to call into question the environmental practices of coalition countries during the Gulf war, such as the destruction of Iraqi nuclear facilities. It is nonetheless obvious that Iraqi practices were much more harmful to the environment. If, as in previous "legislative moments" following the end of a war, it is possible to legally stigmatize only the practices of the losing side, that would already represent a substantial step forward for the protection of the environment in time of armed conflict.

– Paul Fauteux



Bullet-ridden temple in Cambodia: destruction of property must be "demanded by the necessities of war". Photo: Elizabeth Kempf.

III. The Way Ahead

In this section, several legal scholars and policy-makers comment on recent events and set out their ideas for future action by the international community, by States and by IUCN.

Not yet the end

The Gulf War has not ended, despite the United Nations cease-fire. A "continuing act of war", unlike any other the world has witnessed, prolongs the hell. When Iraq deliberately destroyed oil wells and oil production infrastructure, it initiated events of mass destruction afflicting both people and nature. No military cease-fire could contain these actions.

All armed conflict entails some "collateral damage", as when electrical generating facilities in Iraq were bombed, resulting in the loss of power to sewage treatment facilities and subsequent discharges of raw sewage into the Tigris River, or when a bomb hit the Sarafiya pumping station in Baghdad. Current law prohibits only the *deliberate* destruction of civilians and the environment during armed conflict.

What made the Gulf War unique, and terrifying, is the fact that Iraq attacked nature itself.

Since ecological concerns increasingly define our era, it should be evident to all that any recurrence of eco-warfare as it occurred in the Gulf War affronts the dictates of the world's public conscience.

Wars may continue, but nature must be safeguarded even amidst armed conflict.

– Nicholas A. Robinson, Deputy Chair
IUCN Commission on Environmental Law

Step carefully

It is clear that existing international law is not sufficient to protect the environment from the effects of war. But it is not yet clear what steps have to be taken to improve the situation, and for now we should not close doors on possible options. For the moment it is enough to say that more States need to ratify the existing legal instruments and that the gaps between the existing instruments must be filled. How this is to be accomplished is the next step which will take careful consideration on all sides.

– Wolfgang Burhenne, IUCN Legal Adviser

A common good

Up until now, solutions for the environment in time of war have been essentially reactive. Thus after the herbicides, the defoliants and the "daisy-cutter" bombs of Vietnam, the international community moved to prohibit such weapons.

The public conscience is increasingly becoming aware that our natural environment should no longer be seen as *res nullius*. On the contrary, future international law must be based on the concept of *res omnium*, that is, that the environment is a common good of the whole of humanity.

– Carlo Ripa di Meana
European Commissioner for the Environment



Vietnam's children are familiar with the environmental scars of war. Photo: Elizabeth Kempf.

A new legal instrument

The Gulf War was the last straw for the environment. We must now put in place a legal instrument to ensure that such destruction never happens again – a new Geneva Convention.

The Convention should contain the following basic principles:

1. The environment may not be used as a weapon.
2. Weapons aimed at the environment must be banned.
3. Indirect or unintended damage to the environment (such as river pollution resulting from bombing of sanitation facilities) must be forbidden.
4. Destruction of or damage to installations which may release dangerous radioactive or poisonous substances into the environment must be forbidden.
5. Nuclear, chemical and biological weapons must be banned.
6. Nature parks and reserves of special ecological importance must be strict demilitarized zones.

It is also time to explore the idea of a "Green Cross" – a new, impartial international organization, similar to the Red Cross and Red Crescent, to assess environmental damage resulting from war.

Governments must now put into international law what worldwide opinion is already seeking – much greater protection for the environment. Nations and their militaries must no longer be allowed to overrule any environmental concern they wish during armed conflict.

– Gerd Leipold



Gerd Leipold, a physical oceanographer, is head of Greenpeace International's project for a new Geneva Convention, and of its Nuclear Free Seas Programme.

Law protecting cultural heritage in wartime: a model?

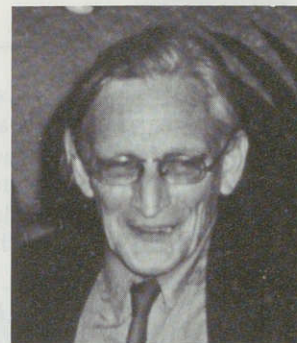
There are no international conventions providing for the protection of the natural heritage in wartime. Admittedly, article 6.3 of the World Heritage Convention requires all Parties to refrain from taking any deliberate measures which may damage, directly or indirectly, World Heritage Sites situated on the territory of other Parties. It should, therefore, apply to military operations. The extent to which this provision can be enforced is, of course, another matter.

A greater degree of protection would require a new convention setting out specific obligations and procedures. A Convention for the protection of cultural property in the event of armed conflict could be used as a model. The Convention was signed at The Hague on 14 May 1954 under the auspices of UNESCO. It generally provides that Parties must, in time of war, safeguard and respect cultural property within their own territory as well as on the territory of other Parties by refraining from any use of the property concerned which is likely to expose it to destruction or damage in the event of armed conflict, and by refraining from any act of hostility against such property. The Convention also provides, *inter alia*, that a limited number of centres con-

taining monuments of very great importance may be placed under special protection, provided they are situated away from important military objectives and are not used for military purposes. Special protection results from the entry of the property concerned in an International Register of Cultural Property under Special Protection which is maintained by UNESCO. As soon as a Party is engaged in an armed conflict, a Commissioner General for cultural property is appointed and accredited to that Party. The Commissioner has the right, with the agreement of the Party concerned, to make investigations. He may also make representations to the parties to the conflict and make reports to the Parties to the Convention.

The actual effectiveness of these otherwise promising provisions remains, however, to be seen.

— Cyril de Klemm



Cyril de Klemm has been a member of the IUCN Commission on Environmental Law since 1965. He is an International Governor and Founding Member of the International Council of Environmental Law, and Member of the French Society for Environmental Law, and winner of the Elisabeth Haub Environmental Law Prize of 1989.

A Red Cross Convention for the Environment?

Humanity has been slow in recognizing the need for special protection of the environment in time of war. By prohibiting wanton attacks on enemy property, the 1907 Hague Regulations concerning the laws and customs of war on land and the Fourth Geneva Convention relative to the protection of civilians in time of war of 12 August 1949 covered merely a few aspects of the issue. Only the 1977 Protocol I Additional to the Geneva Conventions focuses on the protection of the environment as such. Articles 35(3) and 55 of Protocol I enjoin belligerents to respect and protect the natural environment "against widespread, long-term and severe damage".

In international relations, it is probably wise policy to exploit existing law first, and to consider creating a new treaty only if those rules are obviously inadequate. Negotiating new international law is always a very time-consuming and cumbersome process, and having States ratify the final result is even more difficult. What then are the priorities of the day?

First, Protocol I with its new rules on the protection of the environment in war must be adopted by all States, since an international treaty is binding only on those States which are party to it. As of 30 June 1991, 103 States were bound by that treaty, including States from all five continents but not major powers such as the United Kingdom or the United States.

Second, the meaning and the potential of the new prohibition both require careful study. Articles 35(3) and 55 prohibit damage to the environment only if such damage is "widespread, long-term and severe". What does that mean? Obviously, in the context of the law of war, States have been reluctant to outlaw any damage to the environment, as warfare invariably affects the environment. Thus, a threshold was introduced into the provisions of Protocol I — "widespread, long-term and severe" — and this calls for careful interpretation. Such interpretation must take into

account not only the history of the relevant rules and recent experience regarding attacks on the environment but also the growing expectations of the world community with respect to its international protection.

Third, all those in charge of conducting military operations must be made aware of their obligations vis-à-vis the environment. In particular, military commanders must be familiar with the relevant international rules and they must give orders and instructions to ensure their observance.

In conclusion, existing international law of war affords the environment a certain degree of protection against the

Existing law forbids "widespread, long-term and severe damage" to the environment. This landscape in Vietnam was bombed, napalmed and defoliated more than 20 years ago. Photo: Elizabeth Kemf.





effects of warfare. That law must be accepted by all States; it must be known and respected. In addition, further studies must be undertaken with a view to finding both innovative and realistic approaches to ensure better protection of the environment in time of war.

— **Hans-Peter Gasser, Legal Adviser**
International Committee of the Red Cross

The opportunity for IUCN

Military activities both in peacetime and wartime may be the most serious worldwide polluter and consumer of natural resources. The environment suffers especially during times of armed conflict and the environmental impacts often have long-lasting, disastrous effects after the conflict itself has ended. Perhaps the only optimistic aspect of this issue is that recently people have started realizing that the current legal mechanisms for dealing with the effects of armed conflict on the environment are not sufficient.

It is the main strength of the IUCN system that it has an in-built institutional capacity to respond to the changing dynamics of the international system. It is also a strength that IUCN has a network of volunteers who are actively involved in those changes.

The IUCN Council has important decisions to make in its forthcoming November meeting about the role which IUCN will play in the ongoing debate on how to deal with the effects of war on the environment. The Commission on

Environmental Law awaits their decisions eagerly, for there is much to do in the field of environmental law and policy. The Commission, with its membership reaching all over the globe has a unique opportunity to chart remedies to the current situation.

As a first step, I believe there is a need to assess the ongoing activities in the law and policy field, to ascertain the state and effectiveness of the existing law, and thereby to determine where the gaps and problems in the current regime for dealing with the issue are.

I am seeking a mandate for the Commission to put together a group of experts which will work on a draft Covenant on Armed Conflicts and the Environment. I hope that the international community will learn from the recent Gulf tragedy and move in the direction of seeking to particularly preserve and protect natural resource bases during hostilities. This work could benefit from what has already been accomplished in respect of the saving of non-military sites (such as hospitals and places of worship) during armed conflicts under existing international conventions.

It is important that the group that undertakes this effort adequately represents all shades of opinion from the East and West, North and South. Time will prove, I am sure, that the Commission's recent work in the drafting of the Covenant on the Environment, and its plans to evolve a consensus on environmental obligations during armed conflicts, are epochal.

— **Parvez Hassan, Chair**
IUCN Commission on Environmental Law

Working for peace

Humanity is in a race against time, and the prize is our own future. This future may be nasty, brutish and short unless we can develop a sustainable way of life. War in the last decade of the 20th century, with its pitiless arsenal of chemical, biological and thermonuclear power, could bring the "end of nature" even faster than holes in the ozone layer or global warming. On a small scale, the local antagonisms that blaze into violence may never develop into open war,

but neither do they become a full-scale peace. These little local conflicts also mortgage our future for the sake of short-term advantage by destroying resources, social structures and confidence, and by consuming wealth and effort needed for development.

We know the principles by which we must live to create a sustainable future for all humanity; they are spelled out in *Caring for the Earth*, the successor to the 1980 World Conservation Strategy. These principles demand:

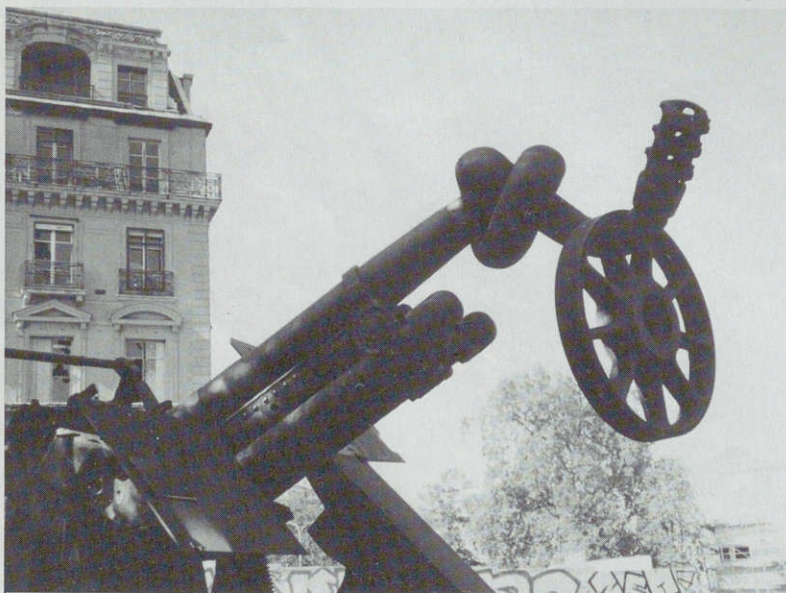
- an ethic of care for our planet;
- development that improves the quality of life;
- safeguards for the diversity and vitality of the Earth;
- lifestyles that keep us within the Earth's carrying capacity;
- help for individuals and communities to care for their environment;
- establishment of national frameworks to promote sustainable living; and
- creation of a global alliance to bind these actions together.

In implementing the principles of *Caring for the Earth*, we cannot evade the problems of war, whether from the standpoint of conservation, development or ethics.

Many IUCN members already work for peace. Several States are trying to advance disarmament. A few, like Costa Rica, have set an example by dispensing with an army. Some NGOs, such as Greenpeace, are energetic peace campaigners. We need now to draw the whole IUCN family behind an effort to prevent war and especially to protect the environment where conflict does tragically occur.

— **Martin W. Holdgate**
Director General, IUCN

The "peace cannon" in Geneva commemorates the 1983 United Nations Disarmament Conference. Photo: IUCN/Nikki Meith.

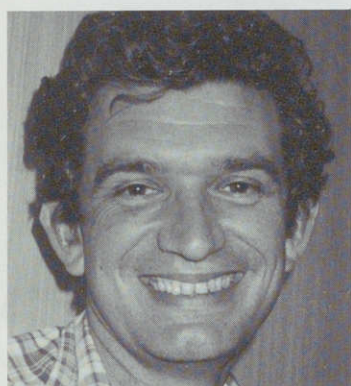




Joanna Boddens-Hosang joined IUCN on 1 June as Communications Assistant. Although a citizen of The Netherlands, she is a dedicated "globetrotter", having lived in Paris, New York, Santiago de Chile, Jakarta, and Nairobi. Joanna has a Master of Arts in Communications and Public Relations, and worked as a rapporteur at the 7th CITES Conference in Lausanne (1989). Her heart belongs to the African elephant, however, and she has just finished a research paper at the University of Leiden on elephant management and the future of the ivory trade.

Argentinian **Virgilio Cozzi** has joined the IUCN Regional Office for Central America (ORCA) as its Director. He has worked in the Central American region for nearly eight years, as consultant, adviser and teacher. Prior to joining ORCA, he held the post of training coordinator at CATIE, the Tropical Agricultural Centre for Research and Education in Costa Rica. He has worked closely with a number of regional organizations and networks dealing with science, agriculture, natural resources and development.

Dr Cozzi, who holds a degree in Education from the Buenos Aires University in Argentina, takes over from César Barrientos who has now gone to head the National Office for Guatemala.



Alejandro Carlos Imbach joined the Secretariat on 1 July as the Area Coordinator for Latin America. Born in Argentina in 1949, Alejandro received a University degree in Agronomy in the University of Buenos Aires in 1973. He worked as an agricultural extension agent for farmers cooperatives in Misiones (north-eastern Argentina) for ten years, and in 1984 was appointed Dean of the Forest Sciences Faculty of the University of Misiones, where he taught for eight years. After receiving a Master of Science degree in Natural Resources Management at CATIE (Costa Rica), he joined the new IUCN Central America Programme as its first Field Project Coordinator, based in Bocas del Toro, Panamá. In early 1989, Alejandro became the Senior Technical Officer at the regional office in San José (Costa Rica), working and travelling intensively in Central and South America.

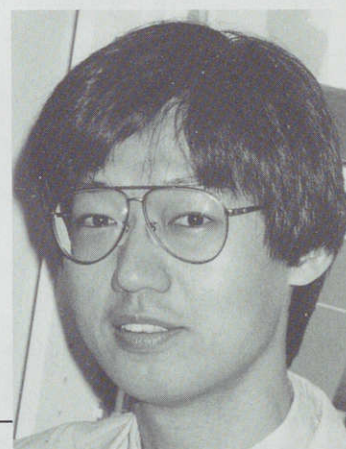
Job announcement

IUCN is looking for a **Senior Adviser for the National Planning Commission/IUCN National Conservation Strategy Implementation Programme** in Nepal. He or she will manage the programme, which is based in Kathmandu, and work closely with a wide range of government and non-government organizations under the direction of the National Planning Commission (NPC).

Candidates should be university graduates in natural resource management, preferably with postgraduate study, and have at least 10 years experience in conservation-oriented development and its practical application. Previous experience in Nepal and knowledge of the National Conservation Strategy process are especially advantageous.

The post will begin on the first of January 1992. Please apply in writing by 30 November 1991 to: Personnel Department, IUCN Headquarters.

Satoshi Kobayashi joined the Ramsar Bureau on 9 April as technical officer for promotion of the Ramsar Convention in Asia and for preparation of the next meeting of Contracting Parties to be held in Kushiro City, Japan, in 1993. He originally studied mammalian ecology and environmental entomology. Satoshi has been involved in the conservation movement in Japan, and participated in an Environmental Impact Assessment on road construction in Japan's national parks. Since 1984 he has studied wildlife conservation in Africa, and worked in Kenya, Tanzania and Liberia. He received a PhD in Environmental Science from Hokkaido University in 1991.



Corrections

The editor apologizes for an error on page 41 of the General Assembly *Bulletin*. The photo (shown again at left) is, of course, that of JoAnne DiSano, First Assistant Secretary, Environment and Conservation Policy Division of Australia's Department of the Arts, Sport, the Environment, Tourism and Territories (DASETT). JoAnne represented the Australian Government in plenary discussions, and tirelessly chaired the General Assembly Credentials Committee. We wrongly identified her as Robyn Graham of the Antarctic Division of DASETT, who participated in the Antarctic discussions.

The list of new State members of IUCN neglected to mention that Guatemala had joined the Union effective in November 1990.

The uncredited photos of Setsuko Yamazato on page 51 were contributed by Mark Edwards/Still Pictures. The names of Dr Akmal Hussain (page 15) and Lalanath De Silva (page 44) were misspelled, and on page 63, the name of the new World Heritage Site in Madagascar should read "Tsingy Bemaraha Nature Reserve".

CALENDAR

15 Nov	Berkeley (USA)	Environmental Symposium: "A Vision for the Future, Environmental Security in the next 100 Years" (Sierra Club/Stanford & Berkeley Universities)
16-19 Nov	Washington (USA)	International Forum on Global Change and the Human Prospect: Issues in Population, Science, Technology and Equity (Sigma Xi)
18-20 Nov	Agra (India)	Int. Workshop on Human Settlements for Sustainable Development (Indian Environmental Soc.)
18-19 Nov	Washington D.C. (USA)	1st Workshop of the CESP Study Group on Business and Environment (IUCN-Commission on Environmental Strategy and Planning)
18 Nov	Geneva (Switzerland)	14th Intersecretariat Meeting on Air Quality in Europe (WHO)
18-21 Nov	Lisbon (Portugal)	Pacem in Maribus XIX (International Ocean Institute)
19-22 Nov	Malta	Clean Seas '91: An International Exhibition and Conference on Marine Pollution Prevention and Control (Mediterranean Oilfield Services/Min. of Maritime Affairs)
19-21 Nov	Brazzaville (Congo)	Séminaire international relatifs aux problèmes de l'environnement en Afrique (Société Congolaise pour le Droit International)
19-21 Nov	Havana (Cuba)	1st International Meeting on Legal Protection of the Environment (Fiscalia Gen.de la Republica/Soc. Cubana de Ciencias Penales)
19-21 Nov	The Hague (Netherlands)	European Coastal Conservation Conference 1991 (Min. of Agriculture/EUDC)
20-24 Nov	Shanghai (China)	Asian Waterquai '91 (National Environmental Protection Agency)
24-29 Nov	Vienna (Austria)	International Conference on an Agenda of Science for Environment and Development into the 21st Century (ASCEND 21) (ICSU)
25-27 Nov	Lilongwe (Malawi)	Int. Conf. on the Conservation and Management of the Elephant in Southern Africa (SADCC)
27-28 Nov	Strasbourg (France)	Comité directeur pour la protection et la gestion de l'environnement et du milieu naturel (CDPE). Groupe de travail "Biodiversité et biosubsistance" (Council of Europe)
December	to be announced	Western Asian Regional Preparatory Meeting for UNCED
December	Bangkok (Thailand)	Asia and Pacific Regional Preparatory Meeting for UNCED
December	Addis Ababa (Ethiopia)	African Regional Preparatory Meeting for UNCED
2-5 Dec	Kampala (Uganda)	International Symposium on Human Influences on Endangered Wildlife Species in Africa (Uganda National Parks)
2-6 Dec	Amersfoort (Netherlands)	Meeting on Impact of Climate Change on Ecosystems and Species (IUCN-Global Change Progr.)
2-6 Dec	Strasbourg (France)	Meeting of the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Council of Europe)
4-11 Dec	New Orleans (USA)	Coastal Wetland Ecology and Management Symposium (Centre for Wetlands Resources)
8-14 Dec	New Delhi (India)	International Conference on Land-Water Interactions (School of Environmental Sciences, Jawaharlal Nehru University)
9-13 Dec	Hong Kong	3rd International POLMET Exhibition and Conference on Pollution in the Metropolitan and Urban Environment (International Exhibits)
9-13 Dec	Rome (Italy)	10th Session of the Committee on Forest Development in the Tropics (FAO)
12-14 Dec	Lausanne (Switzerland)	Colloque: "Humanisme - Cosmisme" (Université de Lausanne)
12-14 Dec	Milan (Italy)	Conference on "The State of the Environment in Europe: the scientists take stock of the situation" (Council of Europe/Foundation for Scientific Research)
13-16 Dec	Berkeley (USA)	Annual Meeting of International Society for Reef Studies (ISRS)
14-21 Dec	Karachi (Pakistan)	Waterfowl and Wetland Management Symposium (IWRB)
16-18 Dec	Brussels (Belgium)	International Conference on River Water Quality - Ecological Assessment and Control (Commission of European Communities)
17-20 Dec	La Villette (France)	International NGO Conference on Environment and Development (UNEP/UNCED)

1992

13-17 Jan	Canberra (Australia)	IUFRO Conference 1992: "Integrating Forest Management over Space and Time" (Dept. of Forestry, National University/ANUTECH)
19 Jan	Penang (Malaysia)	ASEAN Travel Forum: "Nature and Culture" (ASEAN Travel Agency)
19-26 Jan	Sevilla (Spain)	VIII General Assembly of the Scientific Committee on Problems of the Environment (SCOPE)
26-31 Jan	Dublin (Ireland)	International Conference on Water and the Environment (WMO)
27 Jan-1 Feb	Fortaleza (Brazil)	Internat. Conference on the Impacts of Climatic Variations and Sustainable Development (ICID)
28-30 Jan	Jaipur (India)	International Conference on Global Atmosphere Change (Indian Environmental Society)
February	New York (USA)	5th Session of International Negotiating Committee for Climate Change Convention
10-21 Feb	Caracas (Venezuela)	IVth World Congress on National Parks and Protected Areas (IUCN/UNEP)
24-28 Feb	Bozeman (USA)	9th International Conference on Research and Management of Bears (Int. Bear Assoc.)
March	Veracruz (Mexico)	Conf. on the Peopling of the Americas (International Union for the Scientific Study of Population)
March	(France)	Colloque sur l'Ours: Gestion et restauration des populations d'ours en Europe (Secretariat d'Etat chargé de l'Environnement)
2-13 Mar	Kyoto (Japan)	8th Meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
9 Mar-3 Apr	New York (USA)	Final meeting of UNCED Preparatory committee
16-20 Mar	Vancouver (Canada)	Globe '92 International Trade Fair and Conference on Sustainable Development (Globe '92)
22-29 Mar	San José (Costa Rica)	World Youth Preparatory Forum for UNCED
27 Mar-1 Apr	Charlotte (USA)	57th North American Wildlife and Natural Resources Conference (Wildlife Management Institute)