

Allan M. Fox

Nature Reserves

[*Editor's note:* Nature Reserves are so important that it seems unnecessary to present arguments in their favor to the readers of PARKS. This discussion, however, summarizes the matter so lucidly—in addition to presenting various data on Nature Reserves in New South Wales—we felt it should be included here. The article was first printed in Vol. 1, No. 5 of *Parks and Wildlife*, issued by the National Parks and Wildlife Service, N.S.W., Australia. For an earlier report on Nature Reserves and their importance with reference to UNESCO's MAB Program, see PARKS, Vol. 1, No. 2.]

Have you ever tried to forecast what the next twenty-five years will bring, what the world will be like in the year 2000? Twenty-five years, the age of a young adult. The impossibility of the task may be gleaned by thinking of the vast changes of the past twenty years and how, in 1950, many of these were not dreamed of—walks on the moon, jumbo jets, super tankers, the pesticide controversy, intense public interest in pollution, Z.P.G. (zero population growth), pine and woodchip forestry and so on. Who would be game enough to forecast the next twenty-five years?

It becomes more and more imperative, then, that we establish banks of genetic diversity and areas where natural processes are allowed to play out their cycles and/or to evolve continuously, before the remaining resource is swamped by accelerating human-oriented growth rates. These growth rates involve both passive consumption (e.g. recreation) and active consumption (e.g. mineral exploitation) of resources.

This idea of maintaining life's evolutionary options (in New South Wales) was first presented in the late thirties. It was considered then that the area surrounding the summit of Kosciusko, the Morton Primitive Area, and the Macquarie Marshes would be sufficient to cover the most significant natural areas in New South Wales. Problems of wildlife management were foreseen, so Mr. A. K. Weir was given a brief to study the management of Banff National Park (Canada) while returning from London in 1939 with the Minister for Health. Kosciusko National Park and the Morton Primitive Area (now National Park) were established in 1944 and 1938 respectively, while the dedication of the Macquarie Marshes Nature Reserve was resisted until 1971.

The birth of the Natural Reserve idea, however, took place with the 1948 passage of the Fauna Protection Act (N.S.W.) with provisions to allow for the establishment of Faunal Reserves for the "preservation, care, propagation and study of fauna." From the beginning, the inseparable linkage of "fauna" with its habitat has been accepted as a basic premise for both the selection and management of areas. The Fauna Protection Panel, set up under the Act, gave this part of the wildlife program highest priority in the face of extensive and powerful opposition. This ecosystem concept became fully bound into the law in September, 1965,

when the Chief Secretary, Hon. E.A. Willis, approved of the Panel's recommendation that the term Faunal Reserve be dropped and be replaced by Nature Reserve, "Nature" here being interpreted to mean the full biophysical system. The Fauna Protection Act remained the legal base for the Nature Reserve System until the passage of the N.S.W. National Parks and Wildlife Act, 1974, which incorporated the old Act.

Under this Act, the purpose of a Nature Reserve remains unaltered but is now extended to cover natural phenomena as well as wildlife.

Now the hundredth Nature Reserve has been proclaimed in the Government Gazette of 7th March, 1975, the Cecil Hoskins Nature Reserve. The total area encompassed by the reserves in June 1975, was 308,110 ha. While 100 nature reserves in New South Wales may seem a high number it is not a position from which we should feel complacent. It is the quality of the habitats, diversity and distribution preserved that is important.

Purpose

To put it simply, nature reserves are a form of land tenure established for the primary purpose of maintaining the diversity of species, process and phenomena.

For man, nature reserves provide:

1. A means whereby interesting, useful, potentially useful and endangered species may be maintained.
2. A series of "bench mark" areas, against which managed and contrived systems may be measured.
3. A source of natural systems for the study of their dynamics and of man's interaction with them.
4. A source of natural systems and phenomena for educational purposes.

However, the highest purpose of all for nature reserves is that of maintaining genetic diversity and the integrity of natural process, so as to ensure that the options of the evolutionary process are kept as open as possible. It would be absurd for the process which produced man and is modifying man to be impaired by careless destruction of the gene pool.

Ideally, a range of viable samples of all ecosystems and their sub-systems, including the ecotones, should be acquired, but because only fragments are left now of some systems, some of the samples reserved will be less than adequate but better than none.

Too often one hears the criticism that a certain reserve is no good because it is too small. In such an instance the critic is usually thinking of a few larger species which the small area of habitat can no longer support. What he is forgetting is the vast constellation of species which still do exist in the area, the microbes, and small vertebrates which belonged to the original

"complete" ecosystem. Such a reduced system will probably be unstable initially but will eventually settle back to a dynamic equilibrium.

All human usage of nature reserves must be related to the capacity of the reserved systems, species, or phenomena to maintain the form of usage without long-term impairment of the natural resource of the reserve. Ideally multiple samples of habitat would be valuable. Recreation in the "games" sense, "sports" sense, or of a mechanized kind, finds no place in a nature reserve. "Re-creation" of a kind aimed at enjoying the natural systems phenomena is a bonus use, allowed only so long as the reserve is unimpaired.

The activities most appropriate to nature reserves are those of research and education, both being limited to methods which will not modify the systems in the long term.

Management

Linked closely with usage is management, and both require that the primary purposes of the reserve be clearly stated. These purposes will, singly or in concert, depend upon the reserve's resources and would include:

- Education
- Research (species, process, phenomena)
- Bench mark areas for scientific reference
- Endangered species
- Wildlife propagation and establishment, which may involve manipulation of the environment.
- Special purposes

Generally, the more complete the ecosystems constituting a reserve, the more self-regulating will be the reserve and the less need will there be for manipulative management. Thus, where a choice exists, the largest samples available should be acquired for the nature reserve system. However, size alone should not be the sole criterion for selecting areas. Some very small areas are extremely important, e.g., the sea-bird nesting islands and some remnant coastal sand-dune successions located where they are of greatest educational value. It is also acknowledged that management of the smaller areas, particularly if they constitute "islands" in a "sea of development", will be very difficult. Even if a few smaller areas are eventually swamped, their "borrowed time" as a nature reserve will allow for a period of discovering the secrets of the systems. Even the act of breakdown may well provide a vital research and educational resource, demonstrating processes inimical to man's interests.

What of the future?

The accelerating rate of resource use and growth of technology gives resource value to previously unwanted areas and threatens to consume the remaining wild lands. Concurrently, increasing affluence, mobility and above all free time are causing an explosion in the use of that other great reserve of wild lands, the national parks, for recreation.

The wilderness we have now is all that we or any men will ever have.

So there is an urgent need to extend the nature reserve system to include as broad a coverage of ecosystems as possible, each with its own bank of selected genetic factors, and to protect the existing



We depend on earth for everything we use, for our very survival. Awareness and concern for our use of the environment will only be engendered by fostering direct contact with it. By studying natural processes we can learn the principles by which we must manage our natural resources. The use of national parks and nature reserves in developing this growth of conservation attitudes is being encouraged among teachers by a series of teacher schools being held by the National Parks and Wildlife Service education section. Photo: Wendy Goldstein

system from nonconforming uses.

The Specht Report in a survey of Australian and Papua New Guinea plant communities aimed to list this basic resource. Significant inadequacies in the reservation of samples of these botanical communities were brought to light in the Report.

There are now moves afoot in the international sphere to list those nature reserves which might be considered of world significance as Biosphere Reserves. This is in response to the growing international fear that global habitat breakdown will cause a landsliding decline in the number of species in the biosphere. Whether or not these predictions happen rapidly or slowly is of little moment. The cost of keeping life's evolutionary options open in terms of reserved landscape and of management is so slight by comparison with the expenditure and development for all other land-uses that there should be no hesitation in implementing a full scale program of research, investigation and reservation.

Allan M. Fox is Chief, Education/Extension, National Parks and Wildlife Service, New South Wales, Australia.