CHAPTER 8

CONSERVATION

J. G. McKern

Happy is he who lives to understand,
Not human nature only, but explores
All natures,— to the end that he may find
The law that governs each; and where begins
The union, the partition where, that makes
Kind and degree, among all visible beings;
The constitutions, powers, and faculties,
Which they inherit, ...
Through all the mighty commonwealth of things;
Up from the creeping plant to sovereign Man."

Wordsworth—*The Excursion*—1814.

In these words we see, at least, an early glimmering of an understanding that every living thing is linked to all others—that all, including man, share a common weal. This is at the very root of the conservation concept. For, as Paul Sears states—"The whole history of the conservation movement has been an evolution from concern with single resources to realization of their interdependence and the need for viewing the problem in its entirety".

Possibly, it would be considered logical first to discuss the historical development of the conservation movement, particularly in N.S.W. However, in view of the wide lack of understanding of the full meaning of conservation, its definition, its application and its importance in any discussion on land usage, the first part of this contribution will be devoted to definitions, scope and purposes.

The Meaning of Conservation

Conservation is a far-reaching concept, it considers not only wildlife, not only areas of natural beauty or scientific interest; it means, as in the words of Professor J. S. Turner, "the wisest possible use, over a long term, of all our natural resources, applied for the benefit of man".

The four terms of this definition aptly sum up the purposes and scope of conservation — "wisest use" — "long term" — "all natural resources" — "applied for man". Thus conservation is for man of

to-day and to-morrow — conservation is therefore *Conservation of Man.*

Aesthetic values of environments, scenic attractions, and the beauty and wonder of wildlife, have doubtless attracted most people to the support of the conservation movement. National pride, which leads to so many countries featuring their wildlife on postage stamps and coinage, is another motive.

Such interest leads some to activities like bird-watching and bush-walking, plant study and photography. Others, less active, are content to relax and enjoy the whole scene, while the steady sale of books descriptive of wildlife and scenery attests to another form of attraction. Such participation is good because of its enrichment of the spiritual and physical life. But to provide for an ever-increasing and more mobile population, we must fight to the last ditch for those special places of which E. M. Nicholson of the Nature Conservancy of Britain has written:

"It is through . . . awareness of the continuing spiritual need for the wilderness in which Christianity itself was born, that the importance of permanent and strict trusteeship for the earth's wonder and beauty and its remaining natural monuments and resources of wildlife and scenery, can best be grasped. It is indeed impious by any standard to desecrate and destroy those inherited possessions of us all, which have power suddenly to exalt the mind of the human beholder. . . . A civilization which turns to using psychiatrists instead of wilderness is not rich, but poorer than it will ever understand."

But this is only one aspect of conservation. Let us expand Turner's definition by quoting from a brochure issued by the Australian Conservation Foundation:

"Applied to our natural resources, conservation is one of the greatest challenges to modern man.

"Properly applied, it boosts production of primary products from farm and forest without loss of soil or its fertility, or damage to the landscape.

"Conservation means the planned and best use of different environments, so that everyone can continue to receive their needs of food and fibre, yet retain places for scenic and aesthetic satisfaction.

"We need spaces for living and playing; we need areas where the natural environment is preserved, places for industries and cities, and areas for primary production."

It is for such reasons that Conservation, which concerns the vital needs of man, stakes its claim for consideration in the planning of land use.

The conservation of soil, water and trees which are to some extent the subject of other chapters, will not receive any further attention here, except in so far as they are involved in the conservation of natural areas. A full treatment of a most complex subject would need not a chapter but many volumes.

We hope to establish that there is little conflict, if any, between the inviolate retention of selected natural areas, and land usage for other purposes. A. A. Strom "deprecates unilateral approaches to land usage that show half-hearted, superficial, or total absence of consideration for wildlife values". He further affirms, "there is no real and fundamental motivation for a conflict between wildlife conservation and the demands made by man's other interests in land usage".

Of the reasons for such motivation he suggests some to be:

(*a*) "A total absence of long-range planning in our approach to land usage.

(*b*) "A misunderstanding (and downright ignorance) of the purposes and methods of wildlife conservation.

(*c*) "The campaign waged by interests selling short-term benefits and peddling a philosophy of gain from non-renewable resources at the expense of conserving self-regenerating resources for the future."

Purposes and Classification of Lands for Nature Conservation

Dr. J. G. Mosley submitted the following suggestions for discussion by the Nature Conservation of N.S.W.:

Purposes of preserved Natural Areas.—(*a*) Scientific reference, (*b*) Primitive recreation, and (*c*) Semi-primitive recreation. Scientific reference needs ecosystem samples and protection of areas of physiographic, geological, biological and hydrological significance; that is, scientific reference areas or nature reserves within and outside national parks. Primitive recreation needs spacious wilderness without facilities; that is, wilderness areas inside and outside national parks. Semi-primitive recreation needs wilderness with limited facilities and limited development; that is general recreation in national parks.

Classification of Areas: (*a*) National Parks; (*b*) Wilderness Areas, and (*c*) Scientific Reference Areas. National Parks may contain, where desirable, any of the following zones: scientific reference areas (or, nature reserves), wilderness areas, general recreation areas (or limited development areas). Wilderness areas may contain, where desirable, scientific reference areas. Scientific reference areas are nature reserves either inside or outside national parks and wilderness areas.

In putting forward this scheme, Mosley emphasized the special urgency of provision for nature reserves. His scheme appears to provide a basis for the total planning of conservation requirements within a region, provided that full consideration be given to the following requirements:

Scientific Reference Areas need to be selected to include samples of ecosystems essential to preserve all biotic communities, including migratory birds, present in the region, and other sites needed for the protection of the geological record, for soil scientists and hydrologists. The areas should be large enough to enable the biotic communities to be self-sustaining, and be buffered as far as possible against corrosion and pollution.

Spacious Wilderness Areas.—National Parks are usually established in primitive country having scenic and the more popular types of recreation potential. Such attractions result in partial preservation only of their primitive state.

The rapidly increasing usage of national parks throughout the world for mechanized recreation has led to serious deterioration of the natural values, which were the original basis for their foundation. Wilderness areas, on the other hand, must be wholly primitive and excluding internal roads and all recreational facilities. They must be of such size and ruggedness as to make self-reliance, physical fitness, and skill in bushcraft, conditions for safe and interesting usage.

They have, perhaps, an even more important value, serving as large viable biotic reservoirs, supplementing nature reserves managed by wildlife authorities. Indeed, a strong case could be made for wilderness areas to be established primarily as Reserved Scientific Areas, under the management of the appropriate authority, such as the present Fauna Protection Panel in N.S.W. It would be necessary to provide that such authority would allow controlled but reasonable access for hardy bushwalkers and canoeists.

Semi-Primitive Recreation Areas.—Such will be found in national parks and smaller reservations such as around coastal resorts and scenic lookouts. They would provide in most cases for more or less limited access by automative transport, also for shelter and hygienic use, and in some cases for accommodation in huts, lodges, hotels; and also spaces for caravan- or tent-camping. How much or how little development should be allowed in parks is always a contentious matter, but it must be remembered that all citizens who behave decently are

entitled to some access and controlled use of national parks and similar reserves. The provision of well-designed and controlled nature trails in many of our parks is sadly lacking, yet they can be a source of healthful recreation and of opportunities for nature study.

Scientific Reference Areas

It is important that conservationists should understand and stress the material values resident in primitive areas, and which may be developed from study of biota and other resources therein. They may be conserved wholly as control ecosystem types, for comparison with effects in similar ecosystems subject to deliberate or indirect influences arising from man's activities. They may be used as controlled sources of material for study in the field or laboratory, in such fields as biology, ecology, soil science and phyto-chemistry. Portions of them may be used as test areas for forestry, for agriculture, for re-settlement of native fauna threatened by loss of other environments or for depletion due to adverse influences.

Fields of scientific enquiry into natural environments include:

Biology-Ecology.—This is a fundamental field, including taxonomic studies, the inter-relationships of all components of the ecosystem, of the factors which determine the nature of the ecosystem, and its reaction to extra-system influences. Researches in animal physiology and behaviour are also essential for proper wildlife management. They may also isolate resistant strains of plants or of parasites for specific pest control.

The need of a thorough biological survey of Australian flora and fauna was conveyed to the Prime Minister of Australia by the President of the Australian Academy of Science early in 1962. His letter was accompanied by a well-reasoned report prepared by members of the Academy. The establishment of a Museum of Australian Biology in Canberra was recommended, and to have two main functions:—

(*a*) To carry out a national biological survey of Australia and its Territories in collaboration with other agencies of the Commonwealth and States.

(*b*) To commence preparation of a comprehensive Flora of Australia as proposed by ANZAAS. (More reference will be made to ANZAAS proposals later, but it may be stated here that ANZAAS—The Australian & New Zealand Association for the Advancement of Science had recommended to the Commonwealth and State Governments that steps should be taken to organize a general biological survey of the flora and fauna of Australia, also that a co-ordinating authority be set up by the Commonwealth Government, under arrangement with the

State Governments to correlate and co-ordinate conservation measures throughout Australia.)

Unfortunately, after a lapse of three years, the Prime Minister, in answer to the proposals of the Academy, replied that Government finances for the establishment of these activities could not be provided at present.

The report, as published in the *Australian Journal of Science*, Vol. 28, No. 12, June, 1966, stressed the rate at which fauna and flora were disappearing, that much of it is localized and that biotas are being exterminated as their habitats are destroyed. It also drew attention to the very incomplete state of collections in State museums and herbaria of the total number of existing animals and plants, and to the fact that many remained unstudied for lack of staff.

In justification of the preparation of an Australian flora, it pointed out that published literature dealing with taxa and revisions was scattered in Australian and overseas journals. The report continues:— "the whole position is extremely unsatisfactory from the standpoint of workers in agricultural research, forestry, pharmacology and other fields, that depend on accurate identification of plant species".

It is difficult to understand why physical science receives so much attention and public finance as compared with the support and finance for the life-sciences. Admittedly physical research has done much for the needs of man directly, and indirectly by providing research techniques and tools for medical as well as biological use. But can space research provide a quick answer to the problems of hunger and disease afflicting the world? Yet fundamental biological research and its application by workers in other fields dependent on it must be speeded up if any relief to these major problems is to be expected. Further reference to biological application to conservation will be made later.

Phyto-Chemical Research

Seeing that a full chapter of this book is devoted to one aspect of this subject, little need be said here except that the study of the chemistry of plants in Australia is actively pursued. Few fields make a greater demand for the retention of large samples of all plant communities, for, as Dr. J. L. Webb, a leading worker in this field, was reported: "It would be tragic to make a clinical breakthrough 20 years from now, only to find that the world's sole supply of the necessary plant had since been destroyed".

Hydrology

This field, so important in this driest of all continents, is also treated in another chapter. However, in support of its relation to

conservation of natural areas, the following statement by Leopold, Chief of the Water Resources Division of the U.S. Geological Survey, supports the need for the preservation of natural areas "as control areas for the study of water yield, whether as run-off or ground-water". He added: "A civilized nation could, and should in my opinion, afford the maintenance of certain control areas for the study of natural variations in physical phenomena, such as ground-water conditions."

Geology and Geomorphology

In later pages, a fuller statement on the desirability of retaining geological sites of interest is given. That such retention in some cases is vital to the nation's welfare is affirmed by Professor J. N. Jennings at a recent ANZAAS Conference: "To assess these biases it will be vital to retain un-modified samples of morphogenetic systems, whole drainage basins, where the processes solely resulting from the relief, climate and vegetation can be carefully measured and analysed. Against these as norms, the processes from modified but otherwise equivalent areas can be analysed. Without such controls we shall be able neither to understand the past properly, nor guide the future intelligently; we shall have to go on, as we have already done in the past, in ignorant disregard of the laws of nature."

We must accept, too, the views of four Australian scientists, Browne, Day, Costin and Turner, in reviewing the effects of works proposed to be carried out on the Kosciusko Primitive Area:—

"Apart from their purely scientific interest, which is considerable, these and other glacial features of the Kosciusko area have a practical significance. Of late years, the study of climatic changes immediately after the Great Ice Age has become of increasing importance to the geologist, the botanist, the geographer, the anthropologist and the soil scientist—it must be emphasized that the preservation of these glacial remains at Kosciusko is not purely a question of Australian scientific prestige or benefit—glacial research in Australia could contribute to the solution of puzzling problems on the other side of the world."

Agriculture

It may be fairly said that in the past the system of disposal of Crown lands has paid little, if any, regard to the desirability of retaining samples of all ecosystems as reference areas for scientific study into their wisest possible use for agriculture. The chapter "The Rape of the Forests" by Leonard Webb in Marshall's "The Great Extermination" is a sad story of misuse of land. In another chapter, "The Decline of the Plants", J. S. Turner, speaking of the coastal heathlands, says: "The soil scientists and ecologists also" (in addition to naturalists) "value them highly for the intensive study of problems

of soil formation, of soil moisture relationships, of fire resistance and of mineral nutrition. The heathland soils are extremely deficient in phosphorus and in most of the other chemical elements essential to plant and animal life. Yet several hundred species of native plants can maintain themselves, withstand summer drought and can even grow at rates not insignificant. . . . In the long run, scientific work on these plants, and especially on their phosphorus nutrition, may be of great value to the agriculture of the future. *It is therefore, highly desirable that numerous heathland reserves should be made in every State.*"

Semi-Primitive Areas

National Parks and Reserves

The National Parks and Wildlife Bill 1966 (at the time of writing still in the hands of Parliament), when dealing with plans of management for the three types of reserves envisaged in the Bill (viz., national parks, State parks and historic sites), indirectly provides clues to the intended usage of each type. The working plans must have regard to, *inter alia*:

"The encouragement and regulation of the appropriate use, understanding and enjoyment of each national park.

"The preservation of each national park or State park in its natural condition, the protection of the special features of the park and the conservation of wildlife therein.

"The setting apart of the whole or part of a national or State park as a wilderness area."

Admirable objectives, but the conflict between "use and enjoyment" on the one hand and "preservation, protection and wildlife conservation" on the other hand will, as always, require determined and well-balanced action to resolve. Ample funds will be needed to make professional ecological, topographic and engineering surveys before preparation of plans, with continued similar surveillance to detect and correct faults and to deal with misuse.

In 1879, when our Royal National Park—the second "national" park in the world, was dedicated under the Public Parks Act, the "Trust Board" was given extremely wide powers to manage, improve, and preserve the 36,000 acres. In those days, perhaps some excuse could be claimed for the vigorous policy adopted for "improvement" at the expense of "preservation". In an official guide published in 1893, satisfaction was expressed in the work accomplished—32 miles of road, "spreading web-like" over the park, the clearing of 2,000 acres for military manœuvres, the introduction of deer and the planting of thousands of exotic trees. There can be little excuse for later

destruction of natural features, as, for example, the sale of magnificent timber and erection of saw-mills. The present condition of the park, the lack of rangers to prevent abuses, and the failure to control bush-fires in their early stages are all matters for regret in this, the first National Park in Australia, which should serve as a model of balance between use and preservation.

Other areas listed in the schedules to the National Parks and Wildlife Bill are showing signs of over-use, and urgent action is needed to dedicate a much greater acreage of diverse environments of character, to spread out today's mechanized visitors. The present Minister for Lands, the Hon. T. L. Lewis, M.L.A., is reported to have as a target 5% of the total area of the State being set aside for parks and nature reserves, about five times the present acreage of about 2,000,000. He has appointed a scientific committee to select sites which will retain samples of each main ecological type. Another official committee, known as the Sim Committee, is attempting to select sites for reserves on the North Coast foreshores, and to resolve the conflict between conservation and beach-sand mining interests. We can only hope that the work of these committees will result in the early dedication of much needed nature reserves as well as parks.

The Schedules appended to the Bill list eleven National Parks ranging in size from 15,000 acres to 1,314,000 and totalling 1,864,000; eight State parks from 1,310 acres to 5,230 and totalling 26,000; and three historic sites.

Most conservationists are now agreed that a central authority, with a professionally-trained parks service, is essential for the proper control of parks. Many trustees and some trusts have given wise and dedicated service, others have not. Provision is made in the Bill for local advisory committees to assist a National Parks and Wildlife Council, which is to consist of what should be a well-balanced group, representing parks and wildlife interests, while scientific and educational agencies and primary producers also receive consideration.

When considering the Bill, it is interesting to recall that a devoted conservationist and well-known bushwalker, the late Mr. C. d'A. Roberts, seems to have been the first publicly to advocate unified control of parks and wildlife in N.S.W. The woeful developments proposed by the Royal National Park Trust led him, in 1938, to state in an article in *The Sydney Morning Herald*: "The Trust system of control should be abolished, and instead, the management of the larger, perhaps all, parks must be vested in one central authority similar to the Parks Service of the United States."

The Wildlife Preservation Society of Australia, in the same year, confirmed that it had emphasised the need for such a body, while a

conference of this Society and other bodies, e.g., N.S.W. Federation of Bushwalking Clubs, Parks & Playgrounds Movement of N.S.W., the N.S.W. Rangers League and the Sydney Bushwalkers, agreed on the desirability of approaching the Government to set up centralized control of both "National Parks and Nature Reserves".

In 1955, the Caloola Club, in its journal, *Yarrawonga,* published a detailed statement of its views on national park control. This statement advocated the establishment of an authority with a permanent head, outlined its powers and functions, and suggested supplementary aid from local boards. The N.S.W. Federation of Bushwalking Clubs helped with finance to ensure a wide distribution of the article.

A conference of conservation bodies in 1956, set up a committee to present arguments for submission to the Minister for Lands, supporting the passing of a National Parks Act which would provide for a National Parks Authority to manage parks by a National Parks Service. The committee recommended that national parks should be maintained in a natural condition, and that the Authority should encourage and regulate the use of the parks by the public, and provide for their enjoyment without impairment for future generations.

In 1957 the National Parks Association of N.S.W. was founded, and following intensified representations, the Government formed an inter-departmental committee to enquire into the Association's recommendations and report thereon. A subsequent submission in 1959 drew attention to the illogical and uncoordinated administration of the Fauna Protection Act, the Wildflowers and Native Plants Protection Act, and existing parks and reserves. This called for the establishment of a National Parks and Wildlife Authority.

In 1960, a private members' bill, moved by Mr. T. L. Lewis, M.L.A., recommended the establishment of a National Parks Service and training of rangers. The motion, followed by debate in the House and press discussions, revealed a divergence of views as to the value of trusts. The National Parks Association, in 1965, re-submitted a proposal for a Nature Conservation Commission to carry on the work of the Fauna Protection Panel and to act as a National Parks Authority. Such a move, it was considered, would provide greater security for wildlife in parks and reserves.

Late in 1966, the Minister for Lands. the Hon. T. L. Lewis, M.L.A., brought down the Bill, the fate of which has still to be decided.* In view of this, it would be idle to discuss the Bill and, in any case, the quality of administration of legislation is at least as important as the enactment. It is to be earnestly hoped that in both respects the excellent work which the Fauna Protection Panel has done will not be

* See footnote after Conclusions.

submerged, but be given every opportunity to reach higher levels of performance in national parks as well as in nature reserves.

This section concludes with some notes describing the steps leading up to the creation of the Kosciusko State Park. The Trust is faced with a major task in endeavouring to make the wisest use of the large land area to serve diverse recreational and economic needs and yet to preserve most of its unique natural character.

Kosciusko State Park

The agreement reached in 1915 between the Commonwealth and the Governments of N.S.W., Victoria and South Australia concerning the use of the waters of the Murray River gave the second official impetus to the idea of the wise use and conservation of mountain catchments. The first official interest in this subject had been stimulated in 1907 by the proposed construction of the Burrenjuck Dam.

The Commonwealth Forestry Bureau, established in 1926, was influenced by the work done in France towards the restoration of denuded mountain catchments. It took an immediate interest in the catchment area of the Murray River and was instrumental in having reconnaissance surveys carried out both in N.S.W. and Victoria. Further impetus was given by the creation of the N.S.W. Soil Conservation Service in 1938, and by proposals for a national park that had been vigorously pressed by a group of bushwalkers in N.S.W.

Prior to this time, the only people who took an interest in the snow country were a handful of skiers and graziers, mainly from western districts, who made use of the mountain country for relief grazing in time of drought. Grazing had followed closely on the heels of the explorers about the middle of last century. In common with all grazing in the pioneering days, no thought was given to the long-term well-being of the land. Nothing was known about the sensitivity of the alpine pastures or the erodible nature of the soils.

The Soil Conservation Service quickly drew attention to the damage that had already been done, and the erosion that was taking place in the high altitude country, and pressed for a severe reduction or the complete elimination of grazing. Meanwhile, the urge for returned soldier settlement after World War II brought forth a suggestion for closer settlement in some sections of the sub-alpine country.

In 1944 the N.S.W. Government sought to solve the problem by establishing the Kosciusko State Park over all the Crown Land in the Southern Alps not then let under a superior form of lease.

The Park was placed under the control of a well-balanced Trust composed of departmental officers and laymen with the Minister for

Lands as Chairman. Unfortunately, it was given the revenue from grazing as its only source of income, and the whole of this had, perforce, to be spent on recreational development.

The Snowy Mountains Hydro-Electric Authority, established in 1949, having made some initial mistakes, quickly learnt the need for conservation techniques in connection with its engineering works, and has since made Australian engineering history in this regard. It reinforced the efforts of the Soil Conservation Service to restrict grazing which, in 1958, was completely eliminated on all country over 4,500 feet elevation. This has been hailed by those well qualified to express an opinion as one of the most important steps in the history of land use in N.S.W., and its value has been demonstrated by the improvement in the grass and herb cover that has since become evident.

The Trust, under heavy pressure to permit commercial development of the snow fields, nevertheless laid down, and has successfully implemented, a policy whereby every individual and organization authorized to use land within the Park is responsible for restoring and re-vegetating the surface disturbed as a result of his operations. The Soil Conservation Service has pursued a modest though steady programme of restoration on the severely eroded sections of the main range, and the Department of Main Roads has co-operated by providing the money with which to stabilize and re-vegetate the batters on the re-constructed Kosciusko Road.

The Trust has recently prepared a plan for the appropriate zoning of the Park which, it is hoped, will integrate the diverse needs of many different forms of recreation with the over-riding need for the preservation of the whole area as one of Australia's most important water catchments.

Conservation of Geological Sites

Although several existing national parks have geological features of great interest, only three sites have been reserved specifically as geological sites. These are the columnar sandstone area at North Bondi, Hatton's Corner at Yass, and a fossil insect locality near Belmont. The varve shale outcrop (Carboniferous) at Seaham, although unreserved, is marked by a notice explaining its significance.

In 1962 the A.C.T. Central Planning Committee, acting on advice from various bodies in the Territory, reserved a number of sites, in some cases erecting explanatory notices. These covered three varieties of geological phenomena:

(*a*) Broad aspects of the landscape, fault scarps plateaux, and other features produced by agencies such as weathering, erosion and earth movement.

(*b*) Outcrops showing important small-scale features—unusual rock types, contacts and unconformities, faults and folds.

(*c*) Important fossil localities.

The reservation of geological sites in N.S.W. is complicated by the varying status in tenures of land, whether Crown, freehold or held by statutory bodies. It is also affected by the employment of geologists in mineral production, which has not been concerned with conservation. The latter circumstance means that significant geological features exposed may be destroyed as a result of the need for efficient utilization of the deposit. In addition, many low-cost materials which involve unique features will be extracted nevertheless, because of nearness to point of utilization. The present attempts to mine in unique primitive areas such as the Colong Caves and Myall Lakes areas are being actively contested and rightly so.

In 1962, the Geological Society of Australia (N.S.W. Branch) set up a sub-committee which prepared a list of about 200 sites accompanied by statements of the action needed for preservation in each case. This sub-committee has also undertaken a programme of education, firstly with conservation groups, and secondly with gem-collecting groups, many of which are now becoming more conservation-minded. Contact with local government councils has resulted, in some cases, in their co-operation to the extent of implementing a programme of conservation.

There is a need for sites around Sydney for field excursions of high school students. Features such as the Dundas intrusion, the Brookvale shale quarry (where fossil fish were found), laterite sites, and the Long Reef red shales have been used.

The Geological Society also supported attempts by the Australian Academy of Science to preserve the David Moraine at Kosciusko, and no doubt similar problems will involve the weighing of economic against scientific interests.

The special skills of the geologist, probably little known to the general public, have not been used in many problems of conservation. Particular examples are: (*a*) problems of coastal and river erosion brought about by ignorance of the natural processes involved; (*b*) problems of public health and pollution which often involve geology.

The concern of the geologist with the supply of basic materials to the community gives him great responsibility in the matter of their wise use. And finally, the unique nature of many important areas now marked for conservation is largely due to their geology. Proper understanding of the geological history of the State and of continuing geological processes is essential to the conservation movement.

Fish Fauna

"The law is hard on man or woman
Who steals the goose from off the common,
But lets the greater sinner loose,
Who steals the common from the goose."

This old rhyme, taken from Dymond's "Fish and Wildlife", was quoted by Dr. Donald Francois, Director of State Fisheries of N.S.W., as being as applicable to fish as a resource, as to terrestrial forms of wildlife. Indeed, most authorities appear to agree that man-made changes in shore-line and inland waterway habitats are the greatest threat to their conservation. There is considerable agreement, too, that subject to the observance of regulations relating to such matters as bag-limits, size of fish, methods of fishing, closed seasons and closed waters, over-fishing or commercial fishing and angling in the same areas are unlikely to effect depletion.

Gilbert Whitley, in the *Australian Museum Magazine*, 1955, felt that there was little anxiety on this score, but added: "The recognition of submarine reserves for the special study of flora and fauna might well be considered by fishermen."

Francois and Whitley both agree that urban growth is a serious threat to feeding and breeding grounds. Such activities as land reclamation by dredging and filling, cutting of mangroves and drainage of swamps, and many different classes of pollution are all damaging factors. The destruction of shore-line and aquatic flora in bays and estuaries arising from land development was instanced by Dr. Francois as a big menace to underwater food chains.

Fresh-Water Fauna

Whitley, in the same article, wrote: "Inland waterways have given us a series of aquaria of living 'lost-world' animals . . . unique and interesting. Surely these wonderful old laboratories of Nature should be kept intact as much as possible for future and better-equipped generations to study and use."

Pollard and Scott in "The Great Extermination"—A. J. Marshall, state: "The worst damage to the native fresh-water fish fauna has been caused by altering their living conditions. This has occurred in two principal ways, first by the introduction of exotic species, and (much more important) by the direct destruction of the habitats of native species."

The economic necessity of making the widest multiple usage of our limited resources of inland waters has involved the construction of

dams, weirs and river improvements which have affected native fish by altering water temperature and the alternations of water level in streams to which the fish have become adapted.

The establishment of the Narrandera Inland Fisheries Research Station by the State Fisheries has added much to our knowledge of breeding conditions of native fish, of which seven major species have been successfully propagated by artificially stimulated conditions.

The fall in water temperature due to storage of water in large dams has led in some places to the replacement of Murray cod by exotic trout. In addition, the introduction of these species into most suitable streams in the State is continuing, and it would be impracticable to reverse this process. At least it may be argued that increased facilities and larger fish populations available to anglers is a beneficial use of a resource to the nation, because provision for healthy recreational satisfaction is one of the needs of a full life for so many people. Pollution of inland waters by organic and inorganic material, oil and industrial wastes, and particularly by absorption of plant nutrients and chemical pesticides derived from agricultural activities can be a great menace, and stricter control is an urgent matter.

Conservation of Aquatic Life

Official action in N.S.W. to conserve fish probably commenced with the Oyster Fisheries Act of 1868, as a result of indiscriminate waste of live oysters, collected for burning to lime. Subsequent amendments to the Act led to the passing of Fisheries Acts in 1881, 1902, 1910 and, finally, to the Fisheries and Oyster Farming Act 1935 (as amended). This Act, administered by State Fisheries within the Chief Secretary's Department, appears to safeguard fisheries generally. Provision is made for the compulsory installation of fish-ladders at weirs, dams and reservoirs on inland waters when deemed advisable by the Minister. The State Fisheries Branch employs, under the Director, a staff of some 12 biologists and more than 50 field staff to police the Act.

An interesting development has been the establishment of a nation-wide Society of Limnology in 1962. This scientific body deals with the study of fresh water, with special reference to its plant and animal life. In *The Fisherman* issue of Spring, 1963, the tasks of limnologists are stated to be: to carry out a complete classification, to complete the ecological and physiological description of all fresh-water biota, and to do their utmost to see that representatives of all major Australian water types are conserved in perpetuity for scientific study and public interest.

The Development of Protective Legislation

(*a*) *Fauna*

Legislation to stay the destruction of native flora and fauna has lagged behind the need for it; administration of protective laws has nearly always been backward. Hardly any thought until recent years has been paid to the only certain way of saving biota, namely, habitat conservation and management.

How great the need for proper conservation measures, how great have been the losses of plants and animals, can be learnt from such recent books as "The Great Extermination", by A. J. Marshall, and "A Continent in Danger", by V. Serventy. The reading of such books will surely arouse in all, a feeling of anger for the wilfulness or ignorance which contributed to the loss or serious diminution of species populations.

It is strange, too, to read in the first statute enacted in N.S.W. dealing with fauna protection—The Animals Protection Act 1879—that it had two purposes:

To encourage the importation and breeding of game NOT INDIGENOUS to the Colony;

To prevent the destruction of native game during the breeding season.

The imported game protected and "encouraged" included deer, antelope, pheasants, partridges, grouse and white swan. However, as a set-off to the last-named, the black swan was included in the scheduled protected game consisting of some 24 genera or species. No furred animals were protected by this Act, nor subsequently until 1903. Penalties of up to £2 might be imposed for breaches of the 1879 Act, and up to £5 for taking protected game in "any sheet of water, island or enclosed land which has been dedicated to the public or otherwise set apart by the Government or any private person for their preservation".

Aborigines and persons authorized by the Colonial Secretary to collect specimens of natural history for any public museum were exempted from penalties for taking native game.

Another interesting provision authorized the addition to the protective schedule of any animals known to be destroyers of snakes, vermin, or insects injurious to vegetation.

A "Bird Protection Act", 1881, repealed the above and made some advance by protecting another category—"Song-birds". In 1887, the first preserves were proclaimed—on all islands in the rivers north of Newcastle.

The 1881 Act was replaced by the "Birds Protection Act" of 1893, which scheduled native and foreign birds, protected absolutely for five years and afterwards by a closed season, and in addition another schedule listing native game protected during the breeding season from August 1 to January 31 following. Penalties imposed for breaches were given, half to informant and half to Zoological Society. A further Birds Protection Act 1901 greatly increased the number of protected birds while a regulation dated October 31, 1905 further increased the list to 103 native species, absolutely protected for ten years. But provision is made for "removing" birds in pest proportions or because of their being found "injurious".

December 5, 1903, is a date to be remembered, for this day saw the commencement of The Native Animals Protection Act 1903 "to protect native animals, and to amend the Birds Protection Act 1901". The Act provided for a schedule of native animals for which periods of absolute protection or closed seasons may be proclaimed; the Colonial Secretary being empowered to add or remove names for the whole or any part of the State by notification in the Gazette. Notwithstanding anything contained in the Pastures Protection Act 1902, or any other Act, any person infringing was made liable to a penalty not exceeding £5, this applying also to any person selling or offering for sale, or having in his possession, any protected animal, or the whole or any part of the skin recently taken.

The schedule included the red kangaroo and wallaroo, "native bear", all wombat species, platypus, echidna, three species of "sugar squirrels" and the "flying opossum". The great grey kangaroo was added to the schedule on May 30, 1904. The original period of absolute protection was from the commencement of the Act to January 1, 1905, approximately 13 months, and the close season thereafter, August 1 in every year to January 31 succeeding.

Subsequently, the platypus was given absolute protection for seven years from October 24, 1905, the red kangaroo three years from August 11, 1909, and the koala five years from the same date.

For all other animals on the schedule, absolute protection was given for three years from August 11, 1909. Space does not permit mention of regulations gazetted from that date to January 1, 1917, when 153 genera/species of birds were absolutely protected for the most part to June 30, 1924, and absolute protection for all scheduled animals, except in far-western Pastures Protection districts to February 1 for kangaroos and wallaroo, and for others to the end of 1924. In addition, many species of wallaby were included for certain districts.

The Birds and Animals Protection Act 1918, repealing the Birds Protection Act 1901, and the Native Animals Protection Act 1903, came into effect on January 1, 1919, incurred amendments until 1930 and was certified on January 13, 1942, as the Birds and Animals Protection Act 1918-1930. This Act reversed the system of scheduling protected birds or animals, and defines "Protected bird or animal" to include any not mentioned in or hereafter added to the schedules to the Act, and the skin or any part of such bird or animal, and the feathers and eggs of any such bird. However, the Minister was empowered to declare close seasons for scheduled birds and animals, and open seasons for protected ones. The Act made provision for the proclamation of districts (sanctuaries) in which only specified birds or animals might be taken.

Ex-officio rangers and voluntary rangers were defined and their powers of search and seizure set out, and the penalties for breaches and obstruction named.

Up to the date of the superseding Fauna Protection Act 1948, the administration of protective laws was carried out departmentally as a function of the Chief Secretary's Department with the assistance of the Commissioner of Police and the Australian Museum. The aspects of habitat conservation and reservations were not a feature until the establishment of the Fauna Protection Panel under the 1948 Act. Mr. A. G. Kingsmill, now Under Secretary of the Department, took a leading part in preliminary investigations into the whole question of the conservation of fauna in 1944, and subsequently recommended the setting up of a small inter-departmental committee, consisting of Mr. Max Henry, Chief of the Division of Animal Husbandry, Mr. J. R. Kinghorn, of the Australian Museum, and himself. After discussions with a wide range of organizations either interested in the conservation of fauna or in profit from its use, a report was furnished in 1946. On this report the 1948 Act, regarded as an excellent piece of legislation, was drafted.

Since this Act, with amendments under Act No. 50, 1964, is still in force, there is little need to detail its provisions. Important clauses set out the composition and functions of a Fauna Protection Panel,* under the chairmanship of a Chief Guardian of Fauna, which is stipulated as "the authority for the protection and care of fauna". The thirteen members of the Panel, to be appointed by the Governor, consisted at first of seven appointees of Government departments, one representative each of the University of Sydney, and of grazing or agriculture, and three nominated by conservation interests. The amending Act of 1964 adds one representative each of the Western Lands Commission, the Police Force, and the C.S.I.R.O.

* See footnote after Conclusions.

Another important part of the Act provides for the dedication of Crown Lands as faunal reserves "for the protection and care of fauna, the propagation of and the promotion of the study of fauna". Such dedication secures the reserves from mining and timber-getting, and stipulates the concurrence of the Panel to the granting of grazing permits on any travelling stock or camping reserve within its boundaries.

The first Chief Guardian of Fauna was the late Mr. F. J. Griffiths, while Mr. Allen A. Strom, the present incumbent of the office, was an original member of the Panel. Under the guidance of these two officers, so dedicated to the cause of conservation, much progress has been made in "the protection and care, and promotion of the study of fauna". Much more could and would have been effected if funds and staff had been adequate to meet the heavy needs for vigilance and law enforcement, research, management of faunal reserves and education.

The amendments of the 1964 Act provided for the creation of wildlife refuges and game reserves, on the recommendation of the Panel and with the consent of every owner and occupier of any land. As at May, 1967, 52 faunal reserves, now designated Nature reserves, covering a total area of 141,680 acres, and 143 wildlife refuges, totalling 2,167,321 acres, have been proclaimed. The first Nature reserve was the John Gould on Cabbage Tree Island, and the first wildlife refuge was Bouddi Natural Park.

The number, distribution and total area of Nature reserves are quite inadequate to provide properly managed protection, that is, conservation of all important ecosystems. There still remain large areas of vacant Crown Lands which are not likely to be needed for any economic purpose, at least for many decades, if ever. Other environments, such as wetlands and coastal dune and heathland areas, must be set aside for conservation as against commercial exploitation, unless short-term profits are going to be accepted as the condition for qualifying for land usage rather than long-term gains.

As from January 1, 1960, acting under the Customs (Prohibited Exports) Regulation, the Commonwealth Government agreed to place a complete ban on the export of koalas, platypuses, lyre-birds, and on the skeletons, skins and plumage of these species. The Commonwealth also agreed to assume complete control over export of other species of indigenous fauna, for which permits would be granted only for bona-fide scientific and zoological purposes. Successful prosecutions have followed some attempts to export without permits.

(b) Flora

The Wildflowers and Native Plants Protection Act 1927-1959 appears to have been the first and only legislation safeguarding native flora. Here again, conservation can be effective only if a properly managed system of Nature reserves is provided to include self-sustaining areas of all types of ecosystems. This Act, at the best, provides for the "protection" of notified species only, except in certain public lands such as parks and reserves and in private lands without the consent of the owner. The species so "protected" amount to about 4 per cent. only of the total in New South Wales; in addition, destruction of associated unprotected species would, no doubt, affect the survival of the plants listed.

We cannot afford not to conserve every species for reasons already given, and some thought should be given to the introduction of periods of absolute protection for all native species after disasters such as bushfires or droughts, with suitable exemption clauses where such provision is indicated.

Under the present Act, licences may be issued to owners or lessees of private lands, authorizing the growing for sale of protected plants and flowers. There is presently a total prohibition on the sale of the flowers of two species of boronia—native rose and white boronia, and two species of "giant lily".

The recent transfer of the authority to administer the Act from the Local Government Department to the Fauna Protection Panel can only effect some improvement in effective control. Voluntary rangers could do much to assist in policing the Act. But now that the Government has taken the logical step of unifying the administration of flora and fauna legislation, it should not delay the dedication of the necessary Nature reserves essential to make both Acts effective.

To have a proper appreciation of the objectives and achievements of the Fauna Protection Panel, its many publications, such as "Wildlife Conservation", "Wildlife Refuge", "A Background to Nature Conservation", and others, provide valuable information. The annual reports, too, help to fill in the gaps in this necessarily brief statement.

Division of Wildlife Research of the Commonwealth Scientific and Industrial Research Organization

History of Establishment

The Division was established in 1949 to study mammals and birds in Australia initially under the name of "Wildlife Survey Section", with Mr. F. M. Ratcliffe as its officer-in-charge. The Section became subsequently the "Division of Wildlife Research" under Dr. H. J. Frith as chief in 1962.

The formation of the Division was stimulated by two events. The first was a series of recommendations from the Australian and New Zealand Association for the Advancement of Science that a research group should be set up to study the Australian native fauna which is of world-wide interest and needs a conservation policy based on sound ecological knowledge.

The second stimulus was the post-war rabbit situation which had become exceptionally serious in every State, leading to widespread and repeated demands that it should be tackled scientifically on a national basis.

Objectives of Research

During the first few years, almost the whole effort of the staff was devoted to studies of the wild rabbit, including the release of the myxomatosis virus, and long-term studies of rabbit biology, with the ultimate view of control. Rabbits still form an important part of the programme, but since 1951 increasing numbers of staff have been appointed to study native animals and currently the work of more than two-thirds of the total scientific staff of 26 research scientists and experimental officers is devoted to native fauna.

The Division's functions have been defined as follows:

1. Studies of birds and mammals of economic importance.
2. Studies and surveys of the Australian fauna relevant to conservation problems.
3. Basic studies in the field of population ecology and behaviour.

Such a neat division of animal problems can rarely be achieved simply by classing them into a group of obvious economic importance or into another which is worthy of conservation for scientific and aesthetic reasons. The various species of kangaroos, for example, which are being studied in one of the Division's major projects, provide a complex group. Among them there are species that are undoubtedly economic pests in some places, yet at the same time they represent a potentially valuable natural resource; on the other hand, other species are in urgent need of conservation.

As the fauna is in delicate, dynamic equilibrium with environmental forces, a knowledge of the relationship of a wildlife species to its environment, and particularly to its habitat, is basic to any successful programme of control or conservation. An integrated plan for proper management of an animal species must be based on a thorough assessment of its true place in the economy, and on a sound knowledge of its ecology and behaviour.

The work of the Division is directed (*a*) to provide this background knowledge of the status and basic biology of the animals

concerned; (*b*) to increase existing scientific knowledge by research on fundamental principles in animal ecology behaviour, and physiology; (*c*) to point to the way in which this knowledge may be applied in the management of wildlife resources.

Function in Management of Fauna

Under the Australian Constitution, complete control of the fauna is vested in the States within their boundaries. The C.S.I.R.O. is a purely research organization and the Division has no legislative or administrative responsibility for control or conservation. However, the Division is no doubt the largest, best equipped and staffed faunal research unit in the Commonwealth and is able to offer advice and assistance on conservation work and policies where this is needed by the States. Very close collaboration has evolved over the years between the Division both with the State Vermin Control and fauna authorities. This has been reflected in the initiation of several joint projects and a formal co-option of senior members of the staff of the Division to advisory fauna panels of several States.

Organization and Staff

The headquarters establishment of the Division is located in Canberra, where the Division maintains fully-equipped laboratories, its own specialized research library, as well as such essential complementary services as photographic laboratory, illustrating facilities, a museum for reference material of study skins, a herbarium and workshops. Two hundred and fifty acres of land which adjoin the buildings are utilized for experimental enclosures at which breeding colonies of mammals and birds are maintained for detailed study of animals under confined conditions.

Permanent staff is maintained also at somewhat smaller establishments in Perth and at Alice Springs.

Much of the Division's work is undertaken in the field as the work on each animal has to be related ultimately to the wild population in its natural habitat where that occurs. Temporary field stations or base camps have been established for this purpose in numerous locations throughout the Commonwealth to facilitate the long-term studies.

The present composition of the Division's staff is made up as follows:

Scientific staff	26
Technical staff	52
Library, workshop and clerical staff	26

The scientific staff are first class and include men who are acknowledged world leaders in their fields. Since the basis of each

study is ecology, the majority of staff have had postgraduate experience in ecological work. The ecologists are backed by a team of physiologists, ethologists and parasitologists who conduct also independent research in their specialized fields. In addition to their scientific standing, nearly all the scientific and technical staff members are serious naturalists and conservationists.

The Australian Conservation Foundation

An important forward step was taken at a meeting of delegates at Canberra in 1964, consisting of nominees of State Government and private individuals, invited by a group which had been asked to study a proposal from the Duke of Edinburgh, that Australia become a contributing member of the World Wildlife Fund. The group were firmly of the opinion that Australia should first set up a national conservation organization.

At the meeting, under the chairmanship of the late Sir Warren McDonald, delegates voted for the formation of what has now become the Australian Conservation Foundation. At a subsequent meeting of delegates, acting as provisional councillors, they elected an executive committee, with the Rt. Hon. Sir Garfield Barwick as president. This committee adopted a policy setting out the objectives and functions of the Foundation as being concerned with:

1. The maintenance of the quality of the human environment.

   "In the face of intensified development, the quality of our environment can only be maintained by understanding watchfulness which takes into account the community's many and varied needs."

   The Foundation's main role under this head will be to advise Governments, on the basis of carefully collected and analysed information, when matters of principle are at stake or when urgent schemes, such as the establishment of reserves, need championship.

2. Education and public relations.
3. Research.
   (*a*) Outside investigation with financial aid from the Foundation.
   (*b*) Research by the staff of the Foundation, or stimulated and specified by it.
4. Conservation projects. Backing or giving financial support to projects.
5. Helping and stimulating the interchanges of information between different conservation authorities and organizations.

A limited appeal for funds raised $19,000, while the Commonwealth Government made a grant-in-aid of $60,000 spread over three years as a launching grant. This enabled a secretariat to be set up at Canberra.

The Nuffield Foundation made a grant of $10,000 to finance a survey of national parks and reserves which is being undertaken by Dr. J. G. Mosley.

Other projects presently being undertaken and/or financially assisted by the Foundation include a plant community survey in Victoria, the preparation of field guides to Australian birds, negotiations with the Tasmanian Government for securing part of the breeding habitat of the Cape Barren goose, and survey of an area in northern N.S.W. which, it is hoped, may be proclaimed as a special reserve for macropods.

The executive decided to appoint a full-time director to take charge of the Foundation's work, and invited applications from individuals "who are working in the field of conservation, with a university degree in biological science". Dr. D. F. McMichael, Deputy Director of the Australian Museum, has been appointed to the post. Provision is made for individual and member body membership to enable the continuance and further development of the Foundation's work.

Conservation Organizations in N.S.W.

There are nearly fifty organizations affiliated with the Nature Conservation Council of N.S.W., which admits to membership any organized group having as an objective the conservation of Nature. Many of these groups are local and specialized groups, doing good work in the field and at meetings. There are, however, several societies with State-wide membership. Publications of the Royal Society of N.S.W. and the Linnean Society embodying researches on natural resources can be of value in the whole conservation complex. The following notes on some of the larger societies will help to fill out references made to some of them in earlier pages.

The Wild Life Preservation Society of Australia

This Society was founded in 1909, largely due to the work of the late David G. Stead.

Work at first mainly centred on need for absolute protection for some species. Submitted draft bills for improvement and simplification of fauna and flora protection legislation, e.g., Birds and Animals Protection Act 1918, and the Wild Flowers Protection Act 1927.

Took active part in recommendations for national parks and Nature reserves. Submitted proposals to ANZAAS Conferences, aimed at widening activities of C.S.I.R.O. in surveys of wildlife resources and

asking Commonwealth to set up co-ordinating authority with States on wildlife conservation.

Publishes *Australian Wild Life,* invaluable record of conservation activities throughout Australia, editor Thistle Y. Stead, who also edited "Naturecraft in Australia 1956". This book was widely acclaimed as a useful guide on the natural history of our bushland and on its enjoyment by bush lovers.

Caloola Club

Founded 1945 by A. A. Strom to encourage younger and vigorous people to travel through and study in the more primitive areas. Became active conservation group, and club journal, *Yarrawonga,* in 1955, edited by A. A. Strom and A. M. Fox, affirmed: "All our activities are a means to arousing an interest in conservational matters."

Strong representations by club resulted in dedication of the important Nadgee Nature Reserve. Merged with National Parks Association 1961.

National Parks Association of N.S.W.

Founded 1957 largely as result of discussions between A. A. Strom, T. W. Moppett and A. W. Dingledei of Sydney, and R. W. Earp and J. Richley, of Newcastle. Objective: to bring together all interested, to work for the urgent dedication of proper system of national parks and setting up of competent parks service.

Has two Regions—Central and Hunter-Manning—each with own executive and committee, but a State Council elected by regional members responsible for policy.

Publishes monthly journal containing general news, but largely devoted to descriptions of excursions made by organized groups of members. Field excursions most week-ends, some for longer periods. Monthly meetings with lectures.

Has made continuous representations and recommendations to Government for passage of National Parks Bill, providing for creation of parks, to be inviolable and placed under properly-staffed parks service.

Men of the Land Society

Formed 1954; David Petherbridge honorary secretary since inception. Works for conservation of soil, water, forests, pastures, flora and fauna and municipal beautification.

Conducts symposiums, lectures, field-days and demonstrations. Publishes quarterly journal, *The Living Earth,* disseminating expert information in all its fields of interest.

In 1966 inaugurated H. J. Bate Drought Research Fund, to establish first permanent fund for continuous research.

The National Trust of Australia (N.S.W.)

Has main objectives: "To acquire, protect and preserve for the benefits of the public, lands and buildings of beauty, or of national historic, scientific, architectural or cultural interest, including aboriginal relics; to safeguard natural features and conserve wildlife."

Incorporated by Act of Parliament, has membership about 9,000, receives grant from N.S.W. Government, attracts large donations. Has assistance of many voluntary workers, many professionally qualified, has accomplished much in preservation and restoration of historic buildings and areas of natural beauty. Conducts seminars on foreshores, bushfire problems and historic building preservation.

Nature Conservation Council of N.S.W.

First conference 1955 of invited conservation societies, called by late F. J. Griffith, first Chief Guardian of Fauna. Conference 1959 chose above title, resolved there be annual conferences of two delegates from each approved organization on payment of affiliation. At present about 50 member societies spread throughout the State. Elects standing committee of nine to further decisions of conference, with powers to co-opt.

Main object to maintain a continuing and co-ordinated effort rather than a spasmodic and disjointed one, without interfering with normal work of member societies. Committee maintains contact with Government and statutory bodies, holds annual dinner with selected guest speaker.

David G. Stead Wildlife Research Foundation

Established 1963, field headquarters at *Wirrimbirra* near Bargo, N.S.W., on property originally the gift of Mrs. C. Coleman and Mrs. T. Y. Stead. Since extended to nearly 200 acres, 146 acres freehold, the rest Crown leasehold. Purpose of Foundation to initiate and assist research on wildlife conservation, and of establishing wildlife sanctuaries and reserves. Office and residence erected, occupied by resident-ranger; small portion of site being landscaped as visitors' area and wildflower garden, balance maintained as primitive area. Property now deeded to National Trust of N.S.W. and is gazetted as Wildlife Refuge No. 163. Managed by Board of Directors, Foundation maintained wholly by public donations and subscriptions. *Wirrimbirra* now actively used for research and education.

Linnean Society of N.S.W.

This Society is increasingly conscious of need to conserve natural resources. Made reconnaissance survey of Kosciusko State Park in 1945 in conjunction with Royal Zoological Society of N.S.W., reporting to Park Trust on natural history of Park, drawing attention to soil erosion following grazing, and suggesting sites for primitive areas.

Has maintained particular interest in this Park since, taking leading part in moves to eliminate grazing and to preserve sites of particular scientific and scenic interest. Has appointed a standing conservation committee which furnished comments on Kosciusko master plan, made representations aimed to preserve Myall Lakes, and gives expert information to conservation bodies.

The University of New England

Department of University Extension has held successful seminars on national parks and wildlife conservation. Proceedings published of papers read by scientists and others prominent in conservation work, disseminated valuable material.

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CONCLUSION

This brief contribution has necessarily made no reference to some of the major problems affecting conservation. For example, pesticides must be employed, if we are to maintain and lift production of food and fibre, yet there is no doubt that many chemicals are responsible, at least, for sub-lethal damage to species. The control of wild fires and the use of fire generally is another matter to be resolved and deserved some treatment.

However, it is hoped that the definition of the wide scope of conservation makes clear the need for recognition of its place in all planning of land use.

* Since this article was prepared, the National Parks & Wildlife Bill 1966 was amended and passed both Houses as the National Parks & Wildlife Act 1967.

The powers and functions of the National Parks & Wildlife Service now include the conservation of nature reserves and wildlife, under a Director appointed by the Governor and directly responsible to the Minister. He will have the assistance of a well-balanced Advisory Council of which at least four members must "possess special fitness, by reason of their work or interests, to undertake wildlife conservation". The position of Chief Guardian of Fauna and the Fauna Protection Panel are abolished.

Although not completely satisfactory to all conservationists, the new Act can, under good administration, provide a good National Parks and Wildlife Service.