

Gearing up Management of Environment in Coastal Area

by Prof. A B M Enayet Hossain

A recent field trip (7th March to 12th March, 1993) to Mongla and its nearby forest ranges of the Sunderbans was organized by the Department of Botany, Jahangirnagar University. The excursion team, headed by Prof. A B M Enayet Hossain, Chairman of the department and President, GEBCOM (Germplasm Environment and Biodiversity Conservation Movement) also included two teachers (Dr Abu Khair, Associate Professor, and Md. Talim Hossain, Lecturer) and 3rd yr. (Hons) students. In the course of this botanical expedition, the excursion team was especially interested in the ecology of the region and management methods of natural forest resources in the world's biggest mangrove ecosystem, the Sunderbans.

As reported earlier through several news media, top-dying of Sundri, the dominant tree species of the Sunderbans was noticed everywhere, particularly in the older trees having spectacular gall (swellings) formation. However, the concentration here is only on ecological and environmental aspects of the region. At present, a common scene is the large-scale harvesting of shrimp fingerlings by innumerable number of fishermen or local people all along the coastal belt and the adjoining rivers, channels and rivulets. It was hosed from the forest

authority that these fishermen were permitted to catch shrimp fingerlings by setting bag nets or curtain nets (current nets) at the expense of nominal weekly (Tk. 3.00 per week per person) or monthly revenue. In the process of gathering shrimp fingerlings, a large number of other fish fingerlings belonging to different marine fishes (collectively known, locally as white fish) are also being caught in these nets. Most of these fingerlings are dumped in the shore or succumb to death in the process of handling and preserving the shrimp fingerlings in drums or aluminium containers. Such an act of indiscriminate killing of marine fish fingerlings is a prelude to serious depletion of the fish stocks in our coastal waters. Consequences are already apparent in the recent acute scarcity of various marine fishes in local and urban fish markets. As a sequel to shrimp culture and gathering of shrimp fingerlings from natural waters, vast areas of our southern coastal region along with their inhabitants are forced to experience an unusual ecological and environmental problem. The negative aspects of shrimp cultivation are as follows:

i) Increased soil salinity and water-logging, due to permanent retention of high-tide water flow in shrimp cultivation areas (popularly known as 'Ghers') or enclaves;

ii) Disruption of natural hydrological cycle for regular and interrupted inundation, followed by flooding of the region.

The immediate effects of uncontrolled collection of shrimp fingerlings and widespread shrimp cultivation in the coastal belt of Bangladesh can be summed up as follows: (i) drastic reduction in the yield of cereal crops (mainly rice) in the region, once known as the surplus area of the country; (ii) decreased production of cattleheads and milk output, owing to diminishing returns of cereal (as hay) and forage-grasses (due to lack of pasture grounds); (iii) decreasing yield of horticultural crops, particularly the palm fruits e.g. coconut, betel nut, palmyra palm etc. due to increased salinity level and water-logging; (iv) lower output of date palm juice and jaggery production owing to ill health and yellowing of the date palm trees (young trees are showing stunted growth); (v) large-scale yellow-

ing of leaves belonging to tree species, especially coconut, betel nut and date palm trees; (vi) loss of job opportunities

mals, fishes, reptiles, insects and plant species. To this ecosystem, a countless local people are intimately associated for their daily sustenance.

Further, this zone merits special attention owing to its unique ecological habitat and halophytic vegetation which is



Top-dying sundari trees

for the seasonal village wage-workers due to lower production of cereal crops; (vii) increasing rate of germplasm loss and genetic erosion of salt-tolerant, indigenous rice cultivars.

All these detrimental effects related to the present shrimp culture practices in the area, may sound to be too generalized in the absence of quantifiable data. But it is quite certain that over-exploitation of natural shrimp fingerlings will ultimately lead to a situation, comparable only with our frog and froglets export, in the foreseeable future! Further, it is also noticeable that only a few middlemen are being benefited from this shrimp culture practices. Some of these spurious businessmen received capital loans from commercial banks and other agencies during the last autocratic regime, but without investing any money for developing shrimp culture technologies.

However, as a counter argument, one can point to our foreign currency earnings by exporting shrimps to the affluent northern countries. We also do not want to deny the fact. Neither do we advocate banning of shrimp cultivation altogether! The huge coastal belt of Bangladesh along with its mangrove forests in the south-western zone is one of the world's richest biological reserves supporting innumerable number of birds, mam-

normally absent elsewhere in the country. In order to keep the ecosystem in balance and extract the biological resources for sustainable development, we have the following options: (i) restriction of shrimp culture only to those lands which are not cultivable and pasturable in the region; (ii) imposing a total ban on the collection of shrimp fingerlings from natural waters of the coastal rivers and channels; (iii) establishing a good number of artificial hatcheries in the shrimp culture zone in order to mitigate the demands of the 'Gher-owners,' (iv) identification of a common breeding ground for multifarious marine fishes and declaration of the located area as a fish sanctuary which should be protected by all means from netting activities (fishing only by hooks may be permitted, as is done in the Maldives).

If we follow these management strategies, we shall be able to avert a looming, long-term ecological and environmental catastrophe in the south-western region of Bangladesh and safeguard our marine fish stocks from immediate destruction. Our present banning of shrimp cultivation and the concerned authorities, like the Fisheries Directorate, Dept. of Forestry and the Ministry of Forests and Environment should immediately take this problem into serious consideration.



Indiscriminate shrimp fingerling catching

How the Climate Changes

by Patrick McCormick

IT'S perhaps a little-known fact that the earth was a warm, ice-free planet for most of its history. Six hundred million years ago, the earth's climate was much warmer than it is today. There were no ice caps and no glaciers on even the highest mountain ranges.

Since the end of the last ice-age, about 10,000 years ago, global surface temperatures have probably fluctuated by little more than one degree centigrade. So what is all this fuss now about climate change, global warming and the greenhouse effect?

According to experts, a real warming of between 0.3 and 0.6 degrees centigrade has taken place over the last century and the five warmest years on record were all in the 1980s. And the changes predicted to occur by about the middle of the next century from increases in greenhouse gas concentrations would make global mean temperatures higher than they have been for 150,000 years.

Mountain glaciers have been retreating since the end of the nineteenth century and the global sea level has risen over the same period by an average of one to two millimetres per year.

In a recent news report, the Royal Dutch Meteorological Institute said that a warming trend in the Dutch climate seemed to support the theory of global warming. Four of the past five years in the Netherlands have been the

scientifically unable as yet — to give out hard facts, but informed speculation, based on computer models, abounds. These climate models are only as good as our understanding of the processes which they describe, and this, as scientists acknowledge, is far from perfect. Scientists are, however, confident that the models can predict at least the broad scale of climate change.

Rene Gommez, an agronomist working at the Rome-based FAO, says: "There are still huge gaps in our knowledge of the causes and effects of a significant change in the world climate. Small-scale variations in climate are very important, as year-to-year changes control agricultural yields and may bring famine or plenty. Knowledge of the global mean warming and change in precipitation is of limited use in determining the impacts of climate change, for instance on agriculture. For this we need to know changes regionally and seasonally. We would like to be in a position to accurately predict the weather a season ahead; let alone in ten years time."

Accurate predictions aren't yet possible because scientists don't know all the effects of shifts in land and water areas, cloud movements, and the movements of polar ice sheets. We do know that clouds strongly influence the magnitude of climate change, that oceans influence the timing

this accelerated greening will have on the world's climate.

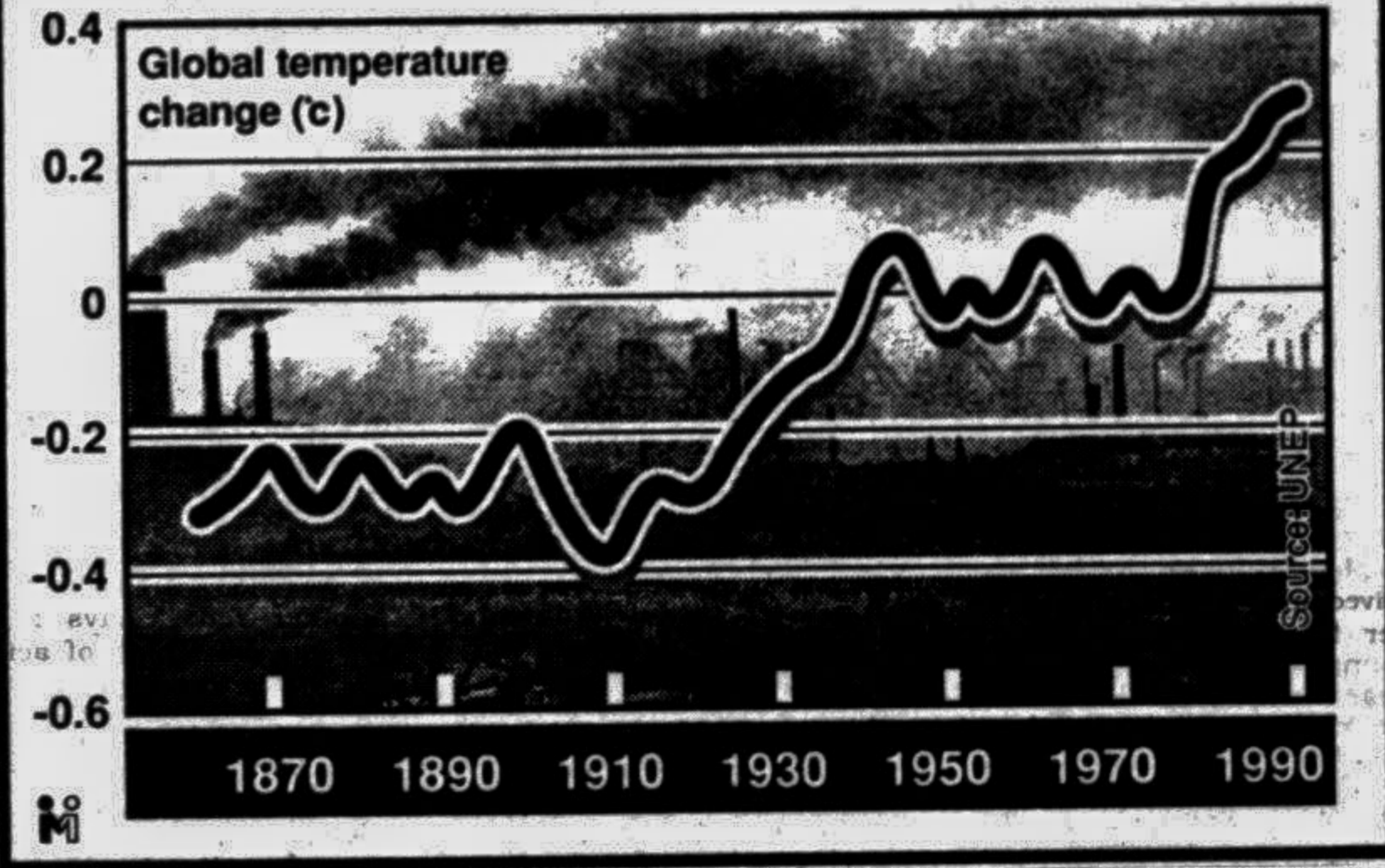
Experts contend that human activities are already changing the climate of the globe enough to cause a significant impact on the way we live. What they are now trying to determine is which parts of the globe will be affected if the warming trend continues, and in what way. According to FAO, there is good evidence to suggest that while global warming may have some beneficial effects on food production in certain zones, the negative effects will make themselves felt in the very areas of the globe where people are already struggling to survive. That, says FAO, would result in an even greater chasm between the world's rich and the world's poor.

A scenario based on predictions of an increase in global mean temperature during the next century of 0.3 degrees per decade, the most popular scenario with the scientists who call it "business as usual," would mean the following, regionally:

In North America, the warming would vary from two to four degrees in winter and two to three degrees in summer. Precipitation increases would range from 0 to 15 per cent in winter whereas there would be decreases of five to ten per cent in summer. Soil moisture would decrease in summer by 15 to 20 per cent.

In southern Asia, the warming would vary from one to two

How the world is warming



Can the Law Save Donana?

IN Andalusia, in the southernmost part of Spain, one last, unspoiled corner of pre-industrial Europe remains — it is Donana. A national park of 50,720ha, bordering the Atlantic, Donana is of such great natural beauty that UNESCO (the United Nations Educational, Scientific and Cultural Organization) has made it a World Heritage Site, and included it in the international network of biosphere reserves. It was concerned for the park's future which inspired the founders of WWF to start the Fund, and the park is renowned both in Spain and abroad for its extraordinary variety of fauna species.

This exceptional richness is due to Donana's geographical situation, between the Atlantic and Mediterranean, and close to the continent of Africa. Donana in the Guadalquivir Delta, is the most important wetland in Spain, and a major RAMSAR site (Convention on Wetlands of International Importance). The park is also a vital — and unique — refuelling and resting site for 80 per cent of the birds which migrate between Africa and Europe.

Only recently Donana was seriously threatened by a development project. Prestige hotels, luxurious houses and two golf courses on the sand dunes: the Swiss developer promised all this to his financial backers for \$1600M (nearly US\$40M), with construction starting immediately, guarantees from the Spanish Government and 48 per cent interest annually on the investment. That was at the beginning of 1988. Since then, the project has not progressed beyond the planning stage and no authorization to start building is in prospect. This is due to massive opposition to the scheme.

The whole scientific community is against the project, as are both Spanish and European environmental organizations.

Many eminent Spanish politicians and officials have condemned the project, such as Ignacio Fucjo, General Secretary for Tourism, and Domingo Ferreiro, General Secretary for the Environment. "This is not the sort of project Spain needs," says Enrique Baron, President of the

European Parliament till June 1991. And Mayor Zaragoza, Director-General of UNESCO feels that "Spain has a moral duty to protect Donana."

The European Community, alerted to the situation, has intervened. "We cannot shut our eyes to the catastrophe of Donana," says Carlo Ripa de Meana, EC Commissioner for the Environment.

This positive development is due to the activities of environmental groups. Their firm intervention has been decisive in stopping the 'concerting' of Donana. In order to ensure this success, the ecologists made particular use of the legal system, for the simple reason that the development project — highly speculative in itself — scorned laws and regulations in force.

Revealing that to the authorities was to expose the Achilles' heel of the developer, to the benefit of Donana's threatened treasures.

With the law against it, the Donana urbanization project lurched from one obstacle to the next. The Swiss promoter 'sold' 32,000 beds and two golf courses, all on 65ha of untouched beaches, but the law only allowed 20. That was the first defeat for the 'concreters.'

The second defeat concerned water — a vital resource in this obscure, sandy corner of Europe. The developer wanted to pump water directly from the ground water which nourishes Donana. That was forbidden by the local government.

The third 'front' in this legal battle began in Geneva, home of the developer, where a writ was issued against him on behalf of the Sociedad Espanola de Ornitologia (Spanish Ornithological Society) and Agaden, an environmental group from southern Spain.

The promoter was accused of knowingly making false promises to his investors spread throughout Switzerland, Germany and Austria. INTERPOL began investigations, and the developer and his friends fought back with a series of counter-indictments against the Swiss lawyer of the plaintiffs — without success.

Saying he had been unjustly

by Jean-Pierre Egger

attacked, the developer brought an action against the ecologists, asking the courts to silence them — in vain. He lost his case and was ordered to pay costs.

Encouraged by this, more and more people spoke out against the scheme. The Swiss society of hotliers and tour-operators called its members to boycott the project — something unheard of. The Swiss-German association of owners

of property abroad stood up for the ecologists, warning against the project, which they described as "speculative and dishonest."

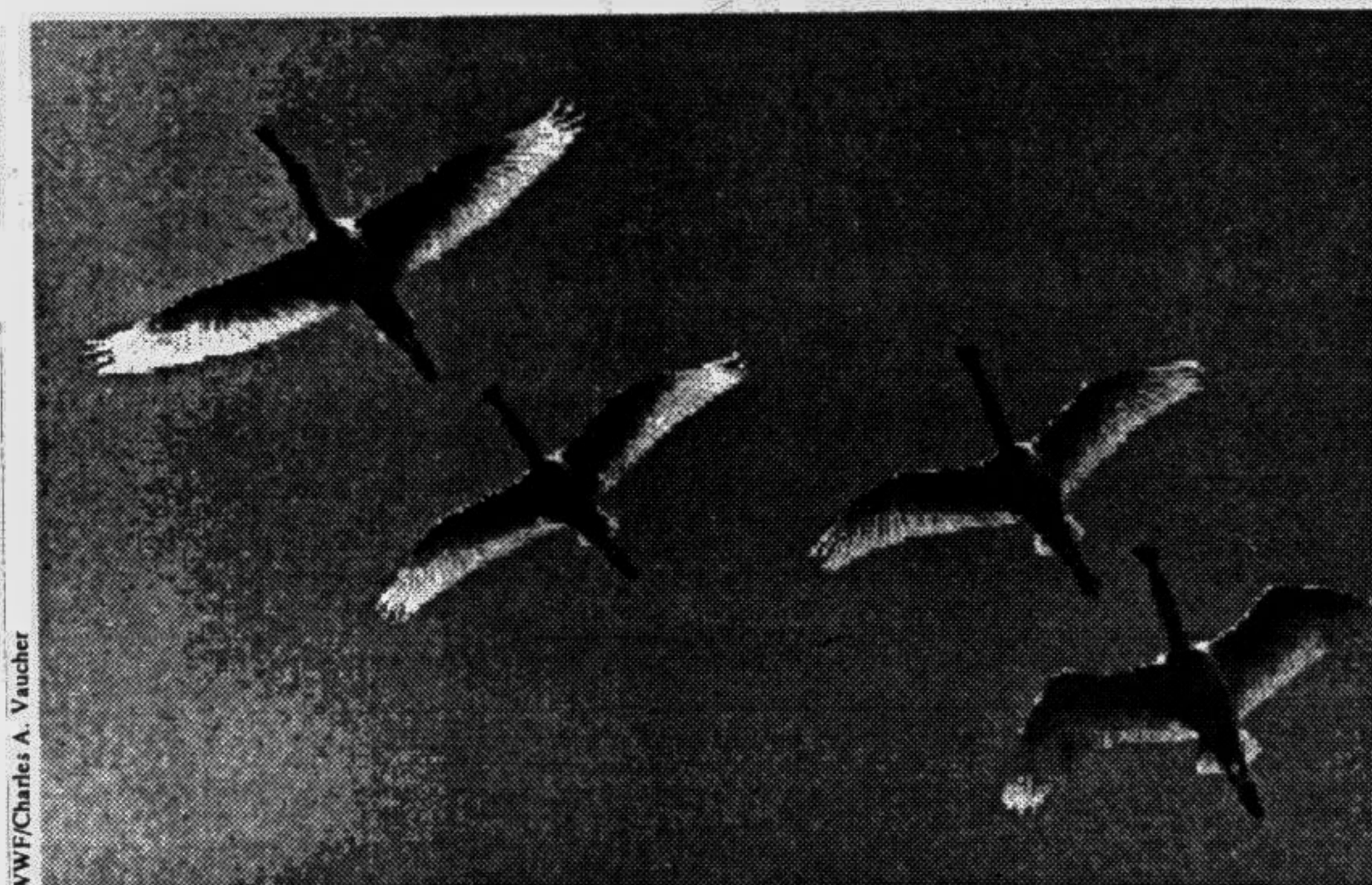
And the Royal Society for the Protection of Birds (RSPB) in the UK expressed its alarm, and began collecting funds for Donana.

Donana then caught the attention of the media. The major European newspapers devoted reports and articles to Donana; German television

went there on location; and it was featured on the cover of TIME-International in August, 1990.

Impressed, the Andalusian authorities vetoed the project, and later, the Vice-President of the Spanish Government resigned from his post as President of Donana National Park.

Paralysed by the Spanish authorities, the project has now come to a complete standstill for the moment, but the ecologists remain vigilant.



Spoonbills are just one of the species which can be found in Spain's Donana National Park, a vital resting site for thousands of migrating birds on their journeys between Africa and Europe.

ON cold mornings, mist hovers on the plains of rugged Calauit island in southwestern Philippines, a ghostly backdrop to zebra and Calamian deer grazing on grass still wet with dew.

But the serene landscape masks the tension and conflict that threaten the survival of this unique nature reserve.

Controversy has hounded Calauit, a 3,700-hectare island in the northern tip of Palawan Province, since former President Ferdinand Marcos declared it a sanctuary for eight exotic species, including zebra and giraffe shipped from Africa in 1976.

Island residents were paid and hauled off to a nearby resettlement area. In the years that followed, Calauit became

Nature Reserve Out of Africa

known as the hunting ground of Marcos's only son and his friends.

In the early 1980's, the sanctuary's managers began putting up breeding programmes in Calauit for endangered wildlife endemic to Palawan — known as the country's 'last frontier' — in an effort to change its image from a frivolous and expensive undertaking to a serious scientific project.

The sanctuary may not as yet have shed its associations with Marcos-era excesses but its dedicated wardens have succeeded in their conservation mission. Wildlife popula-

tion has more than quadrupled, primal forests are untouched, while corals and mangroves thrive, protected from dynamite fishermen.

More than a thousand visit-

Once the safari playground of the son of ex-Philippine President Ferdinand Marcos, Calauit island in southern Philippines is now mired in controversies that threaten the nature reserve. Yasmin Arquiza of IPS reports.

Calauit has become as endangered as the species it protects. Emboldened by the 'People Power' uprising that swept President Corazon Aquino to power in 1986,

warmest of this century — on average 1.3 degrees higher than the mean temperature. In another press story, ozone levels over Finland were a record 25 per cent below normal in February. Ozone level depletion is linked to the increased emissions of man-made greenhouse gases.

Climate change, the conundrum of the 20th century, is the subject of a gathering in Geneva by the world's top scientists and policy makers. "The Climate Agenda," an inter-governmental meeting on the World Climate Programme, was convened by the seven international agencies concerned with climate: the World Meteorological Organisation (WMO), the United Nations Environment Programme, the UN Food and Agriculture Organisation (FAO), the UN Educational, Scientific and Cultural Organisation (Unesco), the Inter-governmental Oceanographic Commission (IOC), the UN Development Programme (UNDP) and the International Council of Scientific Unions (ICSU).

The Geneva meeting is the first follow-up to the Earth Summit in Rio de Janeiro last June, where 154 countries signed the Framework Convention on Climate Change. The convention stated commitments and intentions calling for more intensive cooperation and increased efforts to "reduce uncertainties about the behaviour of the global climate system and its impact on economic and social well-being." What does global warming mean for the average citizen?

The experts are wary — and

and patterns of climate change, and that melting of polar ice sheets makes the sea level rise.

Gommez insists on the need for countries to develop their own global change research programmes. Such programmes, given the right technical expertise, would, according to Gommez, create a worldwide database capable of confronting the consequences of climate change.

These national climate programmes will cost money. Much of this money will have to be spent on expensive satellite equipment. Conservative estimates say the cost would run at around \$2 billion a year, money which developing countries don't have. While the developing countries cover three-fifths of the land area of the earth, they would seem to be the losers in any negative climate change scenario, and experts say they should therefore be allowed to participate in climate change research. The industrialised nations will have to pick up the cheque.

The greenhouse effect has, it seems, contributed to the theory that the earth is getting increasingly warmer. But the greenhouse, as such, is not a bad thing. These same gases keep the earth warm enough to be habitable. Without them, the earth would be about 37 degrees colder. The problem, however, is perceived to be with the fact that mankind is accelerating the greenhouse effect through the burning of fossil fuels, producing carbon dioxide, which has contributed to local temperature increases around the world. The big unknown is what overall effect

degrees throughout the year. Precipitation would change little in winter, but by five to 15 per cent in summer. Summer soil moisture would increase by five to 10 per cent.

The Sahel would heat up by about two degrees. Area mean precipitation would increase.

In southern Europe, the warming would be about two degrees in winter and vary from two to three degrees in summer. Summer precipitation would decrease by five to 15 per cent and summer soil moisture by 15 to 25 per cent.

In Australia, warming would range from one to two degrees in summer and about two degrees in winter. Summer precipitation would increase by around 10 per cent.

Warmer winters in temperate zones may benefit agriculture, allowing crops to grow in areas where it's too cold now. But arid and semi-arid nations are likely to suffer. FAO estimates that if the Sahara desert shifted 200 kilometres southwards, the number of people which Sahelian countries could feed from their own resources would fall by 30 per cent.

Floods, droughts and intense mid-season dry spells could become more common, as would hurricanes and cyclones.

A rise in sea-level, possibly between 0.3 and 1 metre in the next century could force people to flee from islands such as the Maldives and some Pacific Atolls, and from fertile delta areas in Bangladesh, Indonesia, Vietnam, China, Burma, Pakistan, Nigeria and the Plata and Orinoco deltas in South America. — Gemini News

ernment from making any decisive move against the former island residents. A petition to eject them is dragging in court.

It is widely believed here that the conflict with the squatters led to the death of game warden Melvin Anapada in January. The body of Anapada, who was on patrol the night he died, was found on a grassy trail near the beach. A single gunshot had shattered half his face, there were no suspects.

Adding to the tension is the conflict between environment officials and the sanctuary's managers, the Conservation and Resource Management Foundation (CRMF) whose contract is renewed on a yearly basis.