

TECHNICAL FISHERIES SESSION

PROGRAM OF THE BRANCH OF FISHERY MANAGEMENT SERVICES

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(Given by John Gottschalk)

For nearly a year, the U. S. Fish and Wildlife Service has been in the throes of a radical reorganization. While not yet complete, the reorganization has progressed far enough to permit a discussion of the outlook for a more extensive Federal contribution to the improvement of sport fishing. Such a discussion is indeed timely, for already there have been many questions about our planned program. Thus, we welcome this opportunity to review, in outline form, the objectives of an expanded Federal sport fisheries program.

Organizationally speaking, sport fisheries work is found in five different branches of the Bureau of Sport Fisheries and Wildlife. Its Division of Sport Fisheries is charged with responsibilities for fish hatcheries, fishery research, and fishery management services. In addition, the evaluation of the effects of water-development projects on the sport fisheries will continue to be a responsibility of the Branch of River Basin Studies, just as the administration of the Dingell-Johnson program will continue to be handled by the Branch of Federal Aid. The hatchery, research, River Basins and Dingell-Johnson work are well known and require no lengthy explanation. The Branch of Fishery Management Services, however, is an addition to former activities, and is the primary subject of this discussion.

The Branch of Fishery Management Services was officially established as of August 12, 1957, in the Bureau of Sport Fisheries and Wildlife, Department of the Interior. The basis for the establishment of this Branch was the action of the 84th Congress as expressed in Public Law 1024. In its Declaration of Policy, Congress set the stage for a broad approach looking toward a solution of some of the problems encountered in the management of our Nation's sport fish resources.

"Sec. 2. The Congress hereby declares that the fish, shellfish, and wildlife resources of the Nation make a material contribution to our national economy and food supply, as well as a material contribution to the health, recreation, and well-being of our citizens; that such resources are a living, renewable form of national wealth that is capable of being maintained and greatly increased with proper management, but equally capable of destruction if neglected or unwisely exploited; that such resources afford outdoor recreation throughout the Nation and provide employment, directly or indirectly, to a substantial number of citizens; that the fishing industries strengthen the defense of the United States through the provision of a trained seafaring citizenry and action-ready fleets of seaworthy vessels; that the training and sport afforded by fish and wildlife resources strengthen the national defense by contributing to the general health and physical fitness of millions of citizens; and that properly developed, such fish and wildlife resources are capable of steadily increasing these valuable contributions to the life of the Nation."

"The Congress further declares that the provisions of this Act are necessary in order to accomplish the objectives of proper resource development, and that this Act shall be administered with due regard to the inherent right of every citizen and resident of the United States to engage in fishing for his own pleasure, enjoyment, and betterment and with the intent of maintaining and increasing the public opportunities for recreational use of our fish and wildlife resources, . . ."

To implement this policy, Congress specified:

"The Secretary, with the assistance of the Departmental staff herein authorized, shall—take such steps as may be required for the development,

advancement, management, conservation, and protection of the fisheries resources; . . .”

The new Branch of Fishery Management Services has been started with the nucleus of personnel and program formerly designated as the Section of Fisheries Management in the Branch of Game Fish and Hatcheries. This section was established about six years ago and has functioned in close relationship with the Federal fish hatcheries. One of its primary objectives has been to further the best possible use of the fish produced at Federal hatcheries in cooperative stocking programs including those with the State fish and game departments. Assistance was given to agencies managing Federal lands and waters for sport fishing, within the limits of available funds and personnel.

The objectives of the new Branch contemplate constructive action in meeting some of the more important problems facing sport fishery managers today. This includes the giving of technical advice and assistance in the management of the marine and fresh-water sport fisheries throughout the Nation within the general limits of Federal responsibility for these matters. Emphasis will be on the enhancement of sport fishing opportunities to assure the widest and most suitable use of our fishery resources in providing recreation for all our people.

The importance of sport fishing to recreation has never been more clearly recognized nor more generally appreciated. The National Survey of Hunting and Fishing showed that in 1955 nearly 21,000,000 fishermen expended almost \$2,000,000,000.00 following their favorite sport, which was found to reach nearly 400,000,000 man-days of fishing. The increasing popularity of sport fishing is borne out by the 50% rise in sales of fishing licenses reported over the past 10 years by the States in connection with the apportionment of Federal Aid in Fish Restoration funds (12,620,464 in 1947, 18,701,983 in 1950). It has become evident that greater attention not only on the part of the States, but also by the Federal Government will be required to meet the needs of the rising generation of anglers and that the subject is of such importance that prompt action is necessary. The Federal Government has a definite obligation which complements that of the States. The shape of the program designed to meet this obligation is set forth in the following pages. The objective is basically the same, more fishing opportunities through better management of the resource.

MANAGEMENT SERVICES ON FEDERAL LANDS

The Section of Fisheries Management, Branch of Game-fish and Hatcheries, reported assistance to 281 Federal installations during the five years, 1951-56. These included:

- 17 National Forest Areas
- 31 Indian Lands
- 6 National Park Service Lands
- 42 Wildlife Refuges
- 39 U. S. Air Force Bases
- 75 U. S. Army Bases
- 26 U. S. Navy and Marine Bases
- 45 Veteran's Administration Facilities

This work needs to be strengthened and expanded. Some of the best examples of cooperative effort are shown by the work on the management areas located on the National Forests, where State and Federal conservationists have worked together to perpetuate especially valuable fishery resources and at the same time make them available to the largest possible number of anglers. The Bureau of Sport Fisheries and Wildlife expects to provide fish for stocking streams on the National Forests, to carry out management type investigations designed to show the kinds, numbers, and sizes of fish required for stocking purposes and to assist in the collection of data on fisherman-use and harvest. Planning of these programs in cooperation with the States and with the Forest Service will be a responsibility of the new Branch. The responsibility, however, does not end with the stocking of fish. There is a great deal of follow-up work in the nature of continuing surveys on stream conditions, fish populations and creel census data collection, which must be carried out as a guide for future action. Similar surveys and management activities are often called for and conducted on Indian lands, and other Federally owned areas.

The need for management assistance to provide recreational fishing on military areas particularly has grown by leaps and bounds since World War II. Some idea of the magnitude of the opportunities in this connection are evident in the fact that there are 40 odd air force bases in the southeastern States alone. At least half of these have fishing waters on the base or have potential for developing a sport fishing program. An important phase of the work on military bases has been the reclamation of old ponds, rehabilitation, restocking, and management in accordance with modern methods. This type of program requires follow-up contacts in order to assure its continued success.

Greater attention will be given the fishing waters on the National Wildlife Refuges. In only a few instances are these being managed and developed to the most favorable degree. On the refuges first consideration is usually given to waterfowl management and fishery interests must bear this in mind in recommending sport fishery programs. However, each of the refuges having sport fishery potential should have as a part of its general development and management plan a section devoted to public fishing. This will require that all waters be adequately surveyed, fish populations analyzed, and specific recommendations made for the management of each body of water on the refuge.

COOPERATION ON STATE FISHERY PROGRAMS

Here again the new Branch will endeavor to build on foundations which have already been laid down. The position of the Federal agency in relation to the States is stated in Public Law 1024 to be:

"Sec. 10. Nothing in this Act shall be construed (1) to interfere in any manner with the rights of any State under the Submerged Lands Act (Public Law 31, Eighty-third Congress) or otherwise provided by law, or to supersede any regulatory authority over fisheries exercised by the States either individually or under interstate compacts; or (2) to interfere in any manner with the authority exercised by any International Commission established under any treaty or convention to which the United States is a party."

It is not the intent of the Bureau of Sport Fisheries and Wildlife to take over responsibilities which are now being met by the State biologists. Our function will be to work with the States to enable them to do a better program in specialized fields or in the attack of problems which are beyond the ability of any single State to adequately surmount. The need for cooperation in developing management programs on National Forest lands has already been mentioned as a type of cooperation which is to be continued. There are instances where sport fishery problems occur in waters common to two or more States where a Federal agency is in a favorable position to coordinate the efforts of all and to provide leadership or assistance in gathering facts and executing programs beneficial to the fishery resources. An example of this type of program is that now under way in the upper Mississippi Valley where the Bureau is providing a fishery management biologist as a coordinator to work with the States in the taking of data, the preparation of plans and action programs as a joint effort by the States and the Federal Government.

Through activities of the Federal biologists, joint stocking programs are developed and policies agreed upon which will lead to public understanding and support and avoid duplication of effort. Through close liaison, mistakes which might result from improper introductions or lack of understanding of the other agency's operations, can be avoided. There is unlimited opportunity for joint State-Federal effort on the testing of new techniques and methods in fish population studies, control of undesirable aquatic plants, mosquito control operations, effects of pesticides and other chemicals which may have serious effect on fishes, and in many other types of land and water use projects where assistance and guidance beyond that available within the State will be of material aid. Our migrating sport fishes do not recognize State lines and some means of coordinating effort on the management of anadromous species should be provided. The eastern striped bass fishery is an excellent example of this. Considerable joint effort has already been directed toward this species.

PLANS FOR NEW ACTIVITIES

One of the largest tasks which has been considered for the new Branch is an inventory of the nation's sport fishery resources, including the assembling of

facts on both the freshwater and marine resources. The extent of harvest, its value, the amount of public participation, and the size of the Nation's fishing waters all will be covered. Only a few States have maintained inventories on their marine sport fishery resources and it is evident that a coordinated effort, assisted by a Federal agency, is necessary to secure information on a national basis. In the inland fresh waters, the inventory will include the larger publicly owned waters such as reservoirs, lakes and, whenever possible, the natural streams which are accessible to the public. Some of the States have inventories covering at least portions of the resource. Where available, these sources of information will be tapped. In the States where the information is lacking, the Federal government would assist the States in establishing data collection programs. This would be a continuing responsibility and would involve careful handling to insure that sound information was being gathered and that the facts were adapted for use in management programs.

There is unlimited opportunity in the field of extension in sport fishery management. This has been discussed many times in the past but has always been set aside because of a lack of funds and a lack of a central coordinating agency. The latter is now existent in the form of the new Branch. While a program as large as that of the Agricultural Extension Service is not envisioned qualified biologists will work with the agencies which are dealing directly with landowners and conducting programs aimed toward better use of natural resources. Such programs would be initiated in any State only after conference and agreement with the State in objectives and methods.

One of the most important developments contemplated is the establishment of centers for the training of fishery biologists in several universities and colleges. The centers would be financed largely by Federal funds but some assistance would be required on the part of the university or college housing the unit. The training units would provide specialized courses in fishery management for the benefit of undergraduates and graduate students, fellowships and employment of students engaged on approved projects. It is proposed that these training units also contribute to the inservice training program for Federal employees in positions where a knowledge of sport fishery management is required. No better atmosphere for learning the technical features of this work and for becoming acquainted with research methods, use of a laboratory and a library, exists than on the properly equipped university campus. The training units would also be assigned the production of reports and printed materials in the fisheries field which can be distributed widely to the public. Management biologists in field assignments rarely have the time or special skills required to write the articles and reports which are so badly needed to keep the public informed on conservation measures. These units would differ from those which have been operated in the wildlife field primarily in that research would not be emphasized as much as would training for management. It is thought that such training centers would also be utilized by State fisheries personnel, those of other Government agencies, and private operators who found it necessary to return to the university in order to gain the skills and technical background necessary for their chosen work.

OUTLOOK

Admittedly, not all of the activities outlined above can be accomplished next year or the year following. The speed with which they can be accomplished will depend largely upon the availability of funds. This in turn depends upon the support by the public, the Congress, and the State fish and game departments. Those of us who are connected with the program feel strongly that there is an important field to be served and that with the proper direction great good can be accomplished. This is an unexcelled opportunity for Federal and State agencies and private citizens to get together in an effort to protect and develop our sport fishery resources and plan for the future.

Question: Would part of your work deal with the development of standards for reporting data relating to reservoirs and other bodies of water?

Answer: Activity will be directed primarily toward problems associated with the fishery resource but may be tied in with the needs of other Federal agencies.

Question: In regard to extension service to individuals, who will perform this work?

Answer: Needs will continue to be met in the most feasible way by available personnel. May be by new branch personnel or by existing organizations.

Question: Why was the National Park Service omitted from the list of agencies served?

Answer: The omission was not intentional. Work with the Park Service in the past has been primarily of a research nature in the past few years but the Division of Sport Fish and Wildlife still has the responsibility for providing everyday management requirements.

STUDIES OF GIZZARD SHAD REDUCTION AT LAKE BEULAH, FLORIDA

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ABSTRACT

Four experiments with 0.1 p.p.m. or less of 5 percent emulsified rotenone were conducted at Lake Beulah, Florida. Lake Beulah, an eighteen-acre lake with an average depth of 14.9 feet characteristically had a heavy plankton production.

Estimated pounds of gizzard shad killed progressively declined during the four experiments although concentrations of rotenone were increased. The first kill was estimated at 23,455 pounds of shad; second kill, 7,976 pounds; third kill, 1,528 pounds; and fourth kill, 1,060 pounds. Small numbers of fish of other species were also killed.

Length-frequency studies of gizzard shad indicated an over populated condition existed at the time of the first poisoning. Thereafter reproduction and rapid growth of this species occurred. Evidence exists that threadfin shad may have been eliminated from Lake Beulah following the use of the selective poisoning technique.

Total kill calculations included results from bottom sample screens. An inverse relationship existed between average temperature and the percent of all fish killed which did not float to the surface.

INTRODUCTION

Efforts to selectively reduce a large gizzard shad population with small quantities of rotenone were started at Lake Beulah in 1955. Lake Beulah, in Lakeland, Florida, is 18 acres in area, has an average depth of 14.9 feet and receives drainage from several streets and lawns in its vicinity. The lake was characterized, as were other Lakeland lakes, by heavy plankton production and almost yearly fish kills which were comprised principally of gizzard shad.

Temperature and chemical conditions of the lake apparently were favorable for fish production except during periods of fish kills. An analysis of chemical determinations at the surface of Lake Beulah is presented in Table I. Oxygen values varied from 4.8 p.p.m. to 13.6 p.p.m. All CO₂ determinations were 0. pH varied from 7.0 to 8.9 and total Methyl Orange alkalinity readings indicated p.p.m. from 74 to 81. Calculations of concentrations of 5 percent emulsified rotenone used during the study were based on surface area of the lake and average depth ascertained with planimeter readings of an aerial photograph and 100 soundings. Much of the lake is at least 20 feet deep; the deepest area 28 feet. The depth increases rapidly from shore to the 10 foot level.

Gill net, trawls, and minnow nets were used with indifferent results to sample the fish population. Rather than eliminating significant portions of the population with further sampling, reliance was placed on the information obtained with the nets and observations of gizzard shad activity in the lake. This information indicated a large portion of the fish population was comprised of gizzard shad. Four treatments with a 0.1 p.p.m. concentration or less of 5