

marine systems, and small semiwild areas within cultivated lands. Understanding of these areas is an integral part of the *total* effort to understand the complex interrelationship among living things and the interactions between them and their physical environment. This is the science of "ecology."

Coordination and communication among agencies and with the general scientific community is needed to assure that essential work is carried on, and undesirable duplication is avoided.

We recommend that

the Office of Science and Technology assume responsibility for maintaining overview of this area and assure necessary coordination among agencies and with the science community.

The Office of Science and Technology staff can call on such groups as committees of the Federal Council for Science and Technology, panels of the President's Science Advisory Committee, professional societies, and the academic community—for advice and assistance.

The above conclusions are based in part on the recommendations of a panel of experts from Federal agencies assembled by the Office of Science and Technology. The panel made recommendations dealing substantively with areas of potential action and with the question of how the Federal Government may best direct its efforts related to the understanding of natural communities. A report based on the panel's findings is attached. The report recommends:

- designation of additional protected natural areas for scientific purposes;
- expansion of research, including cooperative studies of a limited number of large ecological systems;
- expansion of monitoring and survey programs to measure the impact of environmental changes; and
- improvement of ecologically-oriented training and education programs.

We believe the recommendations require close attention by the concerned agencies. We plan to make the report available so that agencies may review their programs in light of the recommendations, and consider how they might emphasize and reorient activities that contribute to advancing our understanding of natural plant and animal communities and their interactions with man and his activities.

The Bureau of the Budget makes no recommendations for the commitment of funds for new programs. Such decisions can be made only after careful consideration of agency proposals within the context of fiscal policy prevailing at the time.

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Director, Bureau of the Budget.

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ADVANCING SCIENTIFIC UNDERSTANDING OF NATURAL COMMUNITIES

In his message to Congress on Natural Beauty on February 8, 1965, President Johnson asked the Directors of the Office of Science and Technology and the Bureau of the Budget to recommend *how the Federal Government may best direct its efforts toward advancing scientific understanding of natural plant and animal communities and their interactions with man and his activities.*

Natural plant and animal communities are important in rendering material services indispensable to the welfare of man as well as in satisfying aesthetic and recreational needs. They are the least modified ecological¹ systems. They constitute the so-called "wildlands," and include forest, grasslands, marine systems and small semi-wild areas within cultivated lands. The condition and productivity of these natural systems are highly relevant to all segments of human society. The production of food from the sea, food and other products from livestock on natural grasslands, timber from forests, and wildlife for recreation; the regulation of water run-off and maintenance of domestic water supplies; and

¹ Ecology is the science concerned with the interrelationships among living things and the interactions between them and their physical environment. Thus, ecology involves the interrelationships of biology and the environmental sciences such as meteorology, geology, and hydrology. Applied ecology includes practices of forestry, agriculture, the conservation of desirable nondomestic plants and animals and the control of undesirable life forms.