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1110 MORGES SWITZERLAND

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The Conservation of Vegetation in Africa

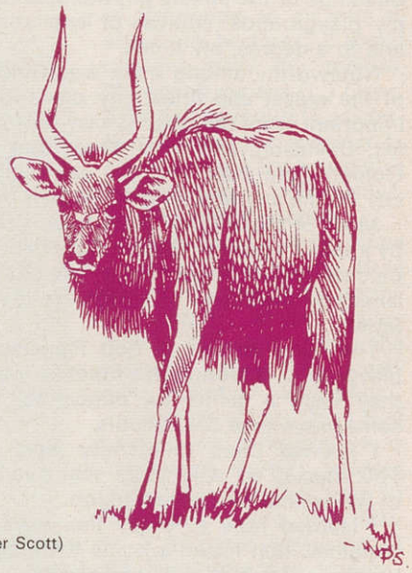
by Olov Hedberg

During recent years it has often been emphasized that one of the most serious threats to the future of mankind is the population explosion, leading to pronounced overpopulation of our planet. The quest for more foodstuffs to feed these teeming millions has led to intensified exploitation in many countries, facilitated by modern techniques, and leading to wholesale destruction of natural ecosystems over vast areas. This trend has been particularly serious in tropical countries, not least in Africa, and is a matter of grave concern not only to botanists, zoölogists and ecologists studying the African biota, but also to foresters, agriculturalists and many others. When, as secretary-general of the "Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale", I had to organize a symposium for the 6th plenary meeting of this association in Uppsala, Sweden, in September 1966, I therefore decided, after consultations with botanical colleagues as well as with representatives of IUCN and IBP, to devote a large part of the symposium to the theme **The conservation of vegetation and of its constituent species in Africa south of the Sahara.**

Through whole-hearted collaboration from a great number of specialists and after more than a year of preparation, it became possible to provide in the conservation sessions of this symposium a fairly comprehensive account of the actual position and most urgent needs for the conservation of vegetation in almost every country in Africa south of the Sahara.

Introductory contributions were given on *Why conserve natural vegetation* by B. Verdcourt, *Soil resources and land use in Tropical Africa* by W. Allan, and *Nature conservation and forest clearance, with special reference to some ecological implications of Tsetse control* by R. Godier. *Zoological aspects on the conservation of vegetation in Tropical Africa* and *Les Parcs Nationaux comme centres de recherches et de documentation sur l'évolution des espèces* were treated by K. Curry-Lindahl and *La conservation des habitats: problèmes de définition et de choix* by Th. Monod. Margaret Steentoft spoke *on Education towards conservation of nature in Tropical Africa,* and R. Keay presented a paper by G. Peterken on *The IBT/CT survey of areas of significance to conservation.*

For the purpose of surveying the actual position concerning conservation of vegetation in the various countries, Africa south of the Sahara was subdivided into seven main regions, *viz.* Sahel, West Tropical Africa, Central Africa, East Africa, South Tropical Africa, South Africa, and Madagascar with the Mascareignes. A regional editor was given responsibility for each of these regions, one of their tasks being to attempt to find the best specialists available to provide brief surveys of each country within the region. Papers were as far as possible circulated before the symposium in the form of 'preprints', and at the meeting the regional editors presented a synthesis for each region. In this way we managed to cover practically the whole of Africa south of the Sahara.



Nyala (Peter Scott)

The papers read at the symposium are now being prepared for publication as a special volume, to be called *The Conservation of Vegetation in Africa,* which will comprise about 400 double-columned pages. The local reports will be published in English or French according to the language situation of the countries concerned. This volume is expected to be of very great use in the large-scale planning of conservation of vegetation in Africa, not least in connection with the work of IUCN and the IBP/CT programme. It should also be of considerable assistance to local proponents of nature conservation in negotiations with their governments. We hope that it will assist in drawing the attention of biologists and laymen all over the world to the wholesale destruction threatening much of the African biota and hence contribute to a more general understanding of the urgent need for correlation of conservation measures in Africa.

Green space going, going...!

by Raymond F. Dasmann

As a small boy I lived in one of the more densely populated areas of San Francisco. It was dominated by elderly apartment buildings and flats, built almost wall to wall, largely without trees or gardens save for the few hardy specimens that could survive the dripping of soapy water from back-yard clotheslines.

The one small neighborhood park, some four blocks from my house, had little to recommend it except the value of its lawns as sites for impromptu games of football or baseball. It was neither scenically inspiring nor organized for recreational use, but it was better than no park at all.

Undoubtedly I should have been depressed by my neighborhood, but I cannot recall this feeling, since I did not belong to a neighborhood but to San Francisco. All the city was in reach of someone with carfare or a pair of walking legs. I knew the city from Ocean Beach to Fisherman's Wharf, from the hills of San Bruno to Land's End.

But to me the important parts of the city were not the buildings or the streets but the open spaces. These were my playgrounds, sources of inspiration and knowledge, and to a degree, my home.

Noteworthy among them was Golden Gate Park, one of the oldest and finest city parks in the country. Also important were the open grassy hills from Twin Peaks to Mt. Davidson, and sand dunes that extended south of Golden Gate Park, and the wild country adjoining the city on the seaward side of the San Francisco peninsula.

Most of these open areas have since been inundated by a sea of housing. Golden Gate Park remains, and a few patches around Twin Peaks. The city has been impoverished by their loss, although its tax rolls have grown fatter.

The open spaces of San Francisco were not just a playground, although this function was important. To me they were a center for education, more important in some ways than the schools.

I learned there to identify most of the more than 100 species of wild birds that lived in the rich variety of native and exotic vegetation.

I learned how to study the ways of the small wild mammals that found a home there and to recognize the various species of trees and shrubs.

The open spaces provided a connecting link with the world of wild nature from which I was otherwise cut off by city streets and houses. Without them I doubt that the career in biology I was ultimately to pursue would have been a possibility.

Today we are engaged in building a new America in which, a few decades hence, more than 300 million people will live, seek to maintain liberty, and pursue their various pathways to happiness. As the population climbs inexorably upward and an increasing percentage of the people will take up residence in the cities, the importance of urban open space, the green patches on the city maps, grows also.

The United States has not in the past been a nation of city people. Although cities have long been important, most of their inhabitants had rural roots, came in from the farms or small towns to take up city life.

Today, however, we are raising a nation of city-born children who must be taken on a special trip to see a cow or a corn-field to learn where our food comes from.

The old understanding of farms and forests, lands and landscape, wild and tame animals that was traditional to Americans will not be present in the urban Americans of the future unless provisions are made for it now.

Yet, these new Americans – to whom the countryside could be only vacationland, a place to play – will wield unprecedented political and economic power over every acre of farm and wild land in the United States.

We face today the prospect of the supercity, the megalopolis. One is extending from Boston to Washington; others are spreading from San Francisco to San Diego, outward from Chicago, southward from Seattle.

Unless the trend is stopped these are the places where most Americans will live and from which they will decide the future of the United States.

Planners are attempting to control and shape the sprawl that is connecting one city to another, to prevent parks, farmlands, natural areas, and all open space from disappearing beneath a pattern of highways, streets, and housing.

But the battle is being lost in a continuing series of seemingly minor skirmishes. Parks attract highway builders just as farmlands on the urban fringe attract land speculators.

Lands that brought $ 300 an acre a few years ago sell for $ 3,000 now. Zoning laws crumble before this degree of economic pressure.

Local governments find the costs of open ground beyond the reach of their budgets even with the massive federal assistance available to help in the purchase of such land. Always the developers can hold the lure of an increased tax base before hardpressed zoning boards or county councils.

Yet most Americans still have, at best, two weeks in a year for vacation. This is when they are free to visit the old "wide open spaces," the national parks and national forests of the West.

But it is only necessary to count the percentage of Negro faces among the national park visitors in the Western United States to realize that this freedom is not truly available to all. Most Americans must still find their recreation grounds closer to home, in the parks, beaches, and playgrounds near the big cities.

The quality of their recreation depends on the job we can do in preserving such areas for public use against extreme pressure for private development.

There is a strong tendency among city people, if they take an interest in nature at all, to develop an emotional sentimental view of it-to demand an all-or-none brand of protection for it.

A person whose early views of wildlife were formed not from experience with animals but from books such as "The Tale of Peter Rabbit," "The Wind in the Willows," or "Bambi," is not likely to be realistic in his approach to wildlife management. More likely he will oppose any form of hunting or trapping, and most certainly he will take a dim view of hunting for sport. The ecological facts that shape the ebb and flow of wild forests or wild animal life may well remain entirely unknown to him.

Similarly, if his knowledge of forests is based on a few vacation trips to national parks, he may well view the activities of lumbermen with dismay.

If he regards meat as only an item purchased in the supermarket, he may see little necessity for grazing on any of America's public lands.

Although I would much rather see cities full of nature lovers with protectionist views than see city populations indifferent to the future of American lands and wild heritage, I believe that such attitudes would cripple the sound management of the nation's natural resources, and interfere to an unjustifiable extent with those who would wish to use these resources in a legitimate manner.

There are excellent reasons for those industries that depend upon utilization of wild lands and resources to take an active interest in urban open space.

The American Forest Products Industries would do well to purchase and manage demonstration forests in or near every metropolitan area in which forests will grow. There it could show the facts of forest ecology and

(Continued page 15)

Northward extension of range of the Dead Sea Sparrow

by Shemuel Lulav, "Beth Gordon",
the A. D. Gordon Agriculture and Nature Study Institute, Deganya A, Jordan Valley, Israel.

The Dead Sea sparrow (*Passer moabiticus moabiticus* Tristram) is a small bird weighing 12-16 grams (for comparative purposes the weight of the house sparrow is 28-30 grams). The male's back is dark chestnut, with yellow spots on both sides of the black throat, which are common to both sexes.

The range of the Dead Sea sparrow is both small and discontinuous, being restricted to the waterways of three well-defined and extremely hot valleys:

(a) the Jordan Valley, which is the habitat of the typical race *P. m. moabiticus,*
(b) the lower Euphrates Valley, where the same race occurs (Zarudny separates this population into *P. m. mesopotamicus),*
(c) the Seistan Valley, on the Afghanistan-Iran border, the breeding place of the subspecies *P. m. yatii* Sharp (which Boros and Horvath (1954) elevated to a full species, *Passer yatii*).

Until recently the typical habitat of the Dead Sea sparrow in Israel was believed to be the series of oases on the shores of the Dead Sea and the belts of riverine vegetation along the Jordan River and its tributaries. The nests are huge globular structures, disproportionately large for such a small bird, made of dry twigs, and built on dead shrubs or trees of *Tamarix jordanis* Boiss., a single nest to a plant, at a height of between 1.5 and 2.5 m. above the ground. According to Professor H. Mendelson of Tel Aviv University, the range of the Dead Sea sparrow is related to the occurence of the beetle *Steraspis squamosa* Klug. var. *tamaricicola* Thoms. (Col., Buprestidae) which develops in the stem of the Tamarisk.

From a narrow entrance a curved tunnel leads to the breeding chamber inside the nest. It seems that the incubation is done partly by direct heat of the sun. Abandoned nests of the Dead Sea sparrow are sometimes inhabited by the much larger (30 grams) Spanish sparrow (*Passer hispaniolensis transcaspicus* Tschusi). The Dead Sea sparrow does not use old nests, but occasionally constructs a new nest on the previous year's.

In 1864 Canon H. B. Tristram described the type specimen from the shores of the Dead Sea. Hart (1891) and Aharoni (1923) met this bird only in the immediate vicinity of the Dead Sea. Mendelson, who observed it in the years 1933-1938, states that it breeds near the southeast shore of the Dead Sea and along the banks of the Jordan, up to 40 km. north of its estuary. The same range is mentioned by Bodenheimer (1935) and Meinertzhagen (1954). In his *List of Israeli Birds* (1960) Merom describes a similar range, adding the Beth-Shean (Beisan) Valley, about 75 km. north of the estuary of the Jordan.

During the last 6 or 7 years the Dead Sea sparrow has been steadily extending its range northward along the Jordan Valley. This expansion shows a diversion from the bird's "normal" habitat.

In the late 1950's a breeding colony of Dead Sea sparrows was recorded near the Yarmukh River (a tributary of the Jordan), about 5 km. south of Lake Kinneret (Sea of Galilee), 100 km. north of the Jordan estuary. In the summer of 1963 more than 50 nests were counted in the triangle Kinneret-Yarmukh-Jordan. Only 18 of them were located in typical habitat (Tamarisk trees along river-banks). The remainder were established on dry poplars, on a dead branch of an Olive tree, on the leguminous shrub *Sesbania aegyptiaca* Poir., on *Ferula communis* L. (Umbelliferae), on *Prosopis farcta* (Soland) Mac Bride (Leguminosae) and on a Eucalyptus tree (*E. rostrata* Schl.) (Lulav and Halevy, 1964).

All the nests were scattered inside a highly developed and continuously irrigated agricultural country, not far from irrigation ditches, always open to direct sun-radiation, but sometimes as far as 2 km. from the "normal" riverine habitat.

In the same district, in the summer of 1965, a breeding colony of more than 30 nests was found in the vicinity of fishponds, in an area of about one hectare (2.5 acres) covered with dry thistles, *Notobasis syriaca* (L.) Cass., *Silybum marianum* (L.) Gaertn., *Scolymus maculatus* L. (Compositae). Each nest was supported by 2 or 3 thistles, binding them together.

Dead Sea Sparrow, Afiqim,
Jordan Valley, July 1963. Male and nest, on dead poplar.

Later observations in Israel recorded nests in the Hule Nature Reserve, in the northern Upper Jordan Valley (some 150 km. from the estuary). Here the nests were found on living trees.

(Nesting of the Dead Sea sparrow on living trees was recorded by German sources (1965) for the first time in southeast Turkey. This may be a northern extension of the Mesopotamian population).

In the Jordan Valley most breeding activity has been recorded in May - June. The Dead Sea sparrow is generally regarded as a summer breeding bird in Israel. It is still not known where our populations winter but some flocks and single birds have been seen by several Israeli observers (Chernov, Yahav) in winter in the Dead Sea area.

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Canada: Caribou decline studied

The mystery of the disappearing barren-ground caribou is being investigated by the Canadian Wildlife Service. The game departments of Manitoba, Saskatchewan and Alberta are cooperating in an intensive two-year biological study.

Wildlife biologists believe over-hunting, poor calf survival and destruction of winter range have brought about the decline in the population from 670,000 animals in 1949 to about 200,000 in 1959. Most of the caribou winter below the tree-line in the northern prairie provinces and migrate north to the tundra to calve in the spring.

Three field parties of biologists are carrying out studies on the calving grounds southeast of Baker Lake, N.W.T., which cover approximately 154,000 square miles.

The caribou will be captured in corrals and studied for age, sex, health and reproductive status. Others will be tagged at water crossings. Eskimo and Indian hunters will be instructed to return the tags in an effort to determine the annual cropping rate.

Alaska: polar bear study

The Alaska Department of Fish and Game is undertaking a study to develop methods of marking polar bears as part of a programme for obtaining data on the biology and ecology of the species and, in particular, factual information on seasonal movements and population dynamics. The work will be done in the Bering Straits in February and March 1967.

An aircraft will be used to locate the animals which will then be immobilized with tranquillizer drugs fired from a helicopter. Each animal will be given a numbered ear tag: at the same time a coloured nylon marker will be attached to the other ear and a nylon collar placed around the neck. These distinguishing marks will assist in identifying individual animals in field observations. Some may also be tattooed, the ear tag and tattoo providing positive identification of specimens subsequently killed or recaptured.

International panel on sealing

Last spring Italy ratified the agreement for the inclusion of sealing in the deliberations of the International Commission for the Northwest Atlantic Fisheries. This cleared the way for ICNAF to set up a panel on harp and hood seals for the purpose of establishing international regulations for the conservation of seals.

The panel, comprising representatives of Norway, Denmark and Canada, agreed that each member country should prepare summaries of research, statistics and domestic regulations relating to the seal fisheries for circulation and consideration by the other member countries.

It is doubtful whether there will be time to reach international agreement on all aspects of seal fishery control in time for the 1967 season, but at least partial regulation may be expected.

Kazakhstan: flamingo colony

Aerial photography has shown that the flamingo colony on Lake Tengiz has increased to approximately 12,500 birds.

The lake, which covers an area of 1,200 sq. miles, is situated in an inaccessible part of Central Kazakhstan and is the most northerly place in the world inhabited by flamingos. The colony is accorded full protection by the Soviet authorities.

Lake Baikal: threat of industrial pollution

Leading Soviet scientists have urged the Russian government to take appropriate measures to safeguard Lake Baikal from pollution.

The lake faces the prospect of severe industrial pollution from a huge pulp-and-paper complex designed to exploit timber resources in the area, and now nearing completion.

In their appeal published in *Komsomolskaya Pravda,* organ of the Young Communist League, the scientists charged that the factories' chemical discharges would dangerously pollute the lake. They asked that the Baikal area be declared a protected natural region under the control of a single agency with responsibility for supervising the utilization of its natural resources.

Lake Baikal is the deepest Lake in the world (5,700 ft) and is unique both in faunal composition and in the biological peculiarities of its species. Of the 890 species found in the area 649 (73%) are endemic. One of these, the Baikal seal *Pusa sibirica,* is a small animal reaching a length of about 4'6" and weighing about 140 lb., dark silvery grey in colour becoming more yellowish on the under surface. It is related to the Arctic ringed seal *P. hispida,* and the probability is that the ancestors of the Baikal seal were arctic seals which reached the lake during Miocene times by way of marine connections.

The majority of the species endemic to the region are relicts of a fresh-water fauna with a marine resemblance, which inhabited the reservoirs of Asia, Europe, and North America in the Upper Tertiary.

Electrically Powered Cars vs Air Pollution

The Ford Motor Company recently demonstrated a new battery system which could be an integral part of a practical electric car for city and suburban driving. The car, a six-foot model with a top speed of 60 mph, may be in production within five to ten years. The battery system could be recharged nightly through a direct-current converter attached to normal home outlets. The development of such a vehicle is of interest to conservationists because, as Ford claims, the electric car "would help alleviate the problems of both congestion and air pollution in some metropolitan areas."

East Africa: cheetah survey

Concern over the widely held belief that the African cheetah, *Acinonyx jubatus jubatus,* is declining led the East African Wild Life Society to undertake an investigation into its present status in East Africa. The Society decided to preface the survey by collecting and analysing existing information on cheetah before deciding what research, if any, should be undertaken. Their findings are published in the *East African Wildlife Journal,* Vol. 4, 1966.

The sightings refer to 2,785 cheetah, of which it is assumed about 30 per cent are repetitive, giving a final total of approximately 1,950 different animals distributed over an area of roughly 406,000 square miles, a density of one per 200 sq. miles.

The absence of earlier records prevents comparisons with the past being made, but no evidence was found during the survey to suggest that the animal was declining or that population densities are now lower than they had been, except possibly in the Narok District of Kenya. On the other hand, of course, neither was any evidence found to support the opposite contention. The report stresses, however, that the expansion of human activities will inevitably continue to reduce the available habitat, and focuses attention on the lack of knowledge of the animal's biological and ecological requirements.

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SUDAN

CHECKLIST OF CONSERVATION ORGANIZATION AND INFORMATION

GEOGRAPHICAL DATA

● **Area :** 967,640 sq. miles (2,506,188 sq. km) of which 45% is desert or semi-desert, 45% is savannah and 10% represents flood plain and montane forest.

● **Population :** 12,800,704 in 1964 ; 90% rural, either sedentary or nomadic, 10% urban ; average 13.2 per sq. mile (5.1 per sq. km).

● **Capital:** Khartoum, population 177,675 in 1964 ; one of the group of 3 towns, Omdurman, Khartoum and North Khartoum with a total population of 450,000 in 1964.

● **Economy:** Based on agriculture. In 1964 cotton and cotton seed represented 52%, ground nuts 14%, sesame 11%, gum arabic 10%, animals and animal products 3%, and cereals, mainly dura (a Sorghum millet) 3% of the total value of exports. Most of the cotton is long staple of high quality produced under irrigation. Sudan is the world's largest producer of gum arabic, and in 1964 exported this product to 54 countries all over the world.

Livestock resources, cattle, sheep, goats, camels and wild life are great ; mineral resources are absent or so far not proved. Several light industries have been successfully established in recent years ; the share of the industrial output in the national income is expected to increase from 9% in 1960/61 to 16% in 1970/71.

The country is divided into five principal vegetation zones. 25% of the total land surface comprises desert; 20% semi-desert; 45% low and high rainfall savannah regions; and 10% flood plains and montane vegetation.

GOVERNMENT AND OFFICIAL ORGANIZATIONS

MINISTRY OF ANIMAL RESOURCES AND RURAL WATERS
P.O.BOX 293, KHARTOUM

● **Rural Water and Development Corporation,**
An independent corporate body, responsible for the planning and execution of soil and water conservation measures with the general aim of social and economic development and stabilization of agricultural production; improvement of rural water supplies by sinking of deep bores, wells and the excavation of hafirs (surface storage reservoirs) on proper land use basis.

It also administers the following two departments, each headed by a Director:

● **Animal Production Department,** P.O.Box 293, Khartoum.
Responsible for livestock improvement, including the maintenance of three centres for breeding and feeding research, the Kenana breed of cattle being of particular interest ; range management; veterinary services including research, prevention and control of disease ; marketing of livestock products, including the improvement of slaughter houses, hide production and export, and establishment of a leather industry.

● **Game and Fisheries Department,** P.O.Box 336, Khartoum.
Responsible for the protection and preservation of wild life ; maintenance and management of national parks, game reserves and sanctuaries, control of hunting, export and sale of wild animals and trophies ; maintenance and management of zoological gardens at Khartoum; control of fresh-water and marine fishing for trade purposes.

MINISTRY OF AGRICULTURE AND FORESTS
P.O.BOX 285, KHARTOUM

Administers the following two departments, each headed by a Director :

● **Agriculture Department,** P.O.Box 285, Khartoum.
Responsible for development and improvement of commercial, grain, oil seed, fodder and horticultural crops; research by the Agriculture Research Division at Wad Medani and other centres, with particular emphasis on research on agricultural soils at Wad Medani; protection against pests, including locusts and zarzour (Sudan Dioch, *Quelea quelea aethiopicus*) by means of the Crop Protection Division, P.O.Box 1142, Khartoum ; maintenance of plant quarantine service to control import of plant material ; agricultural education and training at Institute of Agriculture, Shambat.

● **Forests Department,** P.O.Box 658, Khartoum.
Responsible for the conservation, management and development of forest resources, including the establishment of reserves, their protection, exploitation and reafforestation ; utilization, including maintenance and operation of sawmills to produce railway sleepers and other sawn timber, supply of firewood and charcoal for the three towns, processing, grading and marketing of forests products ; forest inventory ; research including research on gum arabic ; forest education and training in Forest Ranger's College, Khartoum. A Forest Research Institute and new quarters for the Forest Ranger's College have now been established at Soba as a joint project of U.N. Special Fund/FAO/Government of Sudan.

MINISTRY OF IRRIGATION AND HYDROELECTRIC POWER
P.O.BOX 878, KHARTOUM

Responsible for the development and utilization of the water of the Blue and White Nile rivers and their tributaries for irrigation and production of hydroelectric power.

MINISTRY OF COMMUNICATION AND TOURISM
P.O.BOX 1130, KHARTOUM

● **Tourism Section,** P.O.Box 291, Khartoum.
Responsible for the promotion of tourism and travel in the Sudan.

MINISTRY OF MINING AND INDUSTRY
P.O.BOX 306, KHARTOUM

Administers the following two departments, each headed by a Director :

● **Survey Department,** P.O.Box 306, Khartoum.
Responsible for the planning and execution of cadastral and topographical surveys ; preparation, printing and publication of maps.

● **Geological Survey Department,** P.O.Box 410, Khartoum.
Responsible for the planning and execution of geological surveys ; investigation of geological problems ; control of prospecting, mining and quarrying.

UNIVERSITY OF KHARTOUM
P.O.BOX 321, KHARTOUM

The Faculties of Agriculture and Science contain departments for education and original research in all subjects concerning conservation of nature and natural resources.

The Department of Zoology in the Faculty of Science is responsible for the maintenance of the Natural History Museum, P.O.Box 321, Khartoum, a feature of which is the bird collection.

PRIVATE ORGANIZATIONS

● **The Philosophical Society of the Sudan,** P.O.Box 526, Khartoum.
This Society, founded in 1946, holds meetings from time to time, in which papers are presented and discussed. Papers are frequently on subjects relating to natural resources such as birds, insects, soil conservation and shifting cultivation. They are printed and published by the Society in *Sudan Notes and Records* and *Food and Society in the Sudan*.

● **Sudan Forestry Society,** c/o Forests Department, P.O. Box 658, Khartoum.
This Society, founded in 1948, is open to membership by foresters and others interested in forestry and conservation of natural resources. It publishes annually *Sudan Silva* which contains articles on these subjects.

● **Safari Companies**
These are private companies which organize safaris for big game hunting and for sightseeing and photography of wild life, subject to the Game Regulations.

NATIONAL PARKS

There are three National Parks, established to give sanctuary to wild life in its natural environment unaffected by man, and to promote touring, sightseeing and photography. Entrance is controlled and subject to payment of a fee.

- **Nimule National Park:** 100 sq. miles (259 sq. km).

Established in 1954. Situated in Equatoria Province on the international boundary with Uganda, at Lat. 3° 45′ N. and Long. 32° E. Mainly a plateau with steep sided mountains in its western portion. Grazing and water permanent. The principal species is white rhinoceros which is increasing in number. Elephant, buffalo, hippopotamus, waterbuck, hartebeest and cob are also plentiful. Accessible by road.

- **Southern National Park:** 6,500 sq. miles (16,842 sq. km).

Established in 1939. Situated on the border of Bahr El Ghazal and Equatoria Provinces at Lat. 6° 45′ N. and Long. 28° 30′. Mainly level, open savannah with bushy trees, traversed by three permanent rivers. Species commonly found are giant eland, white rhinoceros, elephant, buffalo, giraffe, roan antelope, hartebeest, and many lesser antelopes. Needs an access road to attract tourists.

- **Dinder National Park:** 2,470 sq. miles (6,400 sq. km).

Established in 1939. Situated in Blue Nile Province adjoining the international boundary with Ethiopia at Lat. 12° 30′ N. and Long. 35° E. Mainly level open savannah country, but also has several low hills, occasional dense patches of forest and treeless, grassy swamps. Good grazing and permanent water in the last, also in the Dinder River which crosses the park from S.E. to N.W. Abounds with wild life such as roan antelope, hartebeest, reedbuck, Soemmerring's gazelle giraffe, warthog and lion. Buffalo, ostrich and kudu are also frequently seen. This park has a good access road, open from December to May, as well as rest huts for the accommodation of visitors.

GAME RESERVES

There are fifteen Game Reserves, under the control of the Director, Game and Fisheries Department. Hunting prohibited except under special permit, but cultivation and grazing permissible.

- **Mongalla Game Reserve:** 30 sq. miles (78 sq. km).

Established in 1939. Situated along the banks of the Nile River between Juba and Mongalla. Elephant, buffalo, waterbuck, giraffe, zebra, lesser eland, roan antelope and black rhinoceros are found in this reserve.

- **Bodigeru Game Reserve:** 200 sq. miles (518 sq. km).

Established in 1939. Situated east of Mongalla. An open grassy plain. Elephant, buffalo, giraffe, zebra, eland, hartebeest, gazelle, black rhinoceros and lion are commonly found.

- **Juba Game Reserve:** 120 sq. miles (311 sq. km).

Established in 1939. Situated close to Juba town, for which it serves as a recreational centre. Commonly found are waterbuck, oribi, duiker, occasionally white rhinoceros, elephant, buffalo, hartebeest and roan antelope.

- **Bire Kpatua Game Reserve:** 50 sq. miles (129 sq. km).

Established in 1939. Level area, covered with dense forest, undergrowth and evergreen climbers. Established specifically for the preservation of bongo.

- **Shambe Game Reserve:** 400 sq. miles (1,036 sq. km).

Established in 1939. Mainly marshy land west of lake Shambe. Preservation of the Nile lechwe is the main object. Other species commonly found are white rhinoceros, elephant, buffalo, cob, lion and leopard.

- **Bengangai Game Reserve:** 6,000 sq. miles (15,547 sq. km).

Established in 1939. Mainly for the preservation of bongo. Other species commonly found are elephant, buffalo, giant forest hog and colobus monkey.

- **Mbarizunga Game Reserve:** 60 sq. miles (155 sq. km)

Established in 1939. Is densely forested and well watered. Species commonly found are bongo, elephant, giant forest hog, chimpanzee and colobus monkey.

- **Ashana Game Reserve:** 120 sq. miles (310 sq. km).

Established in 1939. Is traversed by the Lol River. Established primarily for the preservation of giant eland and cob. Other species include tiang, hartebeest, roan antelope, giraffe, reedbuck and waterbuck.

- **Numatina Game Reserve:** 1,000 sq. miles (2,591 sq. km).

Established in 1939. It is virtually an island covered with thick forest, the rich vegetation and ample water being favourable to wild life. Species permanently resident include elephant, buffalo, waterbuck, bushbuck, hartebeest and warthog.

- **Fanyikang Island Game Reserve:** 50 sq. miles (130 sq. km).

Established in 1939. Preservation of the Nile lechwe is the main object. The sitatunga is also a resident species.

- **Sabaloka Game Reserve:** 450 sq. miles (1,166 sq. km).

Established in 1939 for the preservation of wild sheep and ibex. A tract of hilly land with scrub vegetation on the western bank of the Nile north of Khartoum.

- **Zeraf Game Reserve:** 2,700 sq. miles (6,996 sq. km).

Established in 1939. An island between the White Nile and Zeraf Rivers. Preservation of the Nile lechwe is the main object. Other residential species include elephant, buffalo and hippopotamus.

- **Buma Game Reserve:** 533 sq. miles (1,381 sq. km).

Established in 1960. The species commonly found are white-eared cob, lion, giraffe, buffalo, lesser eland, zebra, tiang, roan antelope, waterbuck, gazelle, the first two being abundant. Kudu also occur.

- **Tokar Game Reserve:** 2,300 sq. miles (5,959 sq. km).

Established in 1939. The species commonly found are Soemmerring's gazelle, Dorcas gazelle and ibex.

- **Rahad Game Reserve:** 1,200 sq. miles (3,109 sq. km).

Established in 1939. The species commonly found are Soemmerring's gazelle, red fronted gazelle, roan antelope, oribi and occasionally lion.

SANCTUARIES

There are three Sanctuaries, established for the preservation of all forms of wild life, both fauna and flora, which are under the control of the Director, Game and Fisheries Department. Hunting, cultivation and grazing prohibited.

- **Sinkat-Erkowit Road Sanctuary.**

Strips, 4 miles (6.4 km) wide on each side of the main road from Sinkat to Erkowit, Kassala Province.

- **Erkowit Sanctuary.**

The tract lying within a radius of 10 miles (16 km) from Erkowit.

- **Gordon's Tree Sanctuary.**

The area between Omdurman bridge and Gordon's tree, on the White Nile at Khartoum.

FOREST RESERVES

Forest Reserves cover 2.6 million feddans (1 feddan = 1.038 acre). Although most of the reserves are managed either as protective forest or for timber production, they also serve as faunal sanctuaries. Entry by man and his domestic livestock is restricted by law, and shooting, even by licensed hunters, is prohibited. At present there are more than 450 forest reserves in the Sudan, including two international nature reserves – Aza and Lotti – which, together with other reserves, are managed solely as protective forest. Additional reserves have been proposed, the ultimate aim being that 15% of the total surface area of the country should be embraced by reserves.

CONTROLLED AREAS

None at present. The Director, Game and Fisheries Department, however, is empowered by the Preservation of Wild Animals Ordinance 1935, and the rules made under that ordinance, to declare any area in which, in his opinion, control is necessary.

RARE OR ENDANGERED SPECIES

Under the provisions of the Preservation of Wild Animals Ordinance 1935 and the Game Regulations 1935 the following species are absolutely protected, and it is illegal to hunt, kill, capture, or take their eggs :

Aard Wolf	*Proteles cristatus*
Wild Ass	*Equus asinus*
Elephant	(with tusks under 5 kilos in weight)
Rhinoceros	(both species)
Bald headed Ibis	*Comatibis eremita*
Shoe bill Stork	*Balaeniceps rex*

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INTERNATIONAL UNION FOR CONSERVATION
OF NATURE AND NATURAL RESOURCES

1110 MORGES, SWITZERLAND
IUCN BULLETIN MARCH 1967 SUPPLEMENT N° 17

ETHIOPIA

CHECKLIST OF CONSERVATION ORGANIZATION AND INFORMATION

GEOGRAPHICAL DATA

- **Area:** 477,304 sq. miles, including 2,722 sq. miles of lakes
- **Population:** in 1956 ; 22,590,400 ; population density of 46 per sq. mile
- **Capital:** Addis Ababa, population 480,700
- **Economy:** About 61% of the total export trade comes from coffee, with total coffee exports in 1964 amounting to US$ 64.5 million. Other principal exports include oil seeds, 10%, and hides and skins, 8%.

The economy is based primarily on subsistance agriculture. The varying geographical conditions enable the country to produce a wide range of crops such as cotton, tobacco, cereals, pulses, fruits and vegetables, to satisfy local needs. The lack of manufacturing, however, requires large industrial imports of motor vehicles, petroleum, fabrics, machines, clothing and medicines, which exceed the total exports in value.

Industry is just beginning to develop, and at present accounts for only 2.5% of the gross national product. There is potential, however, for a variety of manufacturing industries, and the country is taking advantage of loans and aid to make use of her natural resources.

GOVERNMENT AND OFFICIAL ORGANIZATIONS

MINISTRY OF AGRICULTURE
P.O.BOX 1232, ADDIS ABABA

Functions : Agriculture and Agricultural Research ; Animal Health and Control of Livestock Disease ; Locust Control ; Forestry and Forest Products ; Irrigation, Land Use and Development ; Livestock and Livestock Produce ; Soil Conservation ; Wildlife Conservation and National Parks ; Veterinary Services and Research.

The Ministry has four technical Departments :

- **Department of Agriculture:** P.O.Box 1232, Addis Ababa.

Functions : Agricultural Department policy ; Administration ; Finance ; Training ; Staff ; Coffee Board ; Entomology ; Pest Control ; Plant production and breeding ; Marketing of produce ; Field and Research services ; Extension service. The Department has several Agricultural Research and Experimental Stations and two Rural Education Centres. Agricultural officers are stationed in all the provincial capitals;

- **Department of Forestry:** P.O.Box 1232, Addis Ababa.

Functions : Forest policy ; Administration ; Finance ; Training ; Staff ; Forest utilization and management ; Timber and forest products ; Forest Reserves ; Research.

- **Wildlife Conservation Department:** P.O.Box 386, Addis Ababa.

Functions : Wildlife conservation policy ; Administration ; Finance ; Training ; Staff ; Conservation and management of wildlife resources ; Legislation ; Hunting licences ; National Parks and Game Reserves ; Research.

- **Veterinary Department:** P.O.Box 1232, Addis Ababa.

Functions : Veterinary Department policy ; Administration ; Finance ; Training ; Staff ; Legislation ; Control of Livestock diseases ; Marketing of stock and stock products ; Veterinary Research.

MINISTRY OF INFORMATION
P.O.BOX 1364, ADDIS ABABA

Functions : Radio and television services ; Publications, including Amharic, English and French newspapers and periodicals ; Press administration and censorship ; Films ; Tourism.

- **Ethiopian Tourist Organization:** P.O.Box 2183, Addis Ababa.

Functions : Development and promotion of tourism ; Tourist publicity; Hotels; Liaison with tour operators and safari outfitters.

- **Marine Department:** P.O.Box 1861, Addis Ababa.

Functions : Administration of marine and fresh-water fisheries ; Administration and development of port and harbour facilities ; Control of shipping ; Oceanographical surveys and research.

PRIVATE ORGANIZATIONS

- **Ethiopian Natural History Society:** c/o P.O.Box 1188, Addis Ababa.

An unofficial organization of amateur and professional naturalists founded in 1966, and interested in the study, recording and conservation of the fauna and flora of Ethiopia; also the dissemination of knowledge concerning the wildlife of Ethiopia, the conservation of such wildlife, and the promotion of legislation to protect it.

- **The Rod and Gun Club of Ethiopia:** c/o P.O.Box 1241, Addis Ababa.

Founded in 1966 under the patronage of His Imperial Majesty Haile Selassie I. An association of persons of all nationalities interested in the promotion of field sports and the conservation of wildlife.

NATIONAL PARKS

National Parks are shortly to be established in the following areas under the administration and management of the Wildlife Conservation Department of the Imperial Ethiopian Government :

- **Awash Park:** situated in the Awash River Valley about 100 miles east of Addis Ababa. The proposed Park lies at the eastern foot of the Shoa Escarpment, on the edge of the arid semi-desert country of Danakil. The Park headquarters will be at Awash Falls. Species include oryx, Grevy's zebra, Soemmerring's gazelle, Chanler's reedbuck, cheetah, leopard, klipspringer, ostrich, waterbuck and hippopotamus. Somali wild ass, Swayne's hartebeest and gerenuk occur to the east of the Awash.

- **Omo Park:** this Park is to be established in the Omo Valley, in Southwest Ethiopia, to the north of Lake Rudolf. The area consists of wide riverain plains bounded to west, north and east by mountain ranges rising to 8,000-9,000 feet. Species found in the area include elephant, buffalo, lion, leopard, eland, giraffe, oryx, zebra, gerenuk, greater and lesser kudu, tiang, Lelwel hartebeest, waterbuck, Grant's gazelle and ostrich. Eland are especially numerous and can be seen in unusually large herds. Nile perch and tiger fish are found in the Omo River.

- **Simien Mountains Park:** the primary object of this Park is to provide protection for the Walia ibex, a species unique to Ethiopia, of which the total number in existence does not exceed 250-300. The Park will be at an altitude of 8,000-12,000 feet and will include the spectacular series of cliffs, some 20 miles in length and 3,000-5,000 feet in height which form the northern wall of the Simien massif and comprise the main habitat of the Walia ibex. Other species include the Simien fox and Gelada baboon (both endemic to Ethiopia), leopard, klipspringer, and bushbuck ; also a wide variety of bird life, including lammergeyer, thick-billed raven, wattled ibis, choughs and others. The area is best reached

by road from Gondar to Davarik (approximately 60 miles), and thence by horse or mule (a day's ride).

• **Bale Mountains Park:** As a result of a survey recently carried out by Mr. Leslie Brown, financed jointly by UNESCO the World Wildlife Fund and the National Geographic Society, it is proposed to establish a further Park in the Bale Mountains, about 150 miles south of Addis Ababa. This Park will total some 350 sq. miles, and will provide protection for the mountain nyala *Tragelaphus buxtoni,* a species unique to Ethiopia, and other wildlife in the area. Apart from its value in terms of wildlife conservation, the magnificent unspoilt mountain scenery of this region is particularly well adapted to development as a tourist attraction.

Note: It is not at present possible to give the exact areas of these proposed parks, as the final boundaries have yet to be determined.

RARE AND ENDANGERED SPECIES

Apart from most of the commoner East African species, the Ethiopian fauna includes a number of animals which are either unique to Ethiopia itself or are confined to Ethiopia and restricted areas in neighbouring countries such as Somalia and the Sudan. These include the following;

Walia ibex, *Capra walie;* found only in the Simien Mountains to the north-east of Gondar at an altitude of 8,000–12,000 feet. It is unlikely that the total population of Walia exceeds 250–300, but with the establishment of a National Park in the Simien Mountains their future survival should be assured.

Nubian ibex, *Capra ibex nubiana;* occurs only in the Red Sea Hills of the Sudan and in the mountains north of Agordat in northern Eritrea. Little is known of its present status in Eritrea, but there is no doubt that numbers have been seriously reduced in recent years as a result of poaching.

Mountain nyala, *Tragelaphus buxtoni;* this magnificent antelope, which is in effect a mountain kudu, is confined to the Bale and Arussi Mountains of south-central Ethiopia, where it is found at an altitude of 8,000–12,000 feet. Until recently the mountain nyala was thought to be in danger of extinction, but a recent survey by Mr. Leslie Brown has indicated a probable overall population of 4,000–5,000, and it has therefore been removed from the IUCN list of endangered species.

Gelada baboon, *Theropithecus gelada;* this handsome primate occurs only in certain mountain regions of central and northern Ethiopia; notably in the Simien Mountains where it is often seen in large troops of several hundreds. Since its habitat in Simien will be included in the proposed new national park its future survival should be assured.

Somali wild ass, *Equus asinus somalicus;* a desert dwelling species found in the arid areas of Danakil, extending as far north as the Danakil Depression, near the Red Sea coast. The largest known population in Ethiopia is in the Sardo-Tendaho area, where there are probably some 250–300. The present status of the species in Somalia is unknown, and its range may now be confined to Ethiopia itself.

Simien fox, *Simenia simensis;* sometimes misleadingly referred to as the Abyssinian wolf, has the appearance of a long-legged European fox, is confined to the Bale, Arussi and Simien Mountains where it lives on the open moorlands at a height of about 10,000–12,000 feet. Although rare, the Simien fox is in no real danger of extinction.

Swayne's hartebeest, *Alcelaphus buselaphus swaynei;* was formerly very numerous in the Haud and Ogaden but is now reduced to a few small herds in the Ethiopian part of its former range, while nothing is known of its present status in Somalia, if indeed it survives at all in that country. This species is undoubtedly in serious danger of extinction.

Beira antelope, *Dorcatragus megalotis;* little is known about this antelope, though in its habits it has a close resemblance to the klipspringer. It is found on rocky hilltops in the arid areas of Eastern Ethiopia where it appears to be relatively scarce and is seldom seen.

Dibatag, *Ammodorcas clarkei;* has a superficial resemblance to the gerenuk, though smaller, but is believed to be more closely allied to the reedbucks than to the gazelles. It occurs in semi-desert areas of the Ogaden (Eastern Ethiopia), though little is known of its present status.

Nile lechwe, *Kobus megaceros;* the Nile lechwe was formerly believed to occur only in the swamps along the Nile and its eastern tributaries, in the Southern Sudan. However, it has recently been discovered on the Baro, Ghilo and Akobo rivers in Western Ethiopia.

Isabelline gazelle, *Gazella dorcas isabella;* has the appearance of a miniature Soemmering's gazelle, is found in the semi-desert regions of Danakil, and is the Ethiopian race of the Dorcas. Little is yet known of its status and distribution.

Speke's gazelle, *Gazella spekei;* found on the arid stony plateaux of Eastern Ethiopia, and characterized by a flabby corrugated protuberance on the nose which it appears able to inflate at will. Like the other gazelles of this region little is yet known of its present status, though it is undoubtedly comparatively rare.

Pelzeln's gazelle, *Gazella pelzelnii;* slightly larger than Speke's gazelle, it replaces that species in the maritime desert regions of Eastern Ethiopia and Somalia, where it is now comparatively scarce.

Heughlin's gazelle, *Gazella tilonura;* distinguished from the Isabelline gazelle by its strongly marked black flank band, this species is found on elevated plains between 3,000 and 5,000 feet in north-eastern Ethiopia and the eastern Sudan.

Menelik's bushbuck, *Tragelaphus scriptus menelikí;* much darker than other races of bushbuck, the male being almost black with only faint white markings, this very distinctive species is found in Arussi, Bale and other mountainous areas of South and Central Ethiopia.

The foregoing is a summary of the rarer species peculiar to the Ethiopian region. The following is a list of those species considered to be the most seriously endangered;

Walia ibex	*Capra walie*
Somali wild ass	*Equus asinus somalicus*
Swayne's hartbeest	*Alcelaphus buselaphus swaynei*
Black rhinoceros	*Diceros bicornis*
Beira antelope	*Dorcatragus megalotis*
Cheetah	*Acinonyx jubatus*

GAME RESERVES, SANCTUARIES AND CONTROLLED AREAS

New wildlife conservation legislation has now been completed (July 1966) and will shortly be introduced. Game Reserves and Controlled Hunting Areas will then be established in appropriate areas under the provisions of the new regulations. Game Reserves are planned in Danakil (Somali wild ass, Swayne's hartebeest and other species); the Gambella area on the Ethiopia-Sudan border (elephant, buffalo, giraffe, tiang, roan antelope, white-eared kob and Nile lechwe), the Rift valley lakes, including Lake Abgiata, primarily for the protection of birds, and in certain areas of Eritrea.

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FOR ADDITIONAL INFORMATION

This synopsis has been prepared by the Wildlife Conservation Department of the Imperial Ethiopian Government, P.O. Box 386, Addis-Ababa, which will be pleased to provide additional information relating to wildlife conservation in Ethiopia. Details of National Parks, Game Reserves and other conservation areas will be submitted to IUCN as and when they are finally established.

New Zealand: propagation of rare plants

The National Parks Authority of New Zealand recently adopted the recommendation that the propagation of rare or threatened species of plants by commercial nurserymen is not inconsistent with the primary objective of ensuring perpetuation of the species. In each case approval of the Authority must be sought before specimens are made available or are collected for purposes of propagation.

This decision follows a test case in which cuttings of *Plectomirtha baylisiana,* a tree known only from one specimen in the Three Kings Islands, were given to a commercial nursery firm to assist in propagating the species, after several attempts by the Plant Diseases Division had failed. Earlier attempts at propagation were successful in safeguarding another plant *Tecomanthe speciosa,* also known from only a single specimen in the Three Kings Islands.

Goats are blamed for much of the floral degradation in the Three Kings Islands. They have since been removed.

Norfolk Island

Norfolk Island, a small oceanic island about 5 miles long by 3 broad, is situated in the S.W. Pacific roughly equidistant from New Caledonia and New Zealand.

At the time of its discovery by Captain Cook in 1774 it was uninhabited and covered with dense subtropical rain forest.

It was first used as a convict settlement and later as the home of the "Pitcairn Islanders" but the long period of relative stability has in recent years given way to rapid expansion of the human population both through greatly increased settlement and tourism. The number of commercial flights from Australia and New Zealand has now increased to three a week, tourists being attracted by the prospect of an island holiday as well as by the duty free shops.

As a result of these mounting pressures the indigenous flora is increasingly threatened with eradication. Like other isolated oceanic islands, a unique flora of great scientific interest and importance has evolved on Norfolk Island. There are between 30 and 40 endemic species of vascular plants alone. The gradual reduction of indigenous forest and destruction of vegetation has already brought about the extermination of several endemic plants, and others are close to extinction. Similarly, several endemic birds are now extinct and others have become very rare.

Stands of native rain forest are now found only around the slopes of the island's solitary hill and its twin summits, Mt. Bates and Mt. Pitt. This is already Crown Land but, although fenced off and often referred to as the "Reserve", its present status is inadequate to prevent various forms of disturbance, encroachment and "development". At present a rough track and a few paths traverse the area but plans have apparently been made to construct a road through the forest as a scenic tourist attraction. The existing tracks and paths are sufficient for the interested walker or tourist but if they were widened, extended or "improved" an immediate result would be to introduce light and drying air currents, thereby materially altering the existing moist, shaded conditions that are essential for the continued survival of several endemic plant species. If the road is built conditions will be so altered that the remnant forest will inevitably be destroyed.

It is important that prompt and effective measures should be taken to ensure the proper protection of what remains of the island's unique flora and fauna, and there appears to be a valid case for declaring Mts. Pitt and Bates a national park.

Supplementary protein

After several thousand years, meat production is still concentrated on the two domesticated grazing animals, sheep and cattle. Latterly, this has often been at the expense of wild animal species which are ideally adapted to local environmental conditions. Their elimination has often resulted in double disaster. Not only has a useful source of valuable meat been eliminated but subsequent uncontrolled over-stocking by domestic livestock has frequently resulted in the land becoming barren following destruction of the plant cover. There are many parts of Africa where manmade deserts – some beyond hope of recovery – are directly attributable to cattle monoculture.

The need to make more rational use of renewable natural resources, including vegetation, for protein production is underlined by the series of warnings issued by the Director-General of FAO. He states that in the 1965-66 period world food production decreased by two per cent in all areas – except North America – which, in view of a population growth of 70 million, is equivalent to an effective decrease of four to five per cent per head.

In his speech to the 8th FAO Regional Conference for the Near East meeting in Khartoum at the end of January, the Director-General, Dr. B. R. Sen, again emphasized that the imbalance between population growth and food supply is assuming proportions fraught with danger to millions of our fellow human beings... [requiring] the combined efforts of the world to avoid catastrophe. Any remaining complacency about the prevailing food situation must surely have been dispelled by these warnings.

In this connection it is interesting to note the lead established by Soviet Russia in the acclimatization of wild ungulates to human use. The herd of eland, *Taurotragus oryx,* established in the Ukraine, which has been built up from four pairs imported from Africa in 1892, now numbers 408 animals, 21 of them being milked with spectacular results. Because it is a browser the eland does not compete for food with grazing animals and it may surprise many to know that this African species can withstand temperatures down to 3° C.

Camargue awarded conservation diploma

The Diploma given by the Council of Europe to protected landscapes, nature reserves or natural sites in Europe of outstanding merit has this year been awarded to the Camargue Nature Reserve.

The Camargue proper covers an area of about 293 sq. miles, of which 55 sq. miles are lakes and a rather larger area swamps. Although substantial sectors in the north and in the south-east have been converted into agricultural land or used for salt-exploitation purposes, what remains still comprises the largest unspoiled area in France, with the exception of some mountainous regions. The nature reserve was established in 1928 and includes nearly 30,000 acres of the best wildlife habitat remaining in Europe.

It is administered by the Société Nationale de la Protection de la Nature de France. There is also an extensive private estate which is managed as a nature reserve and which contains a research station at La Tour du Valat.

It is one of the few true wilderness areas remaining in southern Europe and is geographically so placed that it forms an important link with the African fauna for which it is a kind of bridge-head into western Europe for many migrant bird species. During the autumn large numbers of waterfowl congregate in the area and it is the only place in Europe where flamingos nest regularly.

In addition to the rich avian fauna the Camargue is renowned for the herds of semi-wild bulls and horses, a reminder of the great herds that at one time occupied many parts of Europe.

United States endangered species programme

Although the United States ended 1966 with one fewer whooping crane than the previous year, the loss has been tempered by progress on several other fronts in saving Americas' endangered wildlife species from extinction.

In a report of the year's activities Secretary of the Interior Stewart L. Udall said the wild whooping crane population at the Aransas National Wildlife Refuge in Texas stands at 43, compared with 44 at the end of 1965. Six adult whooping cranes vanished during the year somewhere between Aransas and the annual nesting grounds in Canada. However, five young-of-the-year joined the flock, thus making a net loss of one.

In listing the several advancements made in wildlife conservation in 1966, Secretary Udall counted as the most heartening the passage by Congress of the Endangered Species Act, and the growing concern both by the general public and by all levels of government for endangered wildlife.

"Private citizens, conservation groups, universities, and local state governments were in the front line throughout the year in the fight against encroachment on valuable living space for wildlife." Secretary Udall added that several professional groups, including the American Fisheries Society, Wildlife Society, International Association of Game, Fish and Conservation Commissioners, and the American Association of Zoölogical Parks and Aquariums have established committees to study endangered species and to recommend appropriate action. The U.S. National Committee of the International Biological Programme also has a section concerned with this problem.

The new Endangered Species Preservation Act authorizes the use of the Land and Water Conservation Fund and certain other Federal funds to acquire land needed to safeguard rare and endangered species of wildlife. The Department's Bureau of Sport Fisheries and Wildlife have a leading role in the national conservation programme.

The Bureau's Director, John S. Gottschalk, has established an Endangered Species Office. Much of the research on endangered species will be concentrated at the Bureau's Patuxent Wildlife Research Center near Laurel, Maryland.

The following are the principal 1966 developments mentioned by Secretary Udall:

- A biologist is rounding out a study on four major islands in Hawaii from which will come recommendations for preserving the Koloa (Hawaiian duck), Hawaiian gallinule, Hawaiian coot, and Hawaiian stilt.

- The California condor is being studied on its present range northwest of Los Angeles. A Federal biologist reports that 51 condors, 13 of them young birds, have been counted.

- The rare black-footed ferret, is being studied on the northern plains.

- A study of the ecology and distribution of endangered southeastern species has started. Primary emphasis is on the Florida everglade kite. Thus far 22 kites have been counted, all near Loxahatchee National Wildlife Refuge, northwest of Miami.

- Increased attention is being devoted to protecting endangered species on the 570 million acres of public lands under jurisdiction of various Federal agencies and on the 50 million acres of Indian lands.

- The Colorado Cooperative Fishery Unit has moved 40 adult greenback cutthroat trout in an attempt to extend the range of this rare fish, and field biologists recently transferred 100 Apache trout from Deep Creek in Arizona to a lake built by the White Mountain Apaches specifically for preservation of this native fish.

- Watering tanks were established in strategic locations last summer on the San Andres National Wildlife Refuge in New Mexico and on the Kofa and Cabeza Prieta Game Ranges in Arizona to provide better distribution of desert bighorn sheep.

- A captive flock of rare New Mexican ducks was established on Bosque del Apache National Wildlife Refuge in New Mexico. These birds have produced 30 young which will be released on the refuge next spring. The Bureau and the Arizona and New Mexico wildlife departments helped the Bureau of Land Management with a New Mexican duck-restoration project on the Bureau's San Simon Cienaga area along the Arizona–New Mexico border.

- The Texas red wolf is now protected on the Anahuac, Aransas, and Brazoria National Wildlife Refuges in Texas. Detailed classification for this species was completed in eastern Texas and will be expanded throughout its range.

- Two 97-acre mammal-proof exclosures were constructed on Aransas Refuge to provide safe winter feeding areas for whooping cranes. All eagle nests and roosting sites on national wildlife refuges have been located and marked. No tree cutting or other refuge use by man will be permitted within half a mile. Surveillance is provided along migration routes and at wintering concentration points.

- The National Park Service is cooperating in research on the black-footed ferret, grizzly bear, sea turtles, desert pupfish, desert bighorn sheep, nene goose, and wolf. Its programs include restoration of suitable habitat, reintroduction of endangered species in key areas to form nuclei breeding populations, and control or removal of exotic animals which conflict with endangered species.

- The Forest Service is stressing protection and management of endangered species in National Forests. Habitat management there includes completion of two herd-unit plans for California bighorn sheep and a habitat plan for Tule elk, a special policy on grizzly bear habitat management in Montana and northern Idaho, measures to identify red wolves in Arkansas, habitat considerations for the Little Colorado spinedace, Gila trout, and Piute cutthroat trout, and continuation of programs for the Kirtland's warbler in Michigan.

The January, 1967 issue of *Landscape Architecture* the quarterly Journal of the American Society of Landscape Architects, is devoted exclusively to "ecology and natural processes as a basis for planning and design" and contains authoritative articles on such subjects as
Ecology as a basis for 20th Century planning and design;
An ecological method for landscape architecture;
Landscape analysis for town expansion: The cost of ignoring ecology in development etc.

This issue is of help not only in drawing attention to the subject for its own intrinsic worth but also in serving to strengthen the link beween the ecologist and the landscape planner.

Copies may be ordered at $ 2 from LANDSCAPE ARCHITECTURE, 1500 Bardstown Road, Louisville, Kentucky 40206, USA.

Green space going, going...!

(Continued from page 10)

management to city people who may never visit wild forests, or who might otherwise regard logging as a completely destructive use of the land.

Without such education these people may well vote the lumber industries out of business.

The livestock industries of the United States would be buying good insurance for their future if they would establish demonstration ranches in or near every large urban area where city people could become acquainted with the facts of meat production through sound range and pasture management. Their stake in the public and private range lands of America may well depend on building an understanding among city voters.

Farmers' associations would do well to support demonstration farms within easy reach of the cities, where sympathy could be developed with the problems of those who earn their living directly from the land.

Sportsmen's organizations and the industries that serve sportsmen might join to purchase and maintain wildlife management demonstration areas where city folk could see the necessities in wildlife production and the positive values in management through sport hunting.

The Remington Farms in Maryland provide a good model, but they are both too remote from urban centers and not sufficiently known to do an adequate job alone.

The investment in urban, or near-urban land needed to support such demonstration areas would be high, but the future of the resource-using industries could well depend upon such an investment in city-based education. Properly located, such areas could contribute much needed natural beauty, and add form and definition to the surrounding urban lands.

That they would take some of the burden for open-space preservation from local governments is obvious.

A responsibility for preserving open space in urban areas rests also upon the educational institutions of the cities.

Every college or university that offers courses in field biology or any other natural-resource-based discipline needs natural areas and managed open land within easy reach of its students.

Such areas serve as a necessary practical demonstration ground for the principles taught in the classroom, as well as sites for research by both faculty and students.

Some universities have these already, but too many depend upon summer courses held in remote field stations. The result of such dependence is that most students have no opportunity to practice, or see the application of, the material that they hear about in lectures or read in textbooks.

State legislatures and college trustees need to be made aware of their financial responsibilities in this regard.

The obligation, however, does not cease at the college level. Both secondary and elementary schools would benefit greatly from the presence of small natural areas in or near their campuses. Such outdoor spaces should be regarded as the equivalent of essential classrooms.

In the long run their importance may be greater. It should almost go without saying that some emphasis on ecology and conservation in high school biology or social studies courses may be vital to the future of the nation's lands and natural resources.

The role of federal, state, and local governments in open-space preservation needs critical evaluation. There is a strong tendency today for government to spend public money for recreational facilities known to have mass popularity. Swimming pools are an example.

However, the very popularity of such facilities almost guarantees that they will be provided by private investment to the extent that the public does not supply them.

The government did not have to build Disneyland in order for such a venture to be carried through. It would be irresponsible for government to build the equivalents of Disneyland to supply public outdoor recreation.

Instead, government support is needed for those forms of public outdoor recreation that are not popular, because the level of public awareness and education does not yet create a demand for them, yet are essential if the level of public appreciation of its natural heritage is to be expanded.

The public purse supports art museums, although the level of public appreciation for fine art is still primitive.

There is little likelihood that private capital will supply nature areas, bird sanctuaries, or centers for public education in wildland ecology from a profit motive. Public funds are needed to supplement the remarkable, but still inadequate, efforts of private philanthropy.

There is good reason to believe that natural areas within metropolitan regions will become increasingly essential as the distance between urban man and his natural heritage becomes greater.

We ignore nature at our own peril.

Up to the last century people nearly everywhere grew up on the land, with wilderness on the horizon, and unexplored lands somewhere awaiting discovery.

There is reason to doubt that creatures with such a heritage can be for too long confined in an entirely artificial environment, such as some "city of the future" advocates seem to prescribe for us.

The human species might well adapt to such a life but at the cost of its own humanity, the loss of such qualities as a "reverence for life" that add up to humaneness in mankind. There seems no good reason for risking such social evolution, for cutting ourselves off from our wild roots in the soil of our continent.

The other alternatives require only a willingness to forgo some quick profits from land, to expend a little more public and private money, and to plan rationally for our own future.

Artur Glikson

On the third of July 1966 Artur Glikson, Vice-Chairman of IUCN's Landscape Planning Committee, died in the Tel-Hashomer Hospital in Tel Aviv. His busy life ended wholly unexpectedly, at a time when he was engaged in drawing up a plan for regional reconstruction and for landscape development for Crete.

Born in 1911 in the eastern part of Germany, Glikson completed his studies in architecture at the Berlin Technical High School in 1935 and settled in Palestine in the same year. In a later independent Israël, he worked from 1948 to 1953 in the National Planning Department, and during the period 1954-1958 he was Head of the Planning Department of the Ministry of Housing. Since then, as a private architect and regional planner, he was engaged in development projects both in his own country and abroad. For several years he was Senior Lecturer in national and regional planning in the Faculty of Architecture at the Israël Institute of Technology in Haifa. Since 1950 he had specialised in landscape planning and development in the Netherlands.

He was a good friend of IUCN and took an active part in the work of the Landscape Planning Committee since its inception at the Edinburgh General Assembly in 1956. A number of his ideas can be found in his contributions to the 6th, 7th and 10th Technical Meetings. Altough a highly "creative" man, he recognized the unavoidable necessity for modifying many parts of the face of the earth to meet the changing conditions of human society, but he still was deeply conscious of the need for an ecological approach in connection with man's modification of the natural environment.

Artur Glikson was also well-known in the spheres of F.A.O., I.F.L.A., and in several Town and Country Planning institutions at the international level.

His knowledge and his insight into the ever more pressing problems arising from changes in the human environment will be severely missed among landscape architects, planners and conservationists.

R. J. Benthem
Chairman, IUCN Landscape Planning Committee

Status of the Yeheb nut Tree

An interesting paper by P.R.O. Bally, entitled "Enquiry into the occurence of the Yeheb nut (*Cordeauxia edulis* Hemsl.) in the Horn of Africa", has recently appeared in *Candollea* **21** (1): 3-11. (1966) in his series *Miscellaneous notes on the flora of Tropical East Africa,* 29. [*Candollea* is a scientific journal published by the Conservatoire Botanique de l'Université de Genève.]

Cordeauxia edulis, a small tree which has a restricted distribution in the South-East of the Somali Republic and part of the Ogaden (Ethiopia), is one of the few plants of economic importance indigenous to the Horn of Africa, and one of the few capable of flourishing under such harsh environmental conditions. The low annual rainfall and the nomadic habits of the local people make it impossible for them to grow leguminous crops and, although the protein and carbohydrate content of the Yeheb nut is inferior to that of the legumes currently consumed in East Africa, it is relatively rich in fat and sugar. It is therefore of considerable economic significance to the inhabitants of the semi-desert region in which it occurs.

The nuts have an agreeable flavour and are eaten either fresh, boiled or, occasionally, roasted when they taste somewhat like roasted chestnuts. Most are eaten locally where they form an important constituent of the staple diet of the poorer people, but some are marketed along the coast and in the northern part of the country where they are much in demand, for the Somalis value them highly for their nutritional and alleged medicinal properties.

Mr. Bally has visited this region on a number of occasions during the last 25 years and his observations have shown that the range of the shrub has substantially declined and it has disappeared from many regions cited by early travellers.

This situation has arisen partly through continuing degradation of the vegetative cover throughout the whole of Somalia caused by overstocking (see IUCN Bulletin New Series No. 11. pp. 6-7) and partly through improvident exploitation of the shrub for the nuts, which are harvested so thoroughly that none remain for regeneration. Even if some seeds were permitted to germinate the seedlings would not survive for long – uncontrolled grazing and browsing by the ubiquitous domestic goat would quickly eliminate them. Mr. Bally summarizes the position when he writes:

"The total absence of seedlings and of young plants suggested that regeneration had been inhibited for years. Most of the mature plants bore distinct traces of being browsed upon by stock. The impression I gained was that, if no steps are taken to protect the area from overgrazing, to limit the harvesting and to set aside some of the crop for seeding purposes, the Yeheb bush will disappear from the Bokh region within a matter of years.

It would be a severe loss for the Somali population of the interior if this convenient source of valuable foodstuff provided by nature, not requiring the cultivating and tending of fields, to which a nomadic people take either very reluctantly or not at all, were to vanish from their already so unproductive country."

Wildlife Conservation in Algeria

by David J. Dickinson

At the time of Algerian independence in 1962 there were 13 national parks in the country occupying a total of 274 square kilometers, or approximately 0.01 per cent of the available land area. Recent reports appear to indicate that most of these nominal national parks are so inadequately managed that they do not conform to the normally acceptable standards qualifying areas as true national parks or equivalent reserves.

The reserves are under the control of the Ministry of Agriculture's Department of Forests. Theoretically its authority is considerable, but with no financial allotments for the reserves, with no biologists and only four trained forestry officers, and with most of the forest guard houses destroyed or abandoned since the Algerian war, the ability of the department to exercise its power in the reserves is decisively limited. Illegal woodcutting is widespread, and several of the existing tree species have been reduced to a precariously low level. Only four Mauretania pines, *Pinus clusiana mauretanica,* remain in Algeria, at Tikjda, and two hundred hectares of Algerian fir *Abies numidica* have been destroyed at Mount Babor, to give but two examples. Grazing by sheep and cattle is permitted within most of the reserves, a fact which has contributed to the lack of regeneration and consequent disappearance of *Pistachia atlantica.*

Officially several of the rarer species are totally protected by stringent laws. In practice, however, considerable illegal hunting continues to impoverish the populations of Barbary stag *Cervus elaphus barbarus,* Mouflon *Ammotragus lervia* and a number of other rare animals. According to a report in Wild und Hund (69 (II): 430, it is estimated that only 55 addax *Addax nasomaculatus,* a few White oryx *Oryx algazel,* and a few Dama gazelle *Gazella dama mhorr* remain in Algeria. Several of the larger bird species have also been markedly reduced, particularly the Arabian bustard *Ardeotis arabs* and the White-headed duck *Oxyra leucocephala.*

So far as can be ascertained there appears to be no indication that the Government has any immediate plans for improving the conservation situation. Moreover, the Ministry of Tourism is empowered to issue the equivalent of special hunting permits which would otherwise be difficult or impossible to obtain without appropriate "contacts", and is advertising safari hunting for a number of the rarer species. 500 Dinars (approximately U.S. $ 81) will suffice for a permit to shoot a mouflon, for example, while a similar authorization to shoot a gazelle costs 200 Dinars (approximately U.S. $ 32). These fees are, of course, quite separate from the ordinary hunting licence costing 25 Dinars. The hunting office also advertises such services as guides, beaters, vehicles and experienced drivers for those who require such assistance and can afford the price.