

migrational phenomena, food and cover preferences, recruitment to the population, and drain factors and rates are being studied; population inventory and habitat evaluation techniques are being developed; characteristics of consumptive and non-consumptive users of the resource are being probed. Advanced methods in taxonomy, physiology, ecology, pathology, biometrics, questionnaire surveys and automatic data processing are being employed in this research.

Resulting data form the basis for annual Federal hunting regulations, selection and development of National Wildlife Refuges, restoration and creation of favorable habitats in non-Federal ownership, protection of agricultural crops from bird depredations, and the delineation of the role of birds in the community of living things.

Migratory birds are an integral part of the environment, a recreational base of great magnitude, and an ethetic asset of incalculable value. The maintenance of this resource on a level compatible with other human needs adds to the quality of day to day life.

OTHER WILDLIFE HABITAT AND PRODUCTION RESEARCH

Resident (nonmigratory) wildlife faces a bleak future because of direct spatial competition from a burgeoning human population. Intensive land management for urban, industrial, and agricultural development is, for the most part, incompatible with successful wildlife conservation.

Ways must be found of satisfying the minimum habitat requirements of wildlife in the land utilization plans of the future. This will require a thorough understanding of biological needs of the several species and how these can be meshed with cultural developmental activities.

Although resident wildlife is largely a responsibility of the States, the Bureau of Sport Fisheries and Wildlife is inextricably involved because of having to provide technical guidelines to Federal land managing agencies and to honor cooperative agreements with States under the Wildlife Research Unit and Foreign Game Introduction Programs. Research is undertaken to define the habits, habitat requirements, ecological relationships, and population dynamics of individual species to provide basic information for intelligent, integrated resource management. These studies require the employment of refined skill in all the basic sciences and new advances in specialized technology such as microtelemetry.

Findings are being employed by the Forest Service and Bureau of Land Management in timber and range management plans, by the States on wildlife lands and in the formulation of hunting regulations, and by private landowners in agricultural operations. Wildlife research will insure the perpetuation of optimum wildlife crops in years to come adding to recreational opportunities for the people and sustaining a healthy ecosystem for posterity.

Natural habitats are extremely important to the wildlife contained within the National Park System. The occurrence of truncated ungulate ranges, overzealous predator control programs of the past and the like, make intense management programs imperative. These programs can only succeed if they are built upon adequate knowledge obtained through research.

SPORT FISH HABITAT AND PRODUCTION RESEARCH

The National surveys of fishing and hunting show that the number of sport fishermen has increased from 20.8 million in 1955, and 24.3 million in 1960, to 28.3 million in 1965. The report of the President's Science Advisory Committee, "Improving the Quality of our Environment," drew attention to the deteriorating quality of the aquatic environment. These opposing forces—the increasing need for sport fishing vs. the decreasing quality of habitat—underscore the need of fishery resource managers for knowledge to make their operations more effective. Obtaining this knowledge is the objective of fish habitat and production research.

Two kinds of knowledge are needed: how to use and improve the productivity of natural waters for sport fishes; and, to supplement this natural production, how to produce hatchery fish more efficiently and utilize them more effectively. For the former, studies are made to learn the ecological facts and principles governing the distribution and abundance of sport fishes in both salt and fresh waters. Improvements in the production and utilization of hatchery fish are made by applying results of research in the husbandry sciences: nutrition, pathology, genetics, cultural methods, and environmental requirements. These problems transcend State boundaries, and it becomes a Federal responsibility to