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PRESIDENT JOHNSON'S SIGNATURE ON WILDERNESS ACT

President Johnson's signature to the Wilderness Act is described by the Wilderness Society as "putting the seal to one of the stirring bipartisan conservation enactments of recent times. For the first time a statutory basis for the preservation of federal wilderness areas has been established, thus securing a priceless heritage for the public good."

Harvey Broome, President of the Wilderness Society, credits the late Howard Zahniser with being the "chief architect of the proposal for a wilderness system," and states that he had "for a decade advanced the proposal at hearings, in articles, and in speeches," and had brought to this objective "great powers of persuasion and conciliation".

In a statement issued following the final action of Congress in clearing the legislation for the President, Senator Clinton P. Anderson, leading Senate sponsor of the measure said: "we have determined that the United States shall set aside a significant area as wilderness in a wilderness preservation system. We have placed more than 9.1 million acres in 54 areas in the system. We have provided for the Secretary of Agriculture and the Secretary of the Interior to review and recommend to the President, and the President to Congress, the creation of further wilderness areas out of another 50 million acres in forest, parks, monuments and fish and wildlife refuges and ranges. There will be some disappointment that the bill did not go further, but it has brought from concept to reality an American Wilderness Preservation System with substantial acreage at the outset and provision for much more to be added."

In a statement before the House of Representatives when he urged passage of the Wilderness Bill, Mr Wayne Aspinall, Chairman of the House Interior and Insular Affairs Committee, referred to President Kennedy's personal interest "in the success of the movement for a compromise Wilderness Bill which was assured just a few days before the tragedy of November 22, 1963." In opening the debate on the bill on the House floor, Mr. Aspinall pointed out that there has been "no statutory authority... to set aside and retain areas of federally owned lands in their natural state." The Wilderness Act, achieves such authority through establishment of a national wilderness preservation policy. It sets up the National Wilderness Preservation System, and provides clear-cut procedures for adding wilderness from primitive areas, National Park System units, and wildlife refuge areas to the system.



Pine Barrens Tree Frog *Hyla andersoni*.

Peter Scott

Stewart Brandborg, Executive Director of the Wilderness Society, said that the Wilderness Act represents a great achievement of conservationists throughout the nation who have worked untiringly, and with remarkable patience, for the passage of an effective Wilderness Bill. There are few pieces of conservation legislation," he said, "that have enlisted a broader interest and public support or which have been the result of more extensive and effective work by conservation-minded citizens and their local leaders. Each of these people has contributed in a direct way to the passage of this basic and far-reaching public land legislation."

"President Johnson's signing the Wilderness Act as a culmination of this long effort," Brandborg stated, "will be recognition of the work of conservationists who have made it possible to provide enduring protection of our remaining wilderness lands under a national policy."

Mr. Brandborg stated that his only regret was "that the late Dr. Howard Zahniser and Dr. Olaus Murie, former executive heads of the Wilderness Society... who did so much to advance the appreciation of wilderness through their effective work with people throughout the country and the world... are not with us to see this achievement. The Wilderness Act is a lasting memorial to their selfless and untiring efforts in working for the preservation of our wilderness heritage."

Mr. Brandborg emphasised that although the Wilderness Act is a significant achievement, it is only a beginning. In accordance with the terms of the Act itself, 34 areas now classified as "primitive" are not immediately included in the Wilderness System, but must be studied during a prescribed 10-year period for individual recommendation to be brought into the system by Act of Congress.

CONTROL OF TSETSE-FLY BY 'GAME' EXTERMINATION

It is with some misgivings that IUCN has noted recent signs that destruction of wild animals is again being favoured as a method of controlling tsetse-borne trypanosomiasis, the group of diseases which still threatens domestic livestock and sometimes man in several parts of Africa.

In Rhodesia it was announced in June, that "because of the serious threat to the cattle industry caused by the advance of tsetse-fly... the Government has agreed in principle to the controlled shooting of game where this is necessary for the preservation of the industry and to keep tsetse-fly from encroaching on the cattle areas." More recently reports have reached IUCN that there is some possibility that 'game elimination' as a control method might be adopted in one or two other parts of Africa.

The destruction of one natural resource in the apparent interests of another can never in principle commend itself to the conservationist. Moreover, the importance of wildlife as a natural resource is now generally recognised, not least in Rhodesia itself, and the husbandry of all such resources on the basis of sustained yield is a principle that is no longer solely or chiefly proclaimed by the forester.

Neglect of this principle has, of course, long been a feature of human behaviour, but it is one of his defects that must surely be remedied if man is to look forward to a worthwhile future or perhaps any future at all. A careless and wasteful attitude may have been understandable enough when natural resources were prodigally plentiful in relation to human populations and needs. In those circumstances it was hardly noticeable when such resources were squandered, especially as the squandering process was inhibited by primitive methods, had not been accelerated by technology and, in Africa at least, was often extremely localised. The situation is very different now.

It is also easy to understand why the temptation to revert to game destruction sometimes seems to be irresistible. There is abundant proof that rapid and wholesale elimination of the wild animals constituting, in many areas, the principal host of the tsetse and vector of the disease, is followed by a spectacular decrease in the fly population. This has again been demonstrated in Rhodesia by a selective game elimination experiment carried out during the last two years, the main target being the warthog which is now well-known to be an important, perhaps the most important, host-species. In such circumstances the immediate relief afforded to the hard-pressed veterinarian (especially as, in the short-term, it makes comparatively modest demands on an often equally over-burdened exchequer) has the same degree of temporary validity as many other 'emergency measures'. It also shares a well-known characteristic of such measures in having undesirable and dangerous potentialities in the long-term.

In the particular context of Rhodesia, it is noteworthy that according to the Government statement "every opportunity will be taken to obtain information of scientific value from the operations" (no doubt a reference to the salvage or analysis of carcase material and certainly some small mitigation of the almost complete wastage - apart maybe from the temporary filling of a few bellies - which used to typify operations of this kind). It is also clear that, with one exception, none of the areas where shooting is planned lies within a wildlife reserve, and that steps have been and will be taken to fence off the reserves to prevent their animal resources from being merely drained away by the operations.

The exception referred to is the Gona-re-zhou Reserve on the southern border of the country where the shooting operations and fencing lines appear to intrude as much as 25 miles into some parts of the reserve and, in effect, to reduce its size by at least 50 percent. This is said to be justified by the fact that the reserve has never been formally promulgated or developed for scientific study or as a tourist attraction; by the proximity of important cattle areas to the existing reserve boundaries; and by the threat of heavy tsetse infestation spreading south-westwards the 50 miles or so to the Kruger National Park.

Nevertheless, the measures decided upon cannot be regarded as more than a temporary palliative in an emergency, which might well have been avoided if sounder and less ephemeral methods of control could have been adopted in the past. It is significant in this connection that no instance is known to IUCN where game elimination by itself has provided a complete and final answer to the tsetse problem. Except under experimental conditions, which are seldom paralleled in nature, a residue of tsetse has contrived to adapt itself to more elusive hosts, ready to make a 'come-back' if conditions become more favourable - including those provided by a build-up of domestic stock. The result will often be that the more expensive but lasting methods of control may after all have to be adopted such as clearing or barrier-clearing, with or without the use of insecticides which also needs careful watching from a conservation point of view.

This point is brought out clearly among the arguments against the game elimination method presented by Dr. P. E. Glover, lately of the Kenya Veterinary Department, in a review of recent knowledge of vertebrate-host/tsetse-fly relationships, which is due to be published shortly. The very fact that tsetse infestation has increased in Rhodesia since game destruction was abandoned, destruction, moreover, which was on a massive scale (e.g. over 10,000 duiker alone in a single area in 29 months) is rightly held to demonstrate the futility of a policy, the wastefulness of which scarcely needs any demonstration.

Another point made by Dr. Glover, which deserves particular mention, is that where, as is the case in Rhodesia, elimination of wild animals is stated to be specifically in the interests of a domestic livestock industry, the aim is presumably to attain a high level of productivity of a kind that is readily adapted for human use and gives a dependable economic return. This aim will be of no avail and 'utter waste' history's verdict on the whole operation, unless the domestic livestock can be controlled, and its numbers scientifically adjusted to the carrying capacity of the land. Such adjustment has not often been achieved under African conditions, any more than in several other parts of the world.

Dr. Glover has done a service to conservation by sifting, it is believed for the first time, evidence available from all parts of Africa, and his considered conclusion that "there is no valid justification for game destruction as a practical or lasting means of tsetse control, particularly in new or future projects", is one which commends itself to IUCN and deserves the most serious attention on the part of all governments concerned with this problem. None the less it is realised that this short article on the subject cannot be expected to deal finally with a controversial issue, and it is hoped in future Bulletins to publish the views of some of the experts who have given special thought to it. H. F. I. E.

ACTIVITIES OF THE INTERNATIONAL COUNCIL FOR BIRD PRESERVATION

Bird Preservation in Asia

The Asian Continental Section of ICBP, which was formed in 1960, met for the first time in Hong Kong 15-18 September 1964, under the chairmanship of Dr. Y. Yamashina (Japan). Representatives from Hong Kong, China, Korea, India, Malaysia, Philippines and Thailand, as well as Japan, attended. One of the most important subjects discussed was the protection of endangered species of birds in Asia: other subjects discussed were the problem of deforestation of virgin forests, the use of insecticides and other agricultural chemicals, commercial catching and exportation of pheasants in South Asia, game laws of Asian countries, public education and the study of migratory birds.

Ten resolutions were adopted among which was one supporting the resolution adopted by the World Meeting of the ICBP in Tokyo in 1960 recommending governments to make an effort to suppress the illegal export and import of birds, and further adding that the trade in birds be regulated by requiring that every bird or bird skin imported or exported be accompanied by a certificate showing that the bird was legally taken in the state or country of origin. Another resolution urged that the Directors of Zoos should consider all aspects of conservation before creating a market for species already endangered, pointing out that this is especially necessary where species from Asian countries are concerned, where even a slight increase in economic value could bring about a great increase in persecution. The Conference also proposed that the white-naped crane *Grus vipio*, which is protected in most countries where it occurs, should be removed from the list of game-birds in Korea and accorded complete protection. Recent studies by an Okinawan biologist have revealed that the woodpecker *Sapheopipo noguchii*, an unusual species confined to the Ryu Kyu archipelago, has been reduced to a remnant living in the remaining forests of Okinawa. The Conference therefore urged the government of the Ryu Kyu Islands to take steps to set aside the forest in which this bird is found as a public reserve to safeguard the species from extinction. In view of the fact that all species of hornbills are highly specialised, with such low biotic potentials that they are incapable of withstanding hunting pressure or environmental changes without suffering severe population losses, the Conference recommended that all species of hornbills be removed from game-bird lists and be included among the totally protected species.

The tragic death of Dato Loke Wan Tho, Chairman of the Malayan National Section, in an air crash on June 20th, 1964, is a great loss not only to the Asian Continental Section, but also to the ICBP and bird preservationists and ornithologists the world over.

Trade in rare species

The ICBP was co-sponsor with the IUCN and International Union of Directors of Zoological Gardens of the Symposium "Zoos and Conservation," held in London in June, 1964. On the proposal of ICBP the Symposium recommended the effective governmental control of the importation and transit of rare animals and, further, that an essential part of such control should be to set up in each country an expert committee to advise governments as to the species to which this control should be applied. At the request of ICBP a letter was sent from the meeting to the Philippines Government appealing for urgent measures to be taken to protect the few remaining monkey-eating eagles *Pithecophaga jefferyi*. It has been widely stated that the demand for live specimens for zoos constitutes one of the greatest threats to this species and, although this fact is appreciated by the leading zoo directors, information has recently reached ICBP that at least one dealer has been offering these birds for sale to zoos.



Kakapo or Owl Parrot *Strigops habroptilus*

A nocturnal and flightless bird, so retiring as to be difficult to study, but undoubtedly very rare. Population almost certainly now less than 100 birds. Restricted to a limited area of rugged country in Fiordland, South Island, New Zealand.

(Photo by New Zealand Dept of Internal Affairs; courtesy of World Wildlife Fund Photographic Library, Morges).

Oil Pollution of the Sea

The important amendments to the 1954 Convention on Oil Pollution of the Sea have not yet come into force as the requisite number of acceptances has not been received. At the present time seven more signatures are required in order to achieve the requisite two-thirds majority of the twenty-eight powers which are party to the Convention. As at 20th October, 1964, Algeria, Australia, Belgium, Dominican Republic, Finland, Iceland, Ireland, Italy, Jordan, Mexico, Panama, Philippines, Spain, the U.S.A. and Venezuela had

not accepted the amendments. The Federal Republic of Germany has adopted the necessary legislation and Ireland is in the course of doing so.

European Conferences

The reports on two specialised European conferences, one on wildfowl conservation held in St. Andrews, Scotland, in October, 1963, and the other on birds of prey, held in Caen, France, in April, 1964, are now available. The *Proceedings of the First European Meeting on Wildfowl Conservation* is obtainable from the Nature Conservancy, 19, Belgrave Square, London S.W.1, or from the International Wildfowl Research Bureau, Station Biologique de la Tour du Valat, le Sambuc, B. du Rh., France, price 25/- postage paid. The *Report of the Working Conference on Birds of Prey* may be obtained from the Headquarters of the ICBP, c/o Natural History Museum, Cromwell Road, London S.W.7, price 17/6d. postage paid.

Changes in U.S. Park Policy

Secretary of the Interior Stuart L. Udall has announced recognition of fresh concepts of management and development policies and authorised that they should prevail in those areas designated as natural parks, historical monuments, and recreation areas. The Secretary's policy is contained in a memorandum to the Director of the National Park Service, dated July 10, 1964, entitled "Management of the National Park System". The Secretary indicated that the essential object of each of the three categories of areas differed in each instance. The primary purpose of natural parks is to maintain areas in absolutely unimpaired form for the use of future as well as the present generations. The Secretary conceded that it may be necessary to re-establish "... indigenous plant and animal life, in keeping with the March 4, 1963, recommendations of the Advisory Board on Wildlife Management". (Leopold Report.) The memorandum states: "Park management shall recognise and respect wilderness as a whole environment of living things whose use and enjoyment depend on their continuing interrelationship free of man's spoilation."

In historical areas: "Management shall be directed toward maintaining and where necessary restoring the historical integrity of structures, sites and objects significant to the commemoration or illustration of the historical story."

In recreation areas: "Outdoor recreation shall be recognised as the dominant or primary resource management objective... primary emphasis shall be placed on active participation in outdoor recreation in a pleasing environment." It is not yet clear whether this policy statement will act to limit gross numbers of visitors to U. S. national parks through emphasis on the development of alternative recreation areas.

Mammalogists' resolution

The following Resolution was recently passed by the American Society of Mammalogists meeting in Mexico City.

WHEREAS, Public manifestations of deep and active interest in conservation of African wildlife have recently been made by officials of some of the newly organized nations of Africa;

AND WHEREAS, Official statements of great sincerity in this regard have been issued by the Government of Tanganyika, in the Arusha Manifesto of September, 1961, and by the Government of Kenya in its pronouncement on Conservation of Natural Resources of September 18, 1963;

AND WHEREAS, Recognition of the world-wide importance of conservation of African wildlife and of the need for world-wide cooperation to that end by all nations, scientists and lovers of nature is expressed in these pronouncements;

THEREFORE, BE IT RESOLVED, That the American Society of Mammalogists aligns itself with others in the promotion of these most worthy objectives and commends the governments of Tanganyika and Kenya for their far-sighted and realistic approach to these critical biological problems.

Bahamas National Trust

The Bahamas National Trust is a non-profit organisation which was established for the purposes of promoting conservation and recreation in islands and submarine areas in the Bahamas islands. The Trust was established by the Bahamas National Trust Act of 1959 and given permanent status in 1961.

Proposals for recreational facilities include development of the Exuma Cays Land-and-Sea Park, comprising 176 sq. miles of islands and coral reefs as one of the finest underwater and island parks in the world.

In the field of natural resource conservation substantial numbers of green turtles, a reptile which was once abundant in the Caribbean region and the Bahamas, have been reintroduced into Bahamian waters. This continuing restocking programme is being undertaken in cooperation with the Caribbean Conservation Corporation and the Bahamas Department of Agriculture and Marine Products.

The Bahamian national bird, the West Indian flamingo, is protected on Inagua in the southern Bahamas. Two-thirds of the world's population of this flamingo are to be found in the islands. The Trust's future plans include the establishment of additional parks, preserves for interesting indigenous flora and fauna, protected submarine breeding grounds to act as reservoirs for breeding populations of valuable food species, preservation of historical sites and an extensive programme of scientific research.

United States

With the assistance of Federal Aid wildlife restoration funds, Wyoming has proposed to establish a 13,195-acre elk winter range adjacent to the Medicine Bow National Forest. The site is in Carbon Country about 20 miles south of Medicine Bow. There are 9,583 acres of private land to be purchased, the balance being State and Federal land. This area will provide valuable winter range for elk and eliminate depredation problems on private land. The area will also be used by mule deer, antelope, and sage grouse. It will be available for public hunting and will assure access routes to Forest Service lands.

New Hampshire plans to use Federal Aid funds to acquire 2,800 acres of salt marsh located in Rockingham County about one mile south of Hampton Village. The Hampton-Seabrook salt marsh complex is one of the new major salt marshes north of Boston still remaining relatively intact. This attractive and valuable waterfowl and shorebird habitat is being acquired for its hunting and recreational values. It is also being acquired to forestall its loss through commercial development.

The Pungo National Wildlife Refuge in Washington and Hyde Counties, North Carolina, was established on December 18th, 1963, with the signing of the deed for 11,705 acres by the Lake Phelps Farms, Inc. This represents completion of 95 percent of the acquisition for the Pungo Refuge that was approved by the Migratory Bird Conservation Commission on May 21st, 1963.

Pungo Lake and environs were typical low wetlands of coastal North Carolina until 1956 when the area was purchased by Lake Phelps Farms, Inc. This company immediately proceeded to convert a potential area of over 100,000 acres to general agricultural production. In the development of the farmland, entire crops of corn, milo, and soybeans are often left in the fields unharvested. The attraction of this food to Canada geese and ducks has developed Pungo Lake into a major waterfowl migration and wintering place. As many as 25,000 geese and 40,000 ducks have been observed using the area. This use can be expected to increase.

Pungo Lake plays an important role in waterfowl migration and wintering in eastern North Carolina. The refuge will provide protection to the large number of waterfowl that trade between national wildlife refuges at Lake Mattamuskeet and on Currituck Sound.

Germany

Professor Dr. Dr. Hans Krieg, München, President of the "Deutscher Naturschutzring e. V." has been awarded the van Tienhoven prize for the year 1963. On the same occasion, Professor Dr. Asal, Ehren-Ministerialrat, Freiburg/Breisgau, was decorated with the Alexander von Humboldt Gold Medal. Both these prizes are awarded annually by the F.V.S. Foundation in Hamburg.

The van Tienhoven prize for the year 1964 - devoted to the realisation of the park on the Germany/Luxembourg border - has been awarded unanimously by the Jury to the Luxembourg Deputy, Georges Wagner, Mayor of Clervaux, and to the Head of Government, Conrad Schubach. The Alexander von Humboldt Gold Medal has been awarded to the Director of the Gran Paradiso National Park, Professor Renzo Videsott of Turin. As in the past, prizes will be presented by the Rector of the Friedrich Wilhelm University, Bonn.

World Soil Map

Progress in producing a map of the world's soils has been discussed by the joint FAO/UNESCO project's advisory panel. The panel is studying various draft regional maps, along with a draft table making it possible to correlate the soils of one region with those of another.

Dr. O. E. Fischnich, FAO Assistant Director-General, told the panel that "information collected thus far is already proving of considerable value in the field work of various UN agencies. The project is well on its way towards achieving a simple global system of soil definition and correlation which will greatly help in transferring knowledge of correct land use from one region to another."

Drafts of regional soil maps, in various stages of completion cover South America, Central America, North America, Near East, South-east Asia and Australasia.

South Africa

An intensive research programme heralds the birth of a new national park in the Republic of South Africa – the Tsitsikamma Forest and Coastal National Park – which is situated along the Indian Ocean, south of Port Elizabeth, between Groot River and Eerste River.

It is one of the last coastal areas in the Republic available for proclamation as a national park. It is also the first coastal national park in South Africa, and is designed primarily to conserve shore-life. The park itself has a mile of sea frontage and inland follows approximately the 400 ft. contour line. An indigenous forest reserve, "De Plaat", has been incorporated into the park.

Mr. Richard Liversidge, co-revisor of Roberts' "Birds of South Africa" has already taken up his position as Nature Conservator. As an ornithologist of repute, with qualifications in botany and marine biology, he is well equipped to be in charge of the area. However, research will not be handled entirely by Mr. Liversidge. Dr. N. J. van der Merwe, Liaison Officer of the National Parks Board, who is responsible for research in the Cape and Free State National Parks has already held a productive conference with various scientists to institute a comprehensive research programme in the park.

Prof. Dr. and Mrs. J.L.B. Smith, of the Ichthyological Dept. at Rhodes University will undertake the investigation of marine and freshwater fish. Mr. C.J. Skead, attached to the Percy FitzPatrick Ornithological Institute, will study avian ecology. Dr. J. Meester and Mr. D.M. Comins from the Kaffrarian Museum at King William's Town will carry out a survey of small mammals. Miss R.M. Tietz, marine biologist to the Port Elizabeth Museum, will undertake a survey of the inter-tidal zone. Dr. G.R. McLachlan, director of the same museum, and Mr. J.M. Spence will examine and record species of reptiles and amphibia as well as studying their distribution and habits. Mr. C.F. Jacot-Guillarmod of the Albany Museum, Grahamstown, will survey the Aculeate Hymenoptera and Thysanoptera, while Dr. S.C. Seagrief of Rhodes University will study the seaweeds of this particular coastline.

The Government Geological Survey will be responsible for research in their field. The following scientists will be concerned with entomological studies: Dr. H.N. Munro, Mr. J. Munting Dr. M.K.P. Meyer, Mr. T.J.D. Coates and Dr. L. Véri.

Prof. R. Inskeep has been asked to accept responsibility for archaeological studies. The Weather Bureau will in all probability erect a weather station, whilst the Admiralty will soon install a tidal meter.

The institution of a research programme by scientists not attached to the Parks Board conforms with the Board's policy. By this system, specialists in every field of research undertake scientific work for the Parks Board by extending their activities into the National Parks. Both parties benefit by the arrangement.

Private nature reserves in Transvaal

In the Transvaal Province provision is made for establishing private nature reserves. There are many landowners in this Province who wish to protect the game on their farms in the best possible manner, namely by having their farms proclaimed nature reserves. For this purpose the land must be properly fenced, and when it has been proclaimed the landowner must erect proper notices at all entrances giving the reserve's name and the number of the proclamation.

In a private nature reserve all wild vertebrate animals and all wild plants are protected. The owner needs permits to destroy, say, a leopard, a chacma baboon or a jackal in the reserve, or to destroy an indigenous wild plant, but his farming activities are entirely unrestricted. The hunting regulations, promulgated annually, are not applicable to private nature reserves; owners deal direct with the Director of Nature Conservation.

The main inducement for establishing a private nature reserve is the landowner's desire to obtain maximum protection under the game laws. The heavy penalties imposed for poaching in a nature reserve give him more effective protection. Thus the minimum fine for an offence in such a reserve is two hundred rand.

A new provincial nature reserve, the Ida Doyer Nature Reserve in the mountains near Barberton, is a gift to the Province from Mr. and Mrs. O. T. Doyer. This small reserve is 37.3 morgen (12 square miles) in extent and has been established for the special purpose of preserving a rare indigenous cycad *Encephalartos paucidentatus*.

There are now 245 private nature reserves in Transvaal with a combined area of 699,815 morgen (2,313 square miles).

Ethiopia

In September 1963, following a request from the Ethiopian authorities, UNESCO arranged for a mission to visit Ethiopia, consisting of Sir Julian Huxley, Dr. E. B. Worthington, Deputy Director (Scientific) of the Nature Conservancy, London, Mr. L. W. Swift, Executive Director of the United States National Appeal of the World Wildlife Fund, and M. Alain Gille, UNESCO's Scientific Adviser for Africa.

Ethiopia boasts a remarkable fauna of which several species have become very rare, including the walia ibex, *Capra walie*, which survives only in the highest mountains of Gondar and of Semien in the northern part of the country; mountain nyala, *Tragelaphus buxtoni*, which occurs only in the Arussi Mountains in the southern part of Ethiopia; the Somali wild ass, *Equus asinus somalicus*, which occurs in the Danakil country and in the Ogaden and the Abyssinian "fox", *Simenia simensis*, which lives on the Semien Plateau. Ethiopia also possesses archaeological sites such as Gondar and its fortified villas, Axum and its decorated monolithic stelae and Lalibela with its churches carved from the living rock. When these sites are opened to tourism they will attract thousands of visitors.

In its report the mission expressed its conviction that the conservation of nature and natural resources was one of the greatest services the Government could perform and an urgent necessity for the future of Ethiopia. The mission also made certain recommendations regarding the establishment of a Conservation Council (an inter-ministerial body which would be responsible for conservation and management of the country's natural resources and archaeological and historic sites) as well as the establishment of a Conservation Bureau (a semi-autonomous body which would be responsible for implementing the decisions of the Council). The creation of national parks and protected areas, botanical and zoological gardens, the training of technical personnel, the establishment of a research programme embracing the indigenous flora and fauna and the introduction of conservation concepts into school curricula were also recommended.

Since this report was submitted the Ethiopian Government has requested the assistance of UNESCO towards implementing these recommendations.

In agreeing to this request and within the framework of its Technical Assistance Programme for Ethiopia, UNESCO decided to send three expert conservationists to Ethiopia. Major I. R. Grimwood, former Chief Game Warden of Kenya, who among other things was leader of "Operation Oryx" – the 1962 expedition to Arabia under the auspices of the Fauna Preservation Society and the World Wildlife Fund – arrived in Addis Ababa in October on a three months' assignment. He will be followed by Mr. L. H. Brown, formerly Deputy Director of Agriculture, Kenya, who in 1963 undertook a study of the mountain nyala, the walia ibex and the Semien "fox", and who is expected in Addis Ababa at the end of December also on a three months' assignment. These two experts will have special responsibility for establishing the Conservation Council and Bureau mentioned above as well as advising the Ethiopian Government on the measures which are most urgently needed to protect the most threatened species and sites. The third expert, who is also in Addis Ababa, is Mr. M. P. Walshe, a specialist in rural education. He will be responsible for introducing conservation concepts into educational curricula. At the request of the Ethiopian authorities, UNESCO has despatched more than 200 free copies of the textbook "Our Mother Nature" and its accompanying filmstrip prepared by IUCN at the request of UNESCO and which is designed to stimulate the teaching of conservation in the schools of the Sudano/Sahelian region. These textbooks will be distributed to agricultural colleges and primary and secondary teaching establishments in Ethiopia. In addition, the Government has undertaken to translate and publish an Amharic language edition in order to ensure a wider diffusion.

Re-stocking bighorn

Arrangements have been made to re-establish bighorn sheep on the Charles Sheldon Antelope Range in Nevada. The plan involves stocking the refuge with animals of the California race which is becoming increasingly rare, but is still found in the Cascade Mountains, the Sierra Nevada, and parts of western Nevada. The reintroduction of bighorns to the refuge area will guarantee them protection, and promote wider and safer distribution of the race in its struggle for survival.

THE GREAT OAKS OF COSTA RICA

by Paul Knight

Near the crest of the continental divide in southern Costa Rica a majestic forest of giant liveoaks stood almost unknown until a few years ago. This forest was a pure stand of a single species, a phenomenon which botanists assert has not been recorded anywhere else.

The species that makes up this beautiful forest, or what is left of it, is the Copey oak, *Quercus copeyensis*. It was first described by Dr. C.H. Muller from four specimens collected in Costa Rica between 1874 and 1925, and from a single specimen found in Panama in 1940. Dr. Muller's first description did not indicate anything unusual about the Copey oak, but merely included it in a general revision of the genus *Quercus* in Central America. Botanists had observed isolated specimens in mixed forests, but it seems evident that they had not observed the solid forest of Copey oak at the higher elevations. If they had, botanical literature would certainly have recorded something beyond a technical description of a new species.

Dr. Paul C. Standley, to whom we owe so much of our knowledge of the flora of Costa Rica, collected specimens of this tree near the settlement of El Copey, at about 6,000 feet elevation. He barely missed being the first trained observer to see the giant forest as a modest climb would have brought him within the lower limits of the big trees.

In 1942, engineers surveying the proposed route of the Inter-American Highway became the first persons to describe this vast timberland. The following year a party of scientists from the United States Forest Service went to Costa Rica to prepare a timber resources study, and they were probably the first trained biologists to observe the Copey oak forest. It is evident that few Costa Ricans were aware of its existence, and the few who may have traversed the hazardous terrain apparently lacked the knowledge to appreciate the unique character of the forest. The Copey oaks were not far from the principal cities of the central plateau of Costa Rica — not far in terms of geographical distance, but the isolation imposed by the incredibly rugged terrain places this region in what Spanish-speaking people call *tierra incognita*. Until the new highway opened this spectacular mountain range there was little reason for anyone other than a scientist bent on discovery to venture into its undiscovered parts.

In spite of the fact that Costa Rica has been settled for more than 400 years and has been more thoroughly explored by botanists than perhaps any other nation in Latin America, what was probably the largest oak forest in the world remained unknown until 1942. This is due in part to the fact that the mountains have been an almost impassable barrier to the settlement of many regions just beyond the central plateau, where most of the population lives. After more than four centuries of settlement, only a small percentage of the land of Costa Rica is occupied, and much is still trackless wilderness.

Another factor which may have delayed the discovery of the Copey oak forest is the rich character of the flora of Costa Rica. Though only about the size of West Virginia, Costa Rica has more indigenous species of trees than the contiguous 48 states and Alaska combined. About 1,000 species of native trees were listed in 1940, although only a small fraction of the total land area has had thorough botanical study. Few if any of the tropical regions of the world of comparable size have such a variety of plant life.

The Copey oak grows in the upper elevations of the continental divide in the portion known as the *Cordillera de Talamanca*. The forest commences at an altitude of about 6,500 or 7,000 feet and extends upward in some places to 9,000 feet. In three unusually high areas it ends abruptly at the *paramo*, the plant community above the timberline which has a flora almost identical to that of the *paramos* of the Colombian and Ecuadorean Andes.

The Copey oak forest is also called the cloud forest or upland rain forest, to distinguish it ecologically from the evergreen forest found at the lower elevations. It grows in the zone which produces the most extravagant variety of

plant life to be found in Costa Rica, and it is the area that has been least explored. Epiphytic plants abound, and every scientific expedition into these cool, moisture-laden forests discovers new species of orchids and bromeliads. Here also grows one of the world's richest and least known fern floras. The lower forms of plant life are almost unstudied. The Copey oak forest is bathed in clouds most of the year, even during months when Costa Rica experiences its dry season. The forest is subjected to frequent torrential downpours and the soil is always saturated. The earth yields water like a sponge. The trees drip water continually and the air is heavy with the odor of rotting vegetation.

The first view of this rich upland forest, often half hidden by clouds, is unforgettable. The trees stand close together darkening the earth beneath, and in the weird half-light the heavily buttressed trunks are a ghostly gray and the evergreen foliage black. Here and there in small open clearings are small groups of tree ferns, some fifteen feet high. Covering most of the ground is a low delicate looking but extremely wiry species of bamboo. The oaks are of a fairly uniform height and age, and there is only rarely an admixture of other species. Some of the tallest trees grow to a height of 125 feet and the lowest branches are often 80 feet from the ground. William R. Barbour, a forester with wide experience in the American tropics, estimated that many acres would produce 20,000 board feet and that some would yield at least 60,000 board feet.

The first foresters to observe the Copey oak forest believe that it may be the world's largest growth of oaks, and that *Quercus copeyensis* is probably the largest species of the genus. The discovery of a pure stand is unique, as far as can be determined today. Tropical forests have always been thought of as communities without dominant members, and they generally are of such a mixed composition that there may be several dozen species growing in a single acre. The Copey oak forest looks superficially like a temperate zone growth, but a close look reveals bamboos, tree ferns and other species in the understory and open spaces, and heavy growth of epiphytes covering many of the branches.

In spite of their obvious age, most of the trees cut to make way for the highway were sound. Age cannot be determined by conventional methods, since there are no annual growth rings. There was no significant pest damage.

The Copey oak evidently grows only in the southern part of the continental divide in Costa Rica and a short distance beyond the border of Panama. The exact distribution of the heavy forest is not known, because of the inaccessibility of the territory. Observations from the air of the mountainous region south of the point where the new highway leaves the crest of the divide indicate that the forest probably continues uninterrupted to a point a few miles beyond the border, into the Republic of Panama. The original forest covered about 750 square miles, or about 4 percent of the total land area of Costa Rica.

This great forest was in no danger of destruction until the opening of the Inter-American Highway, which now winds through the northern portion for approximately 15 miles before descending abruptly into the valley below. Along this developed section construction did not destroy many trees beyond the right of way, but it opened the entire virgin mountain region to the public.

I visited the Copey oak forest in 1943 and again in 1944, before the highway had been opened for public use. Then the forest giants grew to the edges of the road, except in places where cuts or fills were required. For nearly 15 miles the forest stood an almost solid mass of trees, as spectacular if not as tall as the Sequoias of California. South of the point where the new road drops toward the Pacific lowlands the forest may be safe for an indefinite time. It appears doubtful that the value of the timber, though great, would justify the incredible cost of building a highway into the mountain wilderness below this point. There is a sharp gap in the divide at this point which would not easily be over-

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TOWARD AN UNDERSTANDING OF VEGETATION AS A NATIONAL RESOURCE

by Philip Ross, Ph. D.

In the past, the study of vegetation as a natural resource has been neglected and in some cases completely overlooked. European countries and the U.S.S.R. have come to the realization that natural vegetation must be studied and mapped for a proper evaluation of land-use. The United States Government has been slow to arrive at this realization and has been slow to develop agencies dedicated to basic research of one of its most important natural and national resources: vegetation. The United States Government should develop an agency to map and study the vegetation as a natural and national resource. Such an agency would be the United States Botanical Survey.

The United States Government does have large agencies to study the complex yet abundant natural resources of the country such as rocks and minerals, animals, soils, forests, water and air. The U.S. Geological Survey has the task of classification and examination of the geologic structure and mineral resources which include topographic and geologic mapping. This agency has made many significant contributions to scientific knowledge and to the national conservation goals. Likewise, the Fish and Wildlife Service with its Bureau of Sport Fisheries and Wildlife and Bureau of Commercial Fisheries has the task to preserve and augment the Nation's fish, mammal and bird resources on land and the commercial fish of the open seas. The Soil Conservation Service acting as the soil and water conservation agency of the Department of Agriculture is contributing to our understanding of soil genesis and agricultural land-use. The Forest Service is charged with the responsibility for promoting the conservation and optimum use of the Nation's forest lands. The United States Public Health Service is carrying out research on air and water pollution. Thus, many of the Nation's natural resources are being studied, except for one of the most important resources: vegetation. There is no coordinated vegetational mapping, surveying or research program being carried out by any agency of the United States Government.

A basic research program for the scientific evaluation of vegetation, such as would be carried out by the U.S. Botanical Survey, would provide data for formulating policy for 1) forest and federal recreational land programs; 2) wildlife and water conservation; and 3) watershed management, flood control, and soil conservation. Vegetational studies producing maps, charts, and papers would help solve the conflicting land-use problems of grazing and forestry, recreation and wildlife. Basic plant research data are vital to an inventory and evaluation of our natural resources. Thus, basic information gathered by a Botanical Survey which would classify, map and study the "metabolism" of plant communities would be available for solu-

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come, but the time will come when the remaining forest will fall to the developers if it is not given protection.

Hardy explorers can visit the primeval cloud forest that remains, but most of the portion seen by motorists 20 years ago has fallen to the axe. In 1944 there was support in Costa Rica for the establishment of a national park, or at least a protective screen along the Inter-American Highway where it transects the forest. A commission was established for this purpose, but its efforts were of no avail. The sober warning of William Vogt and other conservationists who saw the scientific and economic benefits that could be gained from protection of the cloud forest were not heeded, and an irreplaceable resource was lost in a few years.

I visited the Copey oak forest again, in 1947, and in three intervening years at least three-fourths of the accessible trees had been destroyed. Some of the giants were cut for railroad ties and building timber. In many areas a dense pall of smoke and the odor of burning wood mingled with the clouds above the doomed giants as Costa Rica's great oaks were being reduced to charcoal. The timber cutters were removing the trees without even disturbing the signs posted to warn against trespass.

tion of applied problems which affect our pocketbook, our health and our welfare.

To approach the problem of why there is a need for a Botanical Survey in the United States, let us look at some of the areas in which little or no research is being conducted and the applied problems which basic vegetational knowledge would help to solve. In the past, limited use has been made of plants as indicators of environments including soil types that would be of potential value for crops and grazing. As an example, the oak-hickory community in the New York area may indicate a natural site for apple orchards. Research is lacking on plants as indicators of water resources. Plants that indicate ground water (phreatophytes) can indicate salinity of the water, depth of water table, amount of mineral content, and seasonal variation of water. Basic research data of this type could also be used in forecasting changes in the vegetation which would occur following construction of irrigation and drainage systems. The present vegetational change of the Florida Everglades is an example of an unfavorable change brought about by controlling the release of water to the swamp. Indicator plant studies could profitably be used to indicate salt-dome structures yielding oil, to indicate bitumen-bearing rocks, and to indicate ore deposits. The copper barrens, or "dambos", of Rhodesia; the bauxite, clay savannas in Surinam, and the plant *Erygonum evalifolium* indicating silver in Montana are examples of vegetation and plant species as indicators.

The relatively new and rapidly developing field of environmental health is another important area to which basic botanical research can contribute. Important fundamental considerations are the plant damaging effect of air pollutants such as sulfur dioxide, ozone and carbon dioxide, and the effect of vegetation on controlling air pollution. Other considerations include the role of plant products in air pollution, *i.e.* spores, pollen grains, bacteria, plant parts and fragments; the effect of vegetation on controlling water pollutants such as inorganic industrial wastes, new chemical wastes, pesticides, fertilizers, and radioactive wastes; and the reciprocal effects of plants and environmental engineering including permafrost investigations in Alaska. These problems must be met with and solved in the near future, and only through coordinating efforts involving botanical research will they be solved.

The future of botanical research lies in the study of the whole ecosystem, as well as in the component parts and their interaction in the ecosystem. At present, there is no coherent interpretation of the relation of community patterns to landscape. We desperately need to know what plants exist, where they are located, and why they are located where they are. This type of program must of necessity be governmentally sponsored to insure continuity over the long range of time that would be required. Furthermore, no institute outside of the Federal Government of the U.S. has the financial and physical resources, the initiative or leadership necessary to undertake a vegetational research program. This problem was presented by Dr. Lynton K. Caldwell in the April-June, 1964, issue of the *IUCN Bulletin*. As was pointed out, the education and research in conservation of our natural resources in the interrelated problem of man and nature are both local and universal. A Botanical Survey of the United States would plug a large gap in our understanding of a major, worldwide natural resource.

Conservation interest is running high in the United States. The United States Congress has approved legislation for the establishment of a nine million acre protected wilderness system for recreation and research. Congress is considering a Land and Water Conservation Fund bill to provide the financial support for the acquisition of areas for National Parks. Congress is also considering bills for the establishment of the U.S. Botanical Survey. If these legislative bills are passed, this year would go down in the history of the United States as "The Grand Year for the Conservation of National and Natural Resources."

The Galapagos

The New York Zoological Society has long been concerned with the Galapagos and the conservation of the islands' natural heritage. It has been responsible for sending several expeditions to the islands and, through grants paid during the last few years, has substantially contributed towards the success of the Charles Darwin Foundation for the Galapagos.

The Society's most recent contribution has been the grant of US\$ 10,500, payable over three years, for the employment of a Conservation Officer, Mr. Miguel Castro, who will be responsible to the Director of the Charles Darwin Station and whose work will entail promotion of appropriate measures to preserve the fauna, flora and natural habitat of the Galapagos. Mr. Castro will also help to establish national parks and reserves decreed by the Ecuadorian Government, to define the status of threatened species, and to study them scientifically whilst co-operating with those Ecuadorian authorities responsible for conservation and the repression of illegal activities.

Mr. Castro is an Ecuadorian national who has been living in the Galapagos for a number of years. His extensive knowledge of the islands and their wildlife, together with the problems arising from the sometimes conflicting interests of man and the indigenous fauna, has already proved to be extremely valuable.

The Charles Darwin Foundation is very appreciative of this generous assistance from the New York Zoological Society which will be of the greatest practical help towards implementing a research programme designed to ensure the survival of the Galapagos fauna for the benefit of posterity.

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The following is a translation of the text of the decree promulgated by the Government of Ecuador and signed in Quito on March 12th, 1964:

WHEREAS by Emergency Law-Decree No. 17 of July 4, 1959, published in the Official Registry No. 873 of July 20, 1959, all islands of the Galapagos Archipelago were **declared** protected zones or national parks under the exclusive jurisdiction of the State in order to ensure the preservation of the fauna and flora of the islands

AND WHEREAS the immediate **enforcement** of this Decree is essential for the effective protection of these reserves of known international scientific significance,

THE UNITED NATIONS ORGANISATION FOR EDUCATION, SCIENCE AND CULTURE (UNESCO) and the CHARLES DARWIN FOUNDATION have **established** the Charles Darwin Research Station on the islands.

ARTICLE FIRST: The Charles Darwin Research Station is hereby **empowered** to determine the reserved zones or natural monuments, without restriction of area, on the following islands: Santa Cruz, Isabela, Espanola, Santa Fé and others that the above-mentioned international institution deems advisable.

ARTICLE SECOND: The Charles Darwin Research Station is likewise **empowered** to determine which indigenous species of flora and fauna at present threatened with extinction must have priority for conservation.

ARTICLE THIRD: The Charles Darwin Research Station is hereby **authorised** to take all steps considered suitable, with the corresponding support of military and civil authorities, for the control and extermination of animals, either native or introduced, that have actually become a menace and are affecting the maintenance of suitable environmental conditions required for the conservation and perpetuation of the fauna and flora of the islands.

ARTICLE FOURTH: Any type of uncontrolled colonisation for farming purposes, burning and exploitation of trees for the supply of lumber and charcoal is henceforth **prohibited** in those areas so determined by the Charles Darwin Research Station.

ARTICLE FIFTH: The introduction of animals, whether indigenous or exotic, among the islands that constitute the Galapagos Archipelago and between the latter and the continent is likewise henceforth **prohibited**. Inspection and control will be the responsibility of the national navy, civil authorities and wardens, whose services may be employed for that purpose.

ARTICLE SIXTH: The Ministry of Development is hereby **empowered** to draw up the necessary regulations designed to comply with these instructions.

ARTICLE SEVENTH: The authorities of the Galapagos Archipelago shall be **responsible** for implementing the measures contained in this Decree and of any other directives that may subsequently be issued for the same purpose.

ARTICLE EIGHTH: The Ministry of Development will be **responsible** for executing this Decree.

IUCN Checklist of Conservation Organisations and Information - Great Britain - Addenda

1. The following organisations should be included under *Voluntary Organisations*:

● **The Wildfowl Trust**, Slimbridge, Gloucestershire.

Founded in 1946, the Trust is concerned with the family Anatidae - the ducks, geese and swans of the world. It is a research and educational organisation and the principal agency providing scientific advice to the Nature Conservancy on the conservation of this group of birds. It maintains a private reserve on the Severn Estuary in which up to 4,000 whitefronted geese and 10,000 ducks winter, it has established a collection of some 2,500 captive wildfowl which includes more than 120 of the 147 species of Anatidae, and it publishes a well illustrated Annual Report containing a number of original papers covering wildfowl research.

● **The World Wildlife Fund**, British National Appeal, 2, Caxton Street, London, S.W.1.

The first National Appeal to be formed - in 1961 - in support of this international foundation to raise funds for conservation. It has created a network of local groups each committed to raising £ 100 a year, and a Wildlife Youth Service consisting of Wildlife Rangers and Panda Clubs (for the younger children) to bring the principles of conservation to the new generation. One third of the monies raised is for conservation in Great Britain, the remaining two-thirds being placed at the discretion of the Trustees of the WWF (International) with headquarters at Morges, Switzerland.

● **British Naturalists' Association**, Mrs. W. Burnett, Hawkshead, Tower Hill, Dorking, Surrey.

Founded in 1905 as the British Empire Naturalists' Association, BENA was a pioneer in encouraging nature conservation and today continues to take an active part in conservation matters. The Association has 16 regional branches and has in membership local natural history societies and similar bodies in addition to individuals. The chief objects of the Association are: to bring naturalists and nature lovers in all parts of the world into helpful communication; to encourage and actively support the protection of wild life, the preservation of natural beauties and the promotion and maintenance of national parks and conservation areas, sanctuaries and nature reserves; to organise information services and to publish literature on natural history subjects; to extend and develop natural history study among schools and youth organisations; and to organise and hold gatherings, field meetings, lectures and exhibitions in order to extend and popularise the sympathetic study of nature.

2. The explanatory paragraph under *Local Nature Reserves* should read: There are 9 local nature reserves set up and administered by local authorities after consultation with and approval of the Nature Conservancy:

3. The explanatory paragraph under *Forest Nature Reserves* should read: There are 12 forest nature reserves managed by the Nature Conservancy under administrative agreement with the Forestry Commission and others.

4. Since publication of the Checklist, two more National Nature Reserves have been declared: Lindisfarne, Northumberland (1,665 acres) and Whiteford, Glamorgan (344 acres). In addition, extensions to the following have been declared: Allt Rhyd-y-Groes, Carmarthenshire (107 acres); Rusland Moss, Lancashire (28 acres); Shapwick Heath, Somerset (62 acres); and Thetford Heath, Norfolk (18 acres).

Available from IUCN

Project MAR: the conservation and management of temperate marshes, bogs and other wetlands. Proceedings of the MAR Conference organised by IUCN, ICBP and IWRB at Les Saintes-Maries-de-la-Mer, November 12-16th, 1962.

This 500-page volume presents a detailed documentation on wetlands conservation, the basic criteria for defining reserve areas, legal and administrative ways of achieving protection, management and restoration, and wildlife utilisation of artificial wetlands. It is an essential document for all those concerned with wetland conservation problems and their development.

Obtainable from IUCN, Morges (VD), Switzerland, or from the IWRB, La Tour du Valat, Le Sambuc, B. du Rh., France, at the price of \$ 5 or SFr. 21.