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Press Kit

THREATENED PROTECTED AREAS OF THE WORLD

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Press Release

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WORLD'S OUTSTANDING NATURAL AREAS THREATENED

Robinson Crusoe's islands - the Juan Fernandez archipelago, which is a Chilean National Park - have been cited as representative of the world's most threatened protected natural areas by the International Union for Conservation of Nature and Natural Resources (IUCN).

Goats, cattle, pigs and other domestic animals introduced by man are grazing the plant cover and causing severe erosion on the islands, international scientists and conservationists were told at IUCN's triennial General Assembly in Madrid on 14 November.

The archipelago, a Chilean National Park since 1935, is best known as the place where British buccaneer Alexander Selkirk was marooned in 1704. His adventures inspired Daniel Defoe's famous book "Robinson Crusoe."

The archipelago is one of 11 protected natural areas in Africa, the Americas, Asia, and Europe listed by IUCN as representing the most threatened in the world. Although declared as national parks and reserves these sites are being severely damaged by a wide range of threats, including human encroachment, poaching, inappropriate internal development (e.g. road construction), mining and prospecting, development of neighbouring lands, changes in water regime, hydro development, livestock conflicts, military activities, illegal logging, pollution, acid deposition, invasions of exotic species, inadequate management resources, and delisting or lowering of status.

In addition to the 11, IUCN listed 32 other areas facing similar threats, and emphasized that they were only representative of the situation facing many of the world's 3,000 protected natural areas, and were not necessarily the worst affected.

Listed with Juan Fernandez is Manu National Park in Peru, which probably faces a wider range of threats than any other park in the world, according to IUCN.

The present Government is proposing to build a road to promote settlement, forestry, agriculture and ranching. Oil and mineral exploration have been allowed; there is prospecting for gold; and a canal is planned where the rubber collector Fitzcarraldo dragged his boat from the Urubamba river system to the Manu river system. (His feat was recalled in a recent film.) The canal would affect stream flows, allow boats into the park and remove some forest land.

Earlier this month Tanzania's Ngorongoro Conservation Area and Zaire's Garamba National Park were inscribed on Unesco's List of World Heritage in Danger at the request of the respective governments.

IUCN intends to publish a regular list of the world's most threatened protected natural areas to make the public aware of the dangers threatening them and to marshal support for retaining or regaining the integrity of the areas.

Dr Marc Douroujeanni of Peru, a senior official of IUCN's Commission on National Parks and Protected Areas, stressed that the 11 areas named were considered as only among the most seriously threatened. All 43 parks from which the 11 were selected were just a representative selection of a large number threatened among more than 3,000 protected natural areas recognized by the United Nations.

Dr Douroujeanni stated that in some cases remedial action might not be feasible. Even where solutions were known they might be difficult to achieve because of political, administrative or fiscal constraints.

"Throughout the world, existing laws are proving inadequate to address a broad range of new environmental threats, which often transcend national boundaries. In particular, acid deposition and incompatible activities on land surrounding protected areas, including civil unrest and military action, are adversely affecting many protected areas," Dr Douroujeanni said.

Full documentation and photos available from Don Allan, World Conservation Centre, 1196 Gland, Switzerland. Tel: (022) 64 71 81.

THREATENED PROTECTED AREAS OF THE WORLD



KEY

△ MANU Most threatened areas

● Darien Other threatened areas

THE WORLD'S MOST THREATENED PROTECTED NATURAL AREAS

Brazil - Araguaia National Park. Road construction is causing damage, and squatter invasions occur.

Chile - Juan Fernandez National Park. Introduced animals are causing serious erosion and alien plants are overwhelming native species.

Czechoslovakia - Krkonôse National Park. The most seriously threatened by air pollution of all Central European national parks.

Indonesia - Kutai Game Reserve (proposed National Park). Badly damaged by a huge fire and affected by logging, oil, mineral exploitation, and roads.

Ivory Coast - Tai National Park. Poachers, gold prospectors and illegal settlers have severely affected two-thirds of the park.

Peru - Manu National Park. A major road is proposed. Gold prospecting is going on. More oil and mineral exploration is being considered. There is a canal project to link two river systems.

Philippines - Mt. Apo National Park. Only half the original park is still considered viable because of logging, encroachment by shifting cultivators and squatter settlements.

Tanzania - Ngorongoro Conservation Area. Heavy poaching, especially of black rhino, illegal grazing and wild fires are damaging one of Africa's highest priority protected sites. Management resources are insufficient .

USA - John Pennekamp Coral Reef State Park and Key Largo National Marine Sanctuary. Dredging and landfilling threaten corals. Miami's sewage pollutes area, and boats, fishermen and shell collectors damage reefs. Condominium development is proposed, and other changes to the hydrological regime of southern Florida are reflected in the threats facing this area.

Yugoslavia - Durmitor National Park. Tara river is threatened by proposed release of lead processing wastes and planned hydro station.

Zaire - Garamba National Park. The world's last northern white rhinos, numbering about 10, are threatened by poachers, who have also reduced the elephant population by nearly two-thirds in seven years.

THE WORLD'S MOST THREATENED PROTECTED NATURAL AREAS

Brazil

Araguaia National Park

Chile

Juan Fernandez National Park

Czechoslovakia

Krkonôse National Park

Indonesia

Kutai Game Reserve (proposed National Park)

Ivory Coast

Tai National Park

Peru

Manu National Park

Philippines

Mt. Apo National Park

Tanzania

Ngorongoro Conservation Area

USA

John Pennekamp Coral Reef State Park and Key Largo

National Marine Sanctuary

Yugoslavia

Durmitor National Park

Zaire

Garamba National Park

BRAZIL

ARAGUAIA NATIONAL PARK

The major threat is a 66 km road now under construction through the middle of the park. The road will be used only part of the year for transport of rice and alcohol. It will have unfortunate effects on the hydrology and will disrupt wildlife migratory patterns. Increased pressure for agriculture and grazing is also anticipated.

Much construction damage is already apparent and amelioration measures have not been undertaken. Officials of Brazil's National Parks Department have requested mitigative measures for improved drainage and possible relocation of the road outside the park, as well as funding to allow more intensive patrols and implementation of the management plan for the park.

During the dry season, squatters with 30,000 domestic livestock enter the park, an illegal practice for which the management plan has suggested the solution of a fence. Land rights, however, are still disputed.

BASIC DATA

Araguaia National Park. Established 1959.

Location and area: 750km northwest of Brasilia, west central region, Goias state. 9°00'-10°50'S, 49°56'-50°37'W. 562,312 ha (2,000,000 ha were proposed in the original act (the entire Ilha di Bananal) but the effective size was still only 3000 ha in 1972)

Description: The park includes part of the 2,000,000 ha island of Bananal, the largest fluvial island in the world. The main parkland, situated between the mainstream of the Rio Araguaia and a smaller branch, is flat and is covered with numerous permanent lakes and seasonally flooded plains. It is a transition zone between the woody savanna or "Cerrados" and Amazon forests. Gallery forests along the river banks and a large forested area at the northern end. Scattered marshland, and seasonally flooded grassland.

Noteworthy fauna: The fauna, like the vegetation, is transitional. Giant anteater Myrmecophaga tridactyla (V), maned wolf Chrysocyon brachyurus (V), bush dog Speothos venaticus (V), giant otter Pteronura brasiliensis (V), jaguar Panthera onca (V), puma Felis concolor, marsh deer Blastocerus dichotomus (V), pampas deer Ozotocerus bezoarticus, American tapir Tapirus terrestris, giant armadillo Priodontes giganteus (V), harpy eagle Harpia harpyia (R), hyacinthine macaw Anodorhynchus hyacinthinus, anaconda Eunectes murinus, South American river turtle Podocnemis expansa, arapaima Arapaima gigas, and black-fronted piping guan Aburria jacutinga (E).

CHILE

JUAN FERNANDEZ NATIONAL PARK (Biosphere Reserve)

The resources of this park are under threat from three interrelated factors: introduced animals, alien flora, and severe erosion.

Herbivorous mammals - goats, cattle, horses, donkeys, pigs, sheep and rabbits - have all been introduced (in some cases as early as 1574) causing irreparable grazing damage. Other introduced animals include the coatimundi Nasua narica, the four-eyed sapito Pleuroderma thaul and the vineyard snail Helix pomatia. The most urgent needs are to reduce the numbers of feral cattle and sheep on Robinson Crusoe island, and goats on Alexander Selkirk island.

Erosion caused by livestock grazing is most serious and most difficult to control on the steep volcanic terrain. Some 46% of Robinson Crusoe island is considered affected, especially in the east and around Cumberland Bay. Native forest survives in high ridges and steep ravines. In many other places bedrock is exposed. Regeneration is unlikely to occur because of the presence of weedy alien species. The decline of Luma forest on Robinson Crusoe island has led to widespread repercussions proving detrimental to many species, including the endemic Juan Fernandez. In the late 1970s there was an attempt to construct a road across Robinson Crusoe Island, which was abandoned because of the environmental hazards involved. Similar erosion problems exist on Alexander Selkirk Island.

Alien flora is the third threat. Introduced plants, such as the Chilean Maqui Aristotelia chilensis and a bramble Rubus ulmifoliosus, have become dominant and have extensively over-run plant communities. The native myrtle Ugni selkirkii is being rapidly replaced by the introduced U. molinas. On the dry treeless 'prados' of west Robinson Crusoe Island, several species of European grass and thistles are widespread.

In addition to these three threats, there has been selective felling of native trees, especially of the chonta palm J. australis and the sandalwood tree S. fernandezianum, now thought to be extinct.

There are a number of corrective actions that the Corporacion Nacional Forestal (CONAF) is attempting to undertake, which have been outlined in the 1976 management plan for the park. These include ex situ propagation of endangered plants and some erosion control measures. Under the IUCN/WWF Plants Programme these attempts would be reinforced and a public awareness component added. Controls on domestic stock and removal of feral animals is another priority task. Methods for eradication of alien flora also need to be improved and general protection and management of the park also strengthened. Some \$300,000 is required to carry out these measures.

BASIC DATA

Juan Fernandez National Park. Established 1935. Biosphere Reserve 1977.

Location and area: In the Pacific Ocean 650 km west of Chile. 33°41'S,
78°47'-80°47'W.

Description: An archipelago consisting of Robinson Crusoe, Alexander Selkirk and Santa Clara islands and islets. It is volcanic in origin and consists of steep and rugged mountain ranges with deep ravines. Robinson Crusoe island has a mountainous central ridge dividing arid treeless 'prados' and moist-zone habitats. Santa Clara is dry and uninhabited. Alexander Selkirk rises to a high plateau dissected by deep ravines with forest extending to about 700m and a peak of 1,650m. The islands are characterised by a variety of unusual growth forms and nearly 60% endemism among vascular species. There are 146 species of native flowering plants, 54 ferns and fern allies. Temperate, humid forests grow in elevated parts of the islands.

Noteworthy fauna: Few native species and some introduced. Juan Fernandez fur seal Arctocephalus philippi (V) is the most important mammal. Birds include Juan Fernandez tit-tyrant Anairetes fernandezianus, Juan Fernandez remolinera Cinclodes oustaleti, masafura rayadito Aphrastura masafuerae, masafuera eaglet Buteo polysoma exsul, Juan Fernandez humming bird Sephanoides fernandensis, Juan fernandez buzzard Falco sparverius fernandensis, and nuco Asio flammeus suinda. Rich and diverse marine fauna - lobster Vasus frontalis (which sustains the economy of the islands), Juan Fernandez cod Hectoria oxygeneios, the atherine Basilichthys fernandezianum, white sea bass Sciaea fasciata, horse mackerel Trachurus murphy and hake Merluccius gayi.

CZECHOSLOVAKIA

KRKONOSE NATIONAL PARK

Krkonoše National Park was found to be the most seriously threatened by air pollution in a recent study of national parks in Central Europe . Fully half of the 32,000 ha forested area of the park is heavily damaged and 1,000 ha of forest is already dead. The nearby Krkonoše National Park in Poland is also seriously affected, but not as severely as the Czechoslovak Krkonoše.

Control of air pollution emissions from the various industrial centres of central Europe is the only corrective action that can be taken.

BASIC DATA

Krkonoše National Park. Established 1963.

Location and area: East Boheme. 50°45'N, 15°30'E. 38,000ha.

Description: A mountain area most covered by forests of spruce Picea excelsa, local remnants of natural mixed woods with beech Fagus silvatica, maple Acer spp and mountain ash Sorbus aucuparia. Above the upper limit of forests there are growths of mountain pine Pinus mugo montana and mountain meadows. There are numerous peat bogs in the upper part.

Noteworthy fauna: Alpine shrew Sorex alpinus, white-toothed shrew Crocidura suaveolens, northern bat Eptesicus nilssoni, pond bat Myotis dasycneme, particoloured bat Vespertilio murinus, merlin Falco columbarius, rock thrush Monticola saxatilis, redpoll Acanthis flammea, ring ousel Turdus torquatus, dotterel Eudromias morinellus, alpine newt Triturus alpestris and snail Vertigo artica.

INDONESIA

KUTAI GAME RESERVE
(proposed National Park)

The Reserve is affected by timber concessions, oil and mineral exploitation (with associated access road construction), and lack of effective management aggravated by the conflict between conservation and development interests. There is pressure from local settlement encroachment (over 2,000 families reside in the eastern portion) and associated logging operations which affected some 10,000ha in 1983. Developments for the region (1983) include the construction of a logging road which will bisect the reserve; coalmining in the Bungalon area and transmigration settlements in the region also have negative impacts.

In May 1983 one of the most destructive forest fires ever to occur destroyed 3.5 million ha of forest in East Kalimantan. The fire was the combined result of the activities of hundreds of slash and burn cultivators and was intensified by drought conditions and exacerbated by the effects of selective logging.

Most of Kutai's original 200,000 ha was extensively damaged by this fire, particularly the portions which had previously been cutover or selectively logged. One tract of primary forest of 60,000 ha within the park did not burn, though many canopy trees died from the drought. Portions of this, however, continue to be logged both under concession and illegally by local villagers.

Although it was officially announced at the World Congress on National Parks in Bali in 1982 that Kutai would be upgraded to national park status this has not yet occurred.

Suggested action to save Kutai includes:

1. redefining boundaries to identify and salvage remaining unburned forest land and declare a national park for that area;
2. including a portion of the adjacent burned forests for use in study of recovery and succession;
3. cancelling all logging concessions immediately in the remaining primary forest area;
4. clearly marking boundaries of the new area and instituting management measures which would protect it;
5. establishing an alternative site for protection of a representative sample of Kalimantan lowland rain forest.

The integrity of the Kutai Game Reserve has been seriously affected by human activities in the reserve and subsequently by fire. It provides an object lesson in inappropriate selection of an area for a reserve; ineffective management when it became a reserve; and the combined effects of a major disruptive event and world publicity to bring the issue to light.

BASIC DATA

Kutai Game Reserve. Declared a Nature Reserve 1936 by the Sultan of Kutai and as National Park at the Bali National Parks Congress in October 1982.

Location and area: On the east coast of East Kalimantan Province (Indonesian Borneo), 70km north of Samarinda. 0°-0°35'N, 117°10'-117°30'E. 200,000 ha. An extension west of Banumuda is proposed.

Description: Kutai is in a low, undulating part of the country, dominated by low north-south hills of Miocene clay and sandstone, with occasional coal seams and oil lenses in the sandstones of the east, overlain by Quaternary alluvials in the west. There are a few limestone outcroppings in the south. Most rivers flow eastwards. The rainforest here is lowland dipterocarp forest, with different sub-types - lowland rainforest (91%), riverine forest (3%), swamp forest (3%), mangrove forest (3%). The flora is extremely rich in large trees: 180 species have been recorded in just 1.2 ha. Uncommon plants include Podocarpus rumphii, Citrus macroptera and Platycterium ridleyi.

Noteworthy fauna: At least 10 primate species present, including the Borneo endemics proboscis monkey Nasalis larvatus, the long-tailed or crab-eating monkey Macaca fascicularis, Sunda Island leaf monkey Presbytis aygula and Bornean gibbon Hylobates muelleri, orang utan Pongo pygmaeus (E), pig-tailed macaque Macaca remestrina, silvered leaf monkey Presbytis cristata, tarsier Tarsius bancanus, and, possibly, maroon leaf monkey P. rubicunda, and whitefronted leaf monkey P. frontata. Numerous deer, including mouse deer Tragulus nape, barking deer Muntiacus muntjak, sambar deer Cervus unicolor. Wild pig Sus barbatus, sun bear Helarctos malayanus, flying lemur Cynocephalus variegatus, leopard cat Felis bengalensis, clouded leopard Neofelis nebulosa (V), monitor lizard Varanus salvator, porcupine, marten, otter, squirrels, bats, treeshrews, civet cats, snakes. The Banmuda area, proposed as an extension to the north, is the only known habitat of the Asian two-horned rhino Dicerorhinus sumatrensis in Kalimantan. The reserve is extremely rich in birds, with some 150 species from 47 families recorded, including 83% of all forest-dwelling species recorded from all of Borneo; notable species include the Argus pheasant Argusianus argus, the rare crested fireback pheasant Lophura ignita, eight species of hornbills (Bucerotidae), 17 sunbirds (Nectariniidae), 22 cuckoos (Cuculidae) and 18 woodpeckers (Picidae). Estuarine crocodile Crocodylus porosus (E) may also occur.

IVORY COAST

TAI NATIONAL PARK

Poachers, gold prospectors and illegal settlers have severely affected two-thirds of Tai National Park. Park staff and the army have been unable to remove some 800 people who have moved in. There is little discipline in the park staff, no on-site management, and totally inadequate material resources. A management plan is not being implemented. The central office and the judiciary provide little support.

Extensive felling is taking place in what is supposed to be a protected forest with vast blocs being clear-felled, and there is cultivation in the buffer zone of cocoa, coffee, maize, coco yam, sweet potato and okra. A perimeter road designed to make protection more effective has actually opened up significant portions of the park to timber contractors, shifting cultivators and poachers (who often include local officials). Gold prospecting is taking place in the centre of the park, and an impending dam project at Soubre could severely affect the park by bringing more people to the region. Only a few of the once numerous elephants remain.

HRH Prince Bernhard of the Netherlands, Founder President of the World Wildlife Fund, drew the attention of President Houphouet Boigny to the threats to the Tai in 1981. A long-term assistance project is required, but must have the highest political backing, as well as funds for resettlement, staff training, equipment and technical assistance. This matter is being pursued within the context of the preparation of a national conservation strategy for the country, for which World Heritage funds have been allotted.

BASIC DATA

Parc national de Tai. Declared Forest and Wildlife Refuge in 1926 by former French administration. National Park 1972. Biosphere Reserve 1978. World Heritage Site 1980.

Location and area: Southwest Ivory Coast. 5°15'-6°07'N, 7°25'-54'W. 330,000ha plus 20,000ha buffer zone.

Description: An ancient peneplain (area left after erosion of previous mountains) broken by several inselbergs with the last remaining portion of the vast primary forest that once stretched across present-day Ghana, Ivory Coast, Liberia and Sierra Leone. The park contains over 150 species (16%) which are endemic to the Tai.

Noteworthy fauna: Mona, white-nosed and diana monkeys Cercopithecus mona, C. nictitans and C. diana, black and white, red and green colobus monkeys Colobus polykomos, C. badius and C. verus (R), sooty mangabey Cercocebus torquatus, chimpanzee Pan troglodytes (V), giant, tree, and long-tailed pangolins Manis gigantea, M. tricuspis and M. longicaudata, golden cat Felis aurata, leopard Panthera pardus (V), elephant Loxodonta africana (V), bushpig Potamochoerus porcus, giant forest hog Hylochoerus meinertzhageni, pygmy hippo Choeropsis liberiensis (V), water chevrotain Hyemoschus aquaticus, bongo Tragelaphus euryceros, buffalo Syncerus caffer, forest duikers, including Jentink's Cephalophus jentinki (E), banded duiker or zebra antelope C. zebra, Ogilby's C. ogilbyi, black C. niger, bay C. dorsalis, yellow-backed C. sylvicultor and

royal antelope Neotragus pygmaeus. Forest rodents include Lophuromys sikapusi, Malacomys edwardsi and Graphiurus murinus. Birds include white-breasted guineafowl Agelastes meleagrides (E), Nimba flycatcher Melaenornis anna marulae (I), western wattled cuckoo-shrike Campephaga lobata (V), yellow-throated olive greenbul Criniger divaceus (V). Almost 1,000 species of vertebrate have been identified.

PERU

MANU NATIONAL PARK

The present Peruvian Government is considering construction of a major road along the Manu River through the park. The road will promote settlement, forestry, agriculture and ranching and will effectively divide the park and affect much of its natural habitats.

Oil and mineral exploration have been conducted, and new concessions have been applied for and issued. A canal project would connect two of the watersheds in the park with another from outside, which would affect streamflows, allow boat access, and remove some forest land.

Religious groups have applied for a logging concession in the park and intends to establish a settlement to provide for workers as a part of an evangelical programme for native peoples.

There is much controversy surrounding the various proposals and a "technical committee for the defence of Manu National Park" has been formed by a coalition of conservation, anthropological and university groups. IUCN has also sent a letter of intervention to the President, and a WWF-funded IUCN project is supporting management of the park.

Various actions to avert the above threats have been suggested. These include:

1. suggesting an alternate route for the proposed road;
2. revision and implementation of a management plan for the park;
3. increased measures to improve public awareness of the impacts of the development;
4. encouraging World Heritage nomination for the park;
5. strengthening the capabilities of field managers;
6. supporting efforts of the local Manu Committee.

Ranging from the alpine grasslands of the Andes to the rainforests of the Amazon there is probably no other single protected area in the world with a diversity of ecosystems and species that compares to Manu. At the same time, there is probably no other park that is faced by such a wide range of threats.

BASIC DATA

Manu National Park. Established 1973. Biosphere Reserve 1977.

Location and area: Upper Amazon area of Peru. 11°19'-13°02'S,
71°07'-72°26'W. 1,881,200ha.

Description: Varied relief from high "tablelands" to low forest on flat ground. The park consists mainly of the high and low Manu river basin with steep slopes and deep river canyons. The Biosphere Reserve includes the whole

of the hydrographic catchment area of the River Manu and part of the catchment area of the River Alto Madre de Dios. There is probably no other protected area in the world with the diversity of ecosystems and species that compares with Manu. Contains nearly all the ecological formations of eastern Peru: humid forest, humid sub-tropical forest, very humid sub-tropical forest, and very humid low mountain forest, with their respective flora and fauna. This area is consequently the most exclusive and representative in the Amazon basin. Some botanists claim that Manu has more plant species than any other protected area on earth.

Noteworthy fauna: There is an interesting contrast between the species living in the high mountains and those living in the plains. Giant anteater Myrmecophaga tridactyla (V), river otter Lutra incana, margay Felis wiedi (V), jaguar Panthera onca (V), tapir Tapirus terrestris, white-tailed deer Odocoileus virginianus, Andean huemal Hippocamelus antisensis, dwarf brocket deer Mazama chunyi, spectacled bear Tremarctos ornatus (V), giant armadillo Priodontes giganteus (V), puma Felis concolor, pampas cat F. colocolo (occasionally), ocelot F. pardalis (V), spectacled caiman Caiman crocodilus crocodilus (V), black caiman Melanosuchus niger (E), two species of river turtle, giant otter Pteronura brasiliensis, (V) white-lipped peccary Tayassu pecari, 12 species of primates including howler monkey Alouatta sp., capuchin monkey Cebus sp, Emperor tamarin Saguinis imperator (I), red uakari Cacajao rubicundus, (V) squirrel monkey Saimiri sp. and spider monkey Ateles sp., boa, black lizard, white lizard, numerous species of snakes including vipers. There are probably over 800 bird species in the park (about a quarter of the Latin American total) including: Hoatzin Opisthocomus hoatzin, macaw Ara spp., yellow-rumped cacique Cacicus cela, Andean condor Vultur gryphus, jabiru stork Jabiru mycteria, Tremarctos ornatus, sparrowhawk, cashew bird, herons, owls. Andean lapwing Vanellus resplendens, white-winged cinclodes Cinclodes atacamensis, flocks of buff-necked ibis Theristicus caudatus and green-winged teal Anas crecca inhabit the small lakes. The Andean flicker Colaptes rupicola is also present. Approximately 850 bird species have been recorded. The indigenous fishes are well represented in the rivers.

PHILIPPINES

MT. APO NATIONAL PARK

Mt Apo National Park has suffered in recent years as a result of illegal logging, encroachment by shifting cultivators and the establishment of permanent squatter settlements. In addition, the Philippine Government is reclassifying 32,000 ha of illegally-cleared land within the present park boundaries for agricultural development. The park is not under an effective management regime and few regulations are enforced. Another complication is the presence of insurgents in the park. A recent drought and uncontrolled fire have also been detrimental to 30% of the park. It is estimated that only half of the park is still viable as a natural reserve.

As one of the 10 parks selected by the ASEAN countries as a "Heritage Park", Mt. Apo has outstanding botanical values and is habitat for the last population of the endangered Philippine Eagle.

IUCN/WWF sent an intervention letter to the government in June to suggest that a conservation status review of the park be undertaken. This would involve consolidating boundaries, building public support, and preparing a regional integrated resource management plan. The Bureau of Forest Development in the Philippines is pressing for an amendment to the reclassification proclamation to exempt the remaining forest areas from settlement.

BASIC DATA

Mount Apo National Park. Established 1936. Selected by the Association of South East Asian Nations (ASEAN) as a Heritage Park.

Location and area: On the Davao Gulf of the southeast coast of Mindanao Island, Southern Philippines. 6°58'N, 125°17'E (Mt. Apo). 72,814ha

Description: The park encloses Mt. Apo and Mt. Sibulan, both of volcanic origins and with barren, sparsely vegetated upper slopes. It includes one of the last remaining patches of virgin rain forest, mostly confined to areas above 1,200m with one small area occurring at 823m in a large deep valley near Todaya.

Noteworthy fauna: This park is one of the last remaining strongholds of the endemic Philippines eagle Pithecophaga jefferyi (E) with a surviving population of some 300 birds.

TANZANIA

NGORONGORO CONSERVATION AREA (World Heritage Site)

Ngorongoro, one of the highest priority sites in Africa for protected areas, is suffering from "benign neglect". The threats are subtle and long-term in nature and result from insufficient management resources, with equipment and trained manpower in short supply. The black rhino population has been totally exterminated in the Olduvai area, and only 15-20 remain in the Crater, compared with 109 counted in 1965. There is illegal grazing in Empakai Crater, and legal grazing by permit in Ngorongoro Crater is having detrimental effects. Wildfires arouse fears for the ecology of grasslands and forests. A management plan prepared by the Bureau of Resource Assessment and Land Use Planning at the University of Dar-es-Salaam, and funded by the World Heritage, has been rejected by the Conservator, and there are no formalized management plans and policies.

An evaluation by IUCN of Ngorongoro's problems proposed reaffirmation of budgetary and political support from the parent Ministry; completion and adoption of a revised management plan; and provision of external support for equipment, training and technical assistance.

The areas was placed on Unesco's List of World Heritage in Danger at the request of the Government of Tanzania early in November 1984.

Basic data

Ngorongoro Conservation Area. Established 1959. Accepted as World Heritage Site 1979. Approved as part of Serengeti-Ngorongoro Biosphere Reserve 1982.

Location and area: Northern Tanzania. 2°30'-3°30'S, 34°50'-35°55'E. 828,800ha. Contiguous to Serengeti National Park (1,476,300ha) and close to Lake Manyara National Park (32,500ha). Serengeti is contiguous to Maswa Game Reserve and Maasai Mara National Park in Kenya. Biosphere Reserve 2,305,100ha. World Heritage Site 809,440ha.

Description: Ngorongoro Crater is one of the largest inactive, unbroken, unflooded calderas (collapsed volcanoes) in the world, with a mean diameter of 16-19km, crater floor of 26,400ha and a rim soaring to 400-610m above the crater floor. The conservation area also includes Empakaai crater and Olduvai Gorge, famous for geology and associated palaeontological studies.

Noteworthy fauna: Wildebeest Connochaetes taurinus, zebra Equus burchelli, eland Tragelaphus oryx, gazelles Gazella ranti and G. thomsoni, black rhino Diceros bicornis (V) (at least 20, the Ngorongoro Crater represents the only visible breeding population of rhinos left in northern Tanzania) and hippo Hippopotamus amphibus. On the crater rim are giant forest hog Hylochoerus meinertzhageni, buffalo Synceros caffer, elephant Loxodonta africana (V), mountain reedbuck Redunca fulvorufula and leopard Panthera pardus (V). Serengeti migrants, including over one million wildebeest, are numerous on the plains. Serval Felis serval and waterbuck Kobus ellipsiprymnus occur in Lerai forest. Particularly common in the reserve are lion Panthera leo (highest known density in world), cheetah Acinonyx jubatus (V), hunting dog Lycaon pictus (V), hartebeest Alcelaphus buselaphus, and spotted hyaena Crocuta crocuta. Birds include ostrich Struthio camelus, kori bustard Ardeotis kori, lammergeyer Gypaetus barbatus, Verreaux's eagle Aquila verreauxi, Egyptian vulture Neophron percnopterus, rosy-breasted longclaw Macronyx amerliae and lesser flamingo Phoeniconaias minor. Sunbirds in the highland forest include

golden winged sunbird Nectarinia reichenowi and eastern double collared sunbird N. mediocris. Papilio sjoestedti (R), sometimes known as the Kilimanjaro swallowtail, flies in the montane forests of Mt.Meru, Mt.Kilimanjaro and Ngorongoro in north-eastern Tanzania.

USA

John Pennekamp Coral Reef State Park
and
Key Largo National Marine Sanctuary

Both these protected areas display the nature of the threats to the southern Florida ecosystem due to changes in hydrology and the impact of regional development. In Pennekamp park the current threats are water turbidity, caused by dredging, and land-filling. In the early 1970s, the corals within the park were found to be still healthy although some damage was noted on reefs outside the boundaries. Divers and snorkellers have caused physical damage on Pennekamp reef. Pollution has also caused problems and lead and mercury may be accumulating at the John Pennekamp Reef marina. The importance of preserving the mangroves and sea grasses to trap sediment and prevent increased turbidity within the park must be stressed. Recent plan to build 3,500 condominiums along a 16km section of adjacent land bordering both John Pennekamp and Key Largo Coral Marine Sanctuary has given cause for serious concern. An impact study has suggested that the coral reefs will be significantly affected by degraded water quality and further overuse if the development proceeds.

In the adjacent Key Largo Coral Reef Marine Sanctuary pollution is a potential threat. In 1975, the greater Miami area pumped 84 million gallons of sewage a day into surrounding marine waters and it is thought that much of this travels southwards to the Keys. The ocean outfall at Plantation Key, just south of Key Largo, pumps 700,000 gallons of secondary treated sewage a day, and there are two outfalls that dump sewage into Largo Sound. Studies at Carysfort Reef revealed high mortality rates of corals. Recent agricultural and industrial growth in south Florida has increased the potential for pollution from insecticides, herbicides and industrial chemicals. Evidence of oil pollution from vessel traffic through Hawk Channel and off the Marine Sanctuary increases yearly.

National recognition as a national marine sanctuary has had the effect of intensifying public use of the area. Heavily used areas of reef are in a distinctly poorer condition than more remote regions, probably largely due to anchoring and concentrated diving pressure. Boat groundings have also caused serious damage. Spearfishing and collecting of coral, shells and archaeological artifacts still occurs, although illegal.

The scarcity of the large molluscs Strombus gigas and Pleuroploca gigantea reflects high collecting pressure in past years. Explosives were used for fishing at Carysfort Reef from about 1900 to the early 1950s. Damage throughout that period was severe but recovery has been fairly complete. Litter is a problem in many areas.

Both the park and the sanctuary are areas of national importance and are the only remnants of natural systems that were common in the area before the turn of this century. One action that must be taken is to convince the Florida State Government to disallow the condominium development. A detailed report on other protective measures required has been prepared which include increases in regulating authority, enforcement and funding.

BASIC DATA

John Pennekamp Coral Reef State Park/Key Largo Coral Reef Marine Sanctuary.
Established as USA's first underwater park in 1961.

Location and area: John Pennekamp Park lies in Florida from Key Largo seaward to the 4.8 km State territorial limit and is adjacent and landward of the Key Largo Coral Reef Marine Sanctuary.

Description: Key Largo Coral Reef comprises the approximate northern limit of reef growth along the mainland coast of the Western Hemisphere. It consists of a shallow submerged shelf of sand and Thalassia beds, punctuated with patch and bank reefs. The main formations occur at depths of less than 37m. It is uniquely located where the scarcity of tidal passes through the Keys restricts mixing of colder turbid less saline Florida bay water with warm Florida current water, keeping the environment of the reef stable. The adjacent John Pennekamp Coral Reef State Park has a zone of red alga Goniolithon in shallower water, adjacent to a zone of Thalassia testudinum and the calcareous algae Halimeda. Rodriguez Key supports a dense forest of the mangrove Rhizophora mangle.

Noteworthy fauna: 516 fish species have been recorded, many of commercial value. Porites clivaticata coral dominates in a well-defined zone on the windward margin of the bank. The colonies are not attached to the substrate but are wedged against each other or held by the intergrowth of sponges and green algae.

YUGOSLAVIA

DURMITOR NATIONAL PARK (World Heritage Site)

A lead processing factory 20 miles upstream from the Tara Canyon, through which flows one of the last wild rivers of Europe, has holding tanks for storage of waste waters rich with heavy metals which are due to fill in 1985. As it is not possible to provide new tanks, and as 2,000 workers would lose jobs if the plant were closed down, the government has opted to discharge wastes into the Tara River. A conservation symposium held in Montenegro declared that if this happens, the river would become biologically dead.

A second threat is a hydro-electric project planned for the gorge. An alternative scheme, which would not affect the Canyon, has been presented by the Yugoslavian Institute for Nature Protection, but the Government has not yet announced a decision.

Both of the above threats to this site are of serious consequence and the World Heritage Secretariat has sent a formal expression of concern to the Yugoslav representative to Unesco.

BASIC DATA

Durmitor National Park. Established 1952. World Heritage Site 1980.

Location and area: Montenegro. 42°58'-43°17'N, 18°16'-19°27'E.
32,000ha

Description: The park comprises Mount Durmitor plateau and the valley formed by the canyon of the River Tara with canyons, mountains and plateaux ranging from 450m to 2,522m. The influence of both Mediterranean and alpine micro climates has resulted in an exceptional range of species. The River Tara has a gorge 1,300m deep and its pure, clear waters have notably diverse fauna and flora. There are 16 glacial lakes. Vegetation zones include deciduous forest, coniferous forest, sub-alpine zones and alpine meadows. The park contains one of the last virgin black pine Pinus nigra forests in Europe.

Noteworthy fauna: Brown bear Ursus arctos, wild boar Sus scrofa, wild cat Felis sylvestris, chamois Rupicapra rupicapra, various eagle species, capercaillie Tetrao urogallus, black grouse Lyrurus tetrix and rock partridge Alectoris graeca. The Tara river and its tributaries, as well as lakes, contain a large number of salmonidae, including Salmo trutem fario, Hucho hucho and Thimalus thimalus.

ZAIRE

GARAMBA NATIONAL PARK

The last viable population in the world of the northern white rhino Ceratotherium simum cottoni is threatened with extinction in the Garamba National Park. Its numbers have been reduced to about 10 from an estimated 1,300 in 1963 in Garamba, and it has been eliminated from its former habitats in Chad, Sudan and Uganda.

Poaching of other species, particularly elephant, is a secondary threat. The elephants, which are intermediate between the bush elephant Loxodonta africana africana and the forest elephant Loxodonta africana cyclotis, have been reduced from 22,000 in 1976 to 8,000 in 1983.

To meet the threat a three-year joint rehabilitation programme sponsored by the IUCN, WWF, Frankfurt Zoological Society and World Heritage Trust is providing technical expertise, equipment and supplies to reinforce law enforcement capabilities and restore park management. This is hampered at present by a strike by park rangers who have gone strike to protest against non-payment of their salaries.

In November 1984 the World Heritage Committee, meeting in Buenos Aires, inscribed Garamba on the List of World Heritage in Danger. This was at the request of the Zaire Government with the evaluation carried out by IUCN.

BASIC DATA

Parc National de Garamba. Established 1938, primarily to protect the northern white rhino and northern savanna giraffe. World Heritage Site 1980.

Location and area: Northeast Zaire. 28°48'-30°00'E, 3°45'-4°41'N. 492,000ha.

Description: A vast undulating plateau, which is part of an ancient peneplain - a plain left when ancient hills have been eroded away. Some inselbergs and sizeable marshland depressions. The densely-wooded savanna, gallery forests and papyrus marshes of the north and west gradually give way in the south to a less wooded savanna which merges into grassy savanna.

Noteworthy fauna: square-lipped or northern white rhino Ceratotherium simum cottoni, elephant Loxodonta africana, northern savanna giraffe Giraffa camelopardalis congoensis (occurring nowhere else in Zaire), hippo Hippopotamus amphibius, buffalo Syncerus caffer, hartebeest Alcelaphus sp., kob Kobus kob, waterbuck K. ellipsiprymnus, chimpanzee Pan troglodytes (V), olive baboon Papio anubis, colobus Colobus sp., vervet Cercopithecus aethiops and five other species of monkey, two species of otter, five species of mongoose, golden cat Felis aurata, leopard Panthera pardus (V), lion P. leo, warthog Phacochoerus aethiopicus, bushpig Potamochoerus porcus, roan antelope Hippotragus equinus and six other antelope species.

OTHER SERIOUSLY THREATENED PROTECTED AREAS

1. AFROTROPICAL REALM

Botswana

Central Kalahari Game Reserve

Chad

Ouadi Rimé/Achim Reserves de Faune

Djibouti

Forêt du Day National Park

Ethiopia

Simen Mt. National Park

Ivory Coast/Guinea/Liberia

Mt. Nimba Strict Nature Reserve

Mozambique

Gorongosa National Park

Senegal

Djoudj National Park

Sudan

Boma National Park

Tanzania

Mkomazi Game Reserve

Zambia

Lochinvar and Blue Lagoon National Parks

2. INDOMALAYAN REALM

Bhutan and India

Manas Wildlife Sanctuary, Bhutan and Manas Tiger Reserve, India

India

Gir National Park

India

Silent Valley National Park

Indonesia

Kerinci-Seblat National Park

Malaysia (Sabah)

Klias National Park

Thailand

Thung Yai and Huai Kha Khaeng Wildlife Sanctuaries

3. AUSTRALIAN REALM

Cape Tribulation National Park

4. NEOTROPICAL REALM

Bolivia

The Park System

Brazil

Amazonia National Park

Rio Trombetas Biological Reserve

Costa Rica

La Amistad/Talamanca National Park

Corcovado National Park

Guyana

Kaieteur National Park

Honduras

Rio Platano Biosphere Reserve/World Heritage Site

Jamaica

Montego Bay Marine Park

Panama

Darien National Park

Venezuela

Laguna de Tacarigua National Park

5. NEARCTIC REALM

Canada

Wood Buffalo National Park

USA

Indiana Dunes National Lakeshore, Cuyahoga Valley

National Recreation Area

St. Matthew Island National Wildlife Refuge

Wrangell/St. Elias National Park

6. PALAEARCTIC REALM

Vanoise National Park, France

1. AFROTROPICAL REALM

The threats to protected areas in Africa stem from lack of policies, finances, trained manpower, equipment, public awareness, planning, and the pressure from population. Military activities and civil unrest are factors beyond the control of the protected area agency, but are major disruptive events in several of the sites.

BOTSWANA - Central Kalahari Game Reserve. Cattle raising on a massive scale for beef export is competing for grazing and water with wildlife. Game fences have cut migration routes. Mineral prospecting and a proposed railway are additional threats.

CHAD - Reserve de faune de Ouadi Rimé/Ouadi Achim. Rare addax and scimitar-horned oryx are being poached by nomads, motorised hunters and military personnel. Domestic livestock is excluding wild animals from the best pastures. Since 1979 the security situation has led to desertion of the area by reserve staff, and all equipment has disappeared.

DJIBOUTI - Forêt du Day National Park. Djibouti's only protected area and home for a rare gamebird, the Djibouti Francolin, is being degraded by livestock overgrazing, and removal of trees for firewood. At the current rate of loss it will have disappeared by 1995. An additional threat is a plan to construct houses for government officials in the remaining forest area.

ETHIOPIA - Simen Mountains National Park (World Heritage Site). Abandoned by park staff in 1983 for security reasons. The status of the rare Walia ibex population and of the park management infrastructure is unknown.

IVORY COAST, GUINEA, LIBERIA Mt. Nimba Strict Nature Reserve (World Heritage Site). Massive iron-ore mining has led to removal of hundreds of square metres of soil, with streams for miles around fouled with heavy metal run-off, particularly ferruginous rock debris. There is also poaching and cultivation. The integrity of the Mt. Nimba area is deteriorating rapidly and irretrievably.

MOZAMBIQUE - Gorongosa National Park. Unconfirmed reports say the park has been taken over by rebel forces and abandoned by park staff.

SENEGAL - Djoudj National Park (World Heritage Site). Dam construction is seriously reducing its viability as winter habitat for three million Palaearctic migrant waterfowl. Placed on Unesco's List of World Heritage in Danger in November 1984.

SUDAN - Boma National Park. Bombing and pitched battles at park headquarters have taken place and park staff have been kidnapped. All equipment donated by the Frankfurt Zoological Society was destroyed and the project and staff have been withdrawn.

TANZANIA - Mkomazi Game Reserve. Mkomazi has been transformed into a cattle ranch. Along with settlements, overgrazing and lack of management, poaching has extirpated at least six species in the reserve, including black rhino.

ZAMBIA - Lochinvar and Blue Lagoon National Parks. There are upstream and downstream hydro developments (Kafue Dam), surrounding land use pressures, poaching, commercial fishing, domestic stock overgrazing, and military use of one of the parks.

2. INDOMALAYAN REALM (Indian subcontinent and Southeast Asia)

In the Indomalayan Realm the major threats are encroachment and the construction of hydro dams.

BHUTAN AND INDIA - Manas Wildlife Sanctuary, Bhutan, and Manas Tiger Reserve, India. These contiguous protected areas are threatened by a dam proposed within the Bhutanese sanctuary, which would flood a large part of the sanctuary. Road and canal construction, along with changes in hydrology, would radically alter the reserves' intrinsic values.

INDIA - Gir National Park. The only remaining habitat for the Asiatic lion is threatened by livestock grazing and a proposed dam.

Silent Valley National Park. A proposed hydro dam would inundate 670 ha of the core of the park, which is one of the few remaining areas of isolated and undisturbed rain forest in India. Another 300 ha would be cleared to house 8000 workers and families. The project would have a terminal impact on wildlife.

INDONESIA - Kerinci-Seblat National Park (ASEAN Heritage Park) There are continued incursions caused by logging roads and illegal land clearing and settlement. Two new major roads have been proposed, which would cut through the interior of the park and open it up to further encroachment.

MALAYSIA (SABAH) - Klias National Park. This area was made a national park in 1978 to protect an outstanding mangrove and coastal zone area. To facilitate supplies for a pulp and paper mill and plantation forestry it was degazetted two years later and regazetted in 1981 as a Forest Reserve.

THAILAND - Thung Yai and Huai Kha Khaeng Wildlife Sanctuaries. A proposed dam would flood 14,000 ha of valuable lowland and bisect the two sanctuaries. They are not currently under an effective management regime; no management plans exist; and insurgents are present in the area. Several hill tribes in the area are engaged in opium trade.

3. AUSTRALIAN REALM (Australasia)

Over the years there have been a number of highly publicised threats to protected areas in this realm from various sources, including uranium mining and hydro development. As the conservation lobby in the country is strong and effective, most major threats have been averted.

AUSTRALIA - Cape Tribulation National Park. This park was declared in 1981 by the Queensland Government to protect a unique combination of tropical rainforest, mangrove and coral reef. There is widespread public concern in Australia that a 30 km road has been bulldozed through the park, causing serious environmental damage and which will lead to other unintended impacts. In response to an IUCN intervention on the issue, the Environment Minister replied that the Federal government was opposed to the road, as is the Queensland Government. The Federal Government has since offered the Queensland State Government A\$1 million to prepare a management plan for the Cape York rainforests.

The threats illustrate a classic case of acting locally without thinking globally or even nationally. It is presumed that the road issue will be resolved within the country and that even if a high standard road is constructed, environmental safeguards and significant additions to the park area will be included as a compensatory measure. The conservation status of the area will be reviewed by the Australia Committee of IUCN.

4. NEOTROPICAL REALM (Central and South America)

The categories of threats facing protected areas in the Neotropical Realm are: colonisation within the areas; highway development; mineral and oil exploration; dam construction; resource extraction; native populations inside parks; external pollution; and pressures from tourism. Population growth and land scarcity are major long-term problems which will undoubtedly put more pressure on protected areas in the years to come. The current economic crisis in the region is greatly compounding problems. Conservation agency budgets and personnel rolls have been slashed and many quick-fix resource utilization schemes have been prepared which could affect wildlands.

BOLIVIA - The Park System. Due to extreme restrictions in budgets and other pressing social and economic commitments, the Government of Bolivia has ceased active management of the country's 10 national parks and five nature reserves. With no funds or equipment, the few staff members remaining are unable to undertake any management or law enforcement in these areas.

BRAZIL - Amazonia National Park. This one million ha park, primarily rainforest, lacks personnel and funding, and there is extensive gold prospecting. There is a proposal to open a calcium mine.

Rio Trombetas Biological Reserve. A dam on the Trombetas River will affect an important forest containing primates and a high diversity of birds and riverine fauna, especially the nesting areas of 5-8,000 Amazon River turtles, which are dependent on natural flooding cycles. The Reserve is the most important site in the Realm for this species.

COSTA RICA - La Amistad/Talamanca National Park (World Heritage Site). Human impact is considerable. About 10,000 people maintain their traditional lifestyles with free-range grazing, hunting, fishing and use of medicinal plants. A proposed route for an interoceanic pipeline to transport crude oil from California to the US East coast markets passes through the park. There is oil exploration in the Talamanca reserve; forest loss and soil degradation in the Ujarras, Salitre and Cabagra area; and there are squatters and shifting cultivation.

Corcovado National Park. - An estimated 1,000 gold panners have caused much habitat and faunal destruction. The Central Bank of Costa Rica has set up gold buying stations near the park border. Pressured by politicians and openly threatened by miners, rangers have had to abandon control over sizeable areas of the park.

GUYANA - Kaieteur National Park. The park has reportedly been closed to visitors and is now only in use by the military and by high government officials as a private hunting reserve.

HONDURAS - Rio Platano Biosphere Reserve (World Heritage Site). There are plans to resettle about 4000 Nicaraguan Miskito Indians on the border of the reserve's buffer zone. It is feared that the Miskitos, who are subsistence agriculturalists and hunters, will rapidly spill over into the reserve. Colonisation is also approaching the reserve's southwest borders. A plan to construct a military road has been temporarily stalled due to international pressure. Other threats include plundering of archaeological remains and potential timber exploitation.

JAMAICA - Montego Bay Marine Park. No management presence to enforce regulations. Heavy collecting of corals is occurring; the fish population is depleted, presumably through overfishing; considerable damage is probably being caused by anchors and badly placed fish traps. Boat groundings and propeller damage also seem to have affected corals in some places. Pollution and sediment from an airport swamp drainage channel carries dirty water and oil in considerable quantities after heavy rain; two storm gullies passing through Montego Bay often carry pollutants, and the Montego River carries the outflow of a major sewage treatment plant.

PANAMA - Darien National Park - This area is the only remaining gap in the entire Pan-American Highway, which is under construction and would bisect the Park, opening up the area for settlement and greatly increasing the danger of transmitting foot-and-mouth disease from South American cattle into Central America. The influx of people could lead to uncontrolled forestry and agriculture and hunting, resulting in deforestation, soil erosion and disruption of the fragile ecological equilibrium.

VENEZUELA - Laguna de Tacarigua National Park. The park is reported to be under serious threat from siltation due to river channelisation and artificial opening of the lagoon mouth. Illegal grazing and hunting are also known to occur. No further details are known.

5. NEARCTIC (North America)

Protected areas in this realm are subject to a unique set of management problems, but funds and manpower resources to solve them are greater than in all the other realms combined. Public interest and support are at a high level and have acted to avert many serious threats to the system over the years.

One of the countries in the realm, the USA, has completed an exhaustive survey of threats to its protected areas. In the "State of the Parks" report all areas were reported to be under at least one of 73 types of threat. In turn, states have carried out even more detailed assessments. It is also known that a number of areas administered as Wildlife Refuges are also in serious danger.

As the concern here is to highlight the major threats being experienced by the most significant areas, a full listing of management problems identified in these reports is not repeated here.

CANADA - Wood Buffalo National Park (World Heritage Site). The Province of Alberta is actively considering construction of a hydro dam on the Slave River adjacent to this World Heritage site, which would flood a portion of the park and have particularly serious effects on the area. It is not certain how the dam might affect the nesting site of the rare whooping crane (80 km away from the dam) but losses due to flight impacts with transmission lines would be expected.

USA - Indiana Dunes National Lakeshore and Cuyspo Valley National Recreation Area. These sites are surrounded by industrial, commercial and residential activities. Air and water problems are common. In a study of air pollution effects on 10 protected areas of the Great Lakes region, it was found that these areas were rated in most danger and that environmental alterations from sulphur dioxide and ozone as well as reductions in visibility are most serious. Typical acid rain effects on vegetation and aquatic life and atmospheric haze have been measured and resource values are diminishing at a steady rate. Unless major reductions in pollutant loadings occur, there may be significant future effects.

St Matthew Island Natural Wildlife Refuge - 1600 ha of land in this Sanctuary is to be withdrawn to allow construction of an oil production and exploration base. 250 people will be resident on site, and a deep sea harbour would be dredged and undersea pipelines from offshore drilling rigs would bring oil to storage tanks on the island. Disruptions of seabird nesting areas and marine mammals are expected to be major.

Wrangell/St Elias National Park (World Heritage Site). Senate Bill 5.49 has proposed opening 2.4 million acres of the park to recreational trophy hunting.

6. PALAEARCTIC REALM (Europe, North, Central and East Asia)

Although this is the largest Realm in the world, it has the smallest proportion of its area under protected status and has the fewest reported threats. The western part of the Realm has already been profoundly affected by Man and the few natural landscapes remaining are under pressure primarily from external sources such as illustrated in the cases below.

FRANCE - Vanoise National Park - The Park is currently threatened by a series of three hydro dams on which work has already begun causing extensive and disruptive exploratory construction. One dam would flood 9.5 ha of the central zone of the park and inundate a forested slope which is a relatively rare habitat type, and provides important winter range habitat for several wildlife species. The site has been altered by road and tunnel construction without prior approval from the park authorities, or authorization to proceed with the dam. Another dam proposed at Cru is in one of the last valleys still in a quasi-natural condition. There are already unsightly scars which would require extensive rehabilitation if the valley was to be restored to a natural condition.

Ski lifts to connect Val d'Isere with the small village of Bonneval are another major threat. Approval for the dam and ski lift projects could create dangerous precedents for development in other French national parks.



