- the rarest and least pro-

tected habitat in the country -

is found at Palanan. The area

also abounds with many forest

types: limestone-based, moun-

tain, beach, mangrove, lake

and river forests as well as

three types of lowland forests.

the range of the endangered

Philippine eagle (Pithecophaga

jefferyi). With a wing span of

seven feet, it is the largest in

the world. It is found only in

the Philippines - here in

Palanan, in Samar Island and

mostly in the southernmost is-

not been seen in the Palanan

were recorded by the

International Council of Bird

Conservation, which con-

ducted the bird assessment

There are 63 Philippine

agles known to exist in the

wild. The recent sightings in

Palanan indicate the eagle's

population could be signifi-

cantly higher, thereby increas-

ing the species' chances of

Conservation International

is working with local official to

designate the Palanan wilder-

ness a national park. This pro-

tected status would help en-

sure the Philippine eagle suffi

cient forest cover in which to

the Palanan rainforest is sup-

ported by Environment and

Natural Resources Secretary

Fulgencio Factoran and Isabela

Governor Faustino Dy. They

want to include the area in the

country's Integrated Protected

An IPAS-status would help

protect the habitats and the

plants and animals in the area

by preventing any development

within defined park bound-

Areas System (IPAS).

Giving legal protection to

nest and hunt.

part of the biological survey.

Two sightings of the eagle

wilderness for over five years.

The Philippine eagle re-

land of Mindanao.

All these forests are within

Southeast Asia's Richest Rainforest Forest with ultra-basic soil Facing Extinction

ISABELA: Philippines this province in the Cagayan Valley region of North Luzon holds the largest and richest remaining rainforest in Southeast Asia.

Scientists from five nations are presently working to protect the forest from further destruction as it provides clues to what the Philippines used to be before populatior, pressure through the years altered its terrain irreversibly.

It is the 200,000-hectare Palanan rainforest, east of Cabagan, a sleepy town in Isabela province, nearly 370 kilometres north of Manila Facing the vast Pacific Ocean it is home to deep forests. tribal communities and a deepseated communist insurgency. In the early 1970s, it caught national attention with the aborted landing at Digoyo Point of illicit firearms destined for communist rebels.

The Palanan wilderness is part of the Sierra Madre range in the country's main island of Luzon. The Palanan rainforest compose nearly 10 per cent of the country's remaining rain-

Following four preliminary studies, the scientists who surveyed the area ranked the Palanan rainforest as the richest in Southeast Asia in terms of plants and animals found

It is in serious danger of destruction. A current threat is a proposed road that would allow direct access into the heart of the rainforest which conceals, among others, the jade vine, a highly endangered member of the legume family. and a dense limestone forest

The scientists' report. "Initial Glimpses of the Palanan Wilderness," suggests that Palanan has the most number of the threatened birds in Asia.

The report was made buy a 14-man survey team led by Conservation International. International Council for Bird Preservation (Cambridge. Britain). Field Museum of Chicago, Leiden University (The Netherlands). University of the Philippines (Los Banos campus), Isabela State University, the Department of **Environment** and Natural Resources and the office of the governor.

Highlights of the studies: ** Up to five plant species new to science were identifled. Seven other pant species were previously unknown in the Philippines, including a moss (Isocladiella surculare) and a branching shrub (Scaevola pauciflora):

** 216 bird species were identified, of which 75 are found only in the Philippines;

** 21 threatened bird species were identified, including a subspecies of Collared Scops Owl not previously known to science; Other rare and threatened birds were the Koch's Pitta. the Luzon Wren-Babbler and the Green Racket-Tail:

** There are indications that up to 60 per cent of all Philippine plant species are found in the Palanan rainforest. About 5,000 plant species here represent more than those in all of Canada. Preliminary findings also indicate that Palanan ranks among the world's top ten in terms of

woody plant diversity: ** Indications of a population of the highly threatened dugong, a marine mammal. In

the Philippines, they are found only in one other site, in Palawan province:

** It is also home to the endangered and extremely rare Philippine eagle, the largest eagle in the world.

"The Palanan rainforest is among the world's top conservation priorities, and it may not survive the 1990s," says Dr Russel Mittermier of the Washington-based conservation International. "At current de-

by Harmony Francisca A Cabie

forestation rates, the Palanan ecosystem will be destroyed by the year 2000 unless effective management strategies are put

Conservation International work is part of Rainforest Imperative, a 10-year strategy to save the world's most important rainforests. The strategy focuses on 15 rainforest "hotspots," locations with exceptional levels of biological diversity and endemic species

and very high rates of habitat destruction.

Because it is highly threatened. Philippine rainforests are considered the "hottest of the hotspots." Only 3 per cent of the county's original rainfor-

est remains. A wide variety of habitat types at Palanan allows for extremely high biological diversity, according to Vic Milan. Conservation International's Philippine representative.

quires a minimum of 15 to 25 square kilometres of primary rainforests as resting territory. The Philippines is the 'hottest' among the world's 15 rainforest 'hotspots.' Its ex-Until the preliminary studies made by the international ceptional levels of biological diversity are being threatened by population pressure like what happened to other rainforests in the country which are now gone. team, the Philippine eagle has



Fire-fighters in Maharastra state, India, are locally hired and trained.

African Cheetah Faces Extinction

If its decline is not arrested, the world's fastest animal species may be doomed, experts say. Kate Burling of IPS reports.

been reduced to between 2,500 and 3,000, according to studies, but it is still much stopped soon, the entire higher than in other countries. species could be doomed, according to two international

According to one report, some 800 cheetah were being killed in Namibia every year, although experts believe many go unreported.

THE fate of Namibia's

Middle Eastern royal families

and a conservation project

based in the farmlands of

are being approached for funds

to carry out research on

Namibia's remaining cheetah,

the last viable population on

of the chectah in Namibia has

In recent years, the number

The Middle Eastern royals

Africa's newest state.

cheetah could rest on

the generosity of

Some deaths occurred from 'kudu' rabies, which poisoned the cheetah's food in the early and successive droughts, but the main threat to the animal comes from farmers.

Already a protected species everywhere except Namibia and South Africa, the cheetah continues to be considered a pest by farmers in both countries.

If its present decline is not

chectah experts. Laurie Marker-Kraus and Daniel Kraus recently moved to Namibia with their chectah prescrvation fund, in a last-

fortunes of the world's fastest The experts' ultimate aim is to setup a centre in Namibia devoted entirely to research

and education about the ani-

ditch attempt to reverse the

"All our work on the cheetah all over the world has led us to believe that Namibia is

Rare three-banded Armadillo

Rediscovered

by Pam Cubberly

the heart of solutions to the cheetah problem," she says.

The Middle East connection relies on the esteem the countries of the region hold the cheetah as an age-old symbol of wealth and grace.

"Royal families have been keeping cheetah as domesticated pets and hunting animals since 3000 B.C.," explains

more than 9,000 over a period of 45 years, and having a stable full of chectah was almost a prerequisite of royalty. We are hoping such families won't let the species die out for lack of funds."

"One wealthy man kept

"While cheetah undoubtedly

The cheetah are also selective hunters, taking the oldest and weakest animal from a herd. *What farmers often don't realise is that this makes chectah quite a useful link in

The third score on which the animals suffer is that they do not produce well in captivity, nor do they compete well against other predators on

All this adds up to gloomy odds in the survival stakes. Unless the Namibian cheesimply will not make it.

The cheetah experts are proach, going from farm to farm to discuss the problems farmers and the cheetah face. They want to be able to offer viable alternatives for farmers who agree to stop the slaughter.

"We've already met with some successes. People's attitudes tend to alter quite a bit when they realise the last of the world's cheetah are right here in their backyards," says Kraus.+

Galapagos Ecosystem Under Threat

The influx of migrants into the Galapagos Islands is endangering the delicate ecosystem of the Ecuadorian archipelago. Virginia Aguirre of IPS reports.

OPULATION growth in the Galapagos Islands threatens the fragile ecosystem of the archipelago whose unique vegetation and wildlife confirmed Charles Darwin in his theory of evolution.

The islands' population. which has doubled in the last 10 years, is made up mostly of settlers or immigrants from the American continent and is concentrated in three of the 13 islands of the archipelago located on the equator west of Ecuador. From just 4,500 in habitants in 1980, the population grew to 9,500 in 1990. according to official data.

"We must find a way to control migration," said Jorge Anhalzer, who heads the recently created Permanent Comission for the Galapagos Islands and the Ecuadorian

Tourism Corporation (Cetur). Anhalzer told IPS the population problem has become worse since 1973 when the archipelago was declared a province. This meant that government offices were moved there and infrastructure built, increasing the pressure on the limited natural resources and affecting the delicate island ecosystems.

The growing population has also affected social and health services, causing a chronic deficit in such basic services as drinking water.

The "exaggerated growht" of the population is causing concern among international experts at the multisectorial comission which has drawn up a "global plan of tourist and ecological preservation management in the Galapagos is-The experts also cited the

growing introduction of exotic and other species foreign to the islands which are altering and endangering the archipelago's ecosystem.

Ninety-seven per cent of

the Galapagos islands, located in the Pacific Ocean 1,000 kilometers west of the American continent, have been

Experts have also warned against the unorganised expansion of tourism, though they did not believe this has a nega-



declared a protected national reserve since 1959.

The archipelago was declared part of mankind's heritage by the United Nations Education, Science and Cultural Organisation (Unesco) in

Goats and pigs, introduced two centuries ago by pirates who used the island as a hideaway, and later dogs, cats, rats and donkeys and other animals brought in by settlers, constitute a major threat to the archipelago's unique flora and fauna, experts say.

Those animals have been the main enemies of the giant tortoise or "galapagos", one of the species of fauna that are unique to the after which the archipelago is named.

tive impact of the archipelago's ecosystem.

Anhalzer said tourism has not caused any significant de-

terioration in the flora and fauna since the national park is well managed by naturalist guides. recommends instead that visits to specific areas be

regulated in order to reduce excessive load of visitors in some places. The official rejected sugges-

tions to limit the number of tourists that can visit the islands each year. According to official data,

the number of visitors to the Galapagos increased from 25,000 in 192 to 45,000 in 1990, corresponding to the increase in the islands' hotel capacity.

Do Kuwait's Burning Oil Fields Threaten Global Climate?

HAT the war in the Gulf would entail grave ecological consequences became clear with the discovery of the giant oil slick in the Persian Gulf. But climatologists all over the world saw in Kuwait's blazing oil fields an even greater environmental danger and immediately commenced with the task of estimating its ex-

What havoc such a gigantic firestorm could cause, was studied by climate researchers in the early eighties in connection with research on possible consequences of atomic war between the superpowers. According to these scenarios, smoke from fires in devastated urban areas would so darken the sun that a "nuclear winter" would result.

In recent years, however, computer models have been improved, leading to a mitigation of the original prophecy: a "nuclear fall", as the American atmospheric scientist, Stephen H. Schneider calls it, later seemed more likely. According to this, the falling temperatures due to firestorm in summer would be regionally limited, but still have devastating effects, with a difference of 10 to 15 degrees Celsius.

The atmospheric chemist,

Professor Paul Crutzen of the Max-Planck Institute for Chemistry in Mainz, made calculations about the "nuclear winter" in 1982 and was one of the first scientists in Germany to warn of the threat to the stratospheric ozone layer from chlorofluorocarbons. During the Gulf War, he issued urgent warnings about the worldwide consequences of the large oil fires in the Gulf. According to his calculations, if one assumes the worst possible, case, 1.6 million tons of oil could go up in th flames daily in Kuwait, resulting in a probable daily soot cloud of 100,000 tons. In addition, the

to the green house effect. In this context, the climatologist Professor Christian-Dietrich Schonwiese of the University of Frankfurt on Main, pointed out that in view of the enormous amounts of oil burned daily throughout the world in the form of fuel, this would probably be only a local manifestation.

Much worse and not unlike the "nuclear winter", in the opinion of Crutzen and other scientists, could be the cloud of soot over the oil fields. The black particles absorb a great deal of solar radiation, and thus become very warm. Then

an enormous, black, hot air balloon with a temperature up to 80 degrees Celsius will ascend into the stratosphere" said Dr. Jurgen Hahn of the Fraunhofer Institute for Atmospheric Environmental Research in Garmisch-Partenkirchen. Because of its strong thermal lift, this hot air balloon would even break through the tropopause, the twelve to fifteen kilometer high divider between the troposphere and the stratosphere, not without consequences for the balance between the continuous destruction and formation of ozone.

"High temperature in the stratosphere favor the destruction of the ozone molecule world-wide" commented Hahn, who has also worked out his own worst-case scenario; substances which penetrate the lower stratosphere are distributed evenly around the globe. Should the surface of 80 per cent of the Northern Hemisphere of the earth be covered, the solar radiation in the visible spectrum reaching the earth's surface would be weakened by some 90 per cent. This twilight with winter

temperatures could last months or years. Greatly reduced photosynthesis with attendant crop losses would be accompanied by an increase in dangerous ultra-violet radiation. In addition, the flows of atmospheric air masses would be distorted beyond recognition.

In his estimation of the worst possible results of the Kuwaiti oil fires, the climatologist Professor Winfried Bach of the University of Munster considered it likely that the rainfall of the early summer monsoon rains in Southeast Asia would be reduced by 30 to 40 per cent. "A billion people there are threatened as a result of crop failure."

How quickly the earth's climate can change, was demonstrated by the eruption of the Indonesian Volcano Tambora in 1815. 150 cubic kilometers of dust was thrown into the atmosphere and circled the earth for years in the stratosphere. As a result of the weak sunshine, 1816 was a year of world-wide frost in summer, famine, and extremely bizarre weather occurrences. "But no one can say how much soot actually will ascend into the stratosphere as a result of the Kuwaiti blazes, what composition it will have and how much will be rained out beforehand" says Hahn.

Each hypothesis, each seenario stands and falls with the amount of burned oil. In this

respect, however, there were, and still are, numerous uncertainties. ESSO spokesman Karl-Heinz Schult-Bernemann contrasts the estimated 1.6 million tons of oil which in the worst case could burn daily in Kuwait with the 0.24 million tons of oil which Kuwait has been pumping daily up until

But in any event, it is all respects an open question as to how long it will take to put out all of the many fires in Kuwait. -Martin Boeckh (GRS).

Dam 'Threat' Moves Across a Frontier

UCCESSFUL public resistance to the building of a 580 megawatt hydroelec-tric dam at Nam Choan in western Thailand is threatening to result in the export of some of Thailand's environmental problems to neighbouring Laos.

Thailand, hopes to import electricity from Laos, where plans are in the making to build several dams on tributaries of the Mekong river in Laotian territory.

Last year, a coalition of group called for a moratorium on dam-building in Thailand, arguing that the ecological and social disruption caused by big dams outweighed the electricity benefits enjoyed by city people and the industrial sector. Thailand's former government, overthrown in a military coup on February 23, began seeking alternatives.

To cope with an expected tripling of energy demand over the next few decades to more than 20,000 MW, the Thai government had proposed building at least four new dams inside Thailand. All sparked off widespread protests, with critics pointing to the inefficiency of the country's eight existing big dams, most of which were supposed to last for more than a hundred years.

Thailand's first hydroclectric project, the Bhumibhol Dam built in the early 1960s, is at a critically low level because of extensive deforesta-

For the same reason, the four-year-old Chiew Larn Dam has never filled up, thus failing to provide any of the promised irrigation benefits. The flood zone was not sufficiently cleared and water released from the dam was severely contaminated, affecting villagers who live downstream.

N armadillo, which sci entists believed to have been hunted to extin for its delicious meat, recently been rediscovered. Several live specimens of the rare three-branded Brazilian armadillo, the tatu bola, were found in a local market by a young Brazilian graduate student, Ilmar Bastos

The discovery has inspired a WWF-supported effort to locate and protect any other tatu bolas. However, there may be so few left, that the animal could still vanish as so many other species have. Despite this fear, WWF is hoping that its plan of action, also supported by the Brazilan conservation foundation Biodiversitas", will rescue the species. Beginning with a thorough

survey for tatu bolas by Ilmar Bastos Santos, the plan will involve carefully conducted scientific research to assess the species' current range, population size, and other basic biological information. Field surveys and other approaches could identify additional tatu

bola habitat. The project leader also intends to create a public awareness programme with the goal of establishing the tatu bola as a local symbol of con-

The tatu bola is one of the rarest descendents of huge, armoured mammal called Glyptodon, that existed eight million years ago. At that time, the Central American landbridge had not yet formed, and South America was a continent-sized island with many distinctive species that had evolved in isolation. Among them was Glyptodon, the precursor to the 20 or so dogsized armadillos that exist today. The 17-foot-long giant survived long enough to appear in the legends of Patagonian Indians, and other South American tribes used the enormous shells as roofs and

As Central America rose out of the sea, other species crossed from the north, competing with and preying upon the large South American herbivores like Glyptodon. Its smaller descendents survived

because they filled specialized ecological niches not taken by norther species. Some less common armadillos are endemic to particular habitats. The rare Andean hairy armadillo, for example, is found only in Bolivia's "Puna" - cold and dry mountain plateaux. And the tatu bola is endemic to Brazil, where it resides in areas known as "caatingas" dry, scrubby regions in the northeast of the country roughly translated as "white forests", due to their greyish appearance in the long dry

Scientists are particularly interested in what the planed study may reveal about the tatu bola's unique habitat - a particularly formidable habitat, but one in which the species would survive quite well, if it were not for human predation.

While certainly lacking the rich biological diversity of forests to the north and south, "caatingas" do support a number of other endangered species. Sharing the tatu bola's habitat are Lear's macaws (down to fewer than 100 indi-

viduals in the wild) and Spix's macaws (only one is known to exist in the wild). WWF has done much work in the past to protect these two bird species, which have been threatened by illegal hunting for the pet trade. Now, however, WWF is looking more broadly at what needs to be done to preserve segments of this important and unique ecosystem.

Three of Brazil's national parks, including Serra da Capivara, Ubajara, and Serra Negra, as well as Raso da Catarina Ecological Station, are located in "caatingas". Nonetheless these relatively small protected areas do not contain examples of all the different kinds of "caatinga" habitat recognized by the leading Brazilian authority, on the subject, Dardano de Andrade-

WWF and Biodiversitas hope that the tatu bola project will lead to better management of existing protected areas, and identify and justify the protection of additional habitat. —WWF

Sadly, this is what has been happening for a number of Other African countries have only a few hundred chee-

tah left, and the Asian cheetah is virtually extinct. Unfortunately for the cheetah, its chances of survival are limited by three key factors. Genetic variation in the

species is practically non-exis-

tent, and hence is in danger of

wiping itself out from constant

inbreeding. The already inbred cheetah community is characterised by inherited weaknesses: a high infant mortality and low reststance to disease.

"There's only a certain number below which the cheetah population can drop before its chances of survival disappear," says Marker-Kraus, who has been studying the animal for 18 years.

Even more tragically, the chectah remains an open target for shooting and trapping on farms, where 95 per cent of the animals live.

As a daytime predator, the cheetah is noticed by farmers more often than other stockraiders, with the farmers tending to blame the animals for most of their losses.

do take farmstock, studies have shown they take far fewer than people give them credit for," says Kraus.

the ecological chaim," explains

game reserves.

resulting combustion gases tah is protected, the species would contribute significantly opting for an individual ap-