

NATIONAL PARK SERVICE

HANDBOOK

WILDLIFE MANAGEMENT

Part II — Aquatic Resources, Natural
and Historical Areas

RELEASE NO. 1

November 21, 1966

A "Wildlife Management Handbook" is being prepared to assist and direct the development and operation of wildlife and aquatic resources management programs within areas administered by the National Park Service. This handbook will contain several parts including: Introduction; Part I — Wildlife Resources, Natural and Historical Areas; Part II — Aquatic Resources, Natural and Historical Areas; and Part III — Wildlife and Aquatic Resources, Recreational Areas.

Part II — Aquatic Resources, Natural and Historical Areas, is enclosed. The other parts will be transmitted as soon as they are completed.

Part II contains the objectives, principles, and guidelines which shall govern the management of aquatic resources and fisherman-use in each natural and historical area which contain significant aquatic resources. They supersede the fishery resources management guidelines previously included in the now obsolete National Park Service "Administrative Manual," Volume VI, Ranger Activities, Part II, Chapter 5, pages 3-8.

Also superseded by this handbook is FO 5-63, April 23, 1963, relating to control of aquatic plants and animals, and FO 22-66.

Part II contains instructions for the development of Long Range Aquatic Resources Management Plans and Aquatic Resources Status Statements. A plan is required from each natural and historical area in which aquatic resources and fishing are of major significance. The status statement is required from areas in which aquatic resources and fishing are of lesser importance. Plans and statements should be prepared and submitted as rapidly as feasible.

One copy of Part II of this handbook is being sent to each park and office. If there is a need for additional copies, fill in the tear-off portion of this transmittal and return to the Washington Office. The enclosed material should be brought to the immediate attention of all interested personnel.

Robert R. Lovegren
Acting Assistant Director

Enclosure

Interior — Duplicating Section — Washington, D. C.

WILDLIFE MANAGEMENT HANDBOOK

Part II: Aquatic Resources, Natural and Historical Areas



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE



FOREWORD

An assortment of marine, estuarine and fresh-water ecosystems are found in natural and historical areas administered by the National Park Service. Each require a particular approach to their management for the adequate conservation and perpetuation of the important natural features for educational and scientific purposes. In addition to being significant scientific assets, aquatic environments and the plant and animal life forms they contain provide opportunities for beneficial recreation such as: skin-diving, fish watching, nature study, scenic enjoyment, boating, swimming and fishing. Each of these activities must be managed so that they do not impair or endanger the resources nor the enjoyment of park features by other park visitors.

Consumptive recreational use of fishes (and some other aquatic life) has been provided for by laws and regulations. This is in contrast to other park resources that are rigidly protected against such uses. Much interest in the aquatic resources of the national parks and monuments previously has been focused on the value of park lakes, streams and other waters primarily for sport fishing. The broader concept of the management of each aquatic ecosystem and its relationship to the larger park ecosystem is developing. This includes not only the fishes important to the angler, but also all other fishes endemic to park waters; the quality of the chemical, physical, and biological characteristics of the waters; and the multitude of aquatic life, both plant and animal, and their interrelationships.

Objectives, principles, and guidelines for the management of aquatic resources in natural and historical areas to insure their perpetuation and conservative use are established in this part of the handbook.

Instructions are presented for the development of a long-range aquatic resources management plan or an aquatic resources status statement for each area containing these resources. Plans and status statements should be completed and submitted as rapidly as possible.

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Aquatic Resources, Natural and Historical Areas
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MANAGEMENT OBJECTIVES AND PRINCIPLES

Objectives

Marine and fresh-water aquatic ecosystems in natural and historical areas administered by the National Park Service are managed to achieve three objectives as follows:

1. The protection, perpetuation and restoration of the natural aquatic environments, native fishes, and the associated fauna and flora.
2. The provision for recreational fishing by the conservative and controlled use of native and nonnative fish populations, designated for sport fishing purposes, by regulations and measures that will insure high quality fishing as part of the park experience without endangering the basic fish supplies or impairing the wildlife, scenic, scientific, ecological and historical values of the park and their enjoyment by other visitors.
3. The regulation of commercial fishing, where this activity is permitted by laws, so that commercial fishing will not endanger basic stocks of fishes and other aquatic organisms nor impair basic park values and visitor-uses.

Principles

Management principles, approved to implement the three primary objectives, are:

Aquatic Environments.

1. Waters that originally were without fish life, and are now barren of fishes shall be perpetuated in their natural fishless condition.
2. Waters shall be selected to be representative examples of the aboriginal aquatic conditions; such waters which contain nonnative species shall be restored to a fishless condition or shall have populations of native species re-established upon the removal of the nonnative forms. (See Chapter 4, "Aquatic Plant and Animal Control for Restoration or Management Purposes.")

Principles (con.)

3. Aquatic environments shall be maintained or restored by natural means when possible.

4. Artificial modification of lakes, streams and other bodies of water that alter natural aquatic environments and surrounding landscapes shall be avoided. When unavoidable due to construction, pest control, sewage disposal and other programs, these modifications shall be temporary in nature and shall be limited to the greatest extent possible, and measures shall be taken immediately to correct the situation and bring about as rapid recovery of the natural conditions as possible. When the aquatic environment has been so changed by man that restoration by natural measures is improbable, artificial modification of a physical nature may be required.

- a. Types of artificial modifications that shall not be permitted include: construction of stream "improvement" devices; the erection of dams or gratings at outlets of lakes; the blasting of fishways in streams; and the artificial fertilization of waters.
- b. Types of modification that may be considered include: the development of barriers in streams to prevent the movement of nonnative fishes into park waters from sources outside the park boundary when such obstructions do not impair essential movements of native fishes; the removal of natural log jams and beaver dams that interfere with the movement of migratory native fishes when determined essential for the perpetuation of the fish populations; the construction of road culverts and bridges when properly designed to facilitate the passage of fishes and the protection of aquatic resources.

Principles (con.)

Native Species

5. Native species of aquatic life shall be protected and perpetuated in waters in which they are endemic.
 - a. All native fishes, not specifically designated as sport or commercial fishes in the long-range aquatic resources management plan, shall be given full protection and shall not be intentionally reduced or eliminated solely in the interest of improving conditions for recreational fishing.
 - b. Fishes, designated as sport or commercial fishes, shall receive adequate protection by regulation of the catch by fishermen.
 - c. Eggs may be taken from native fishes only for the purpose of perpetuating a native form. Egg-taking operations for other purposes within natural or historical areas are rarely justified.

6. Native fish species shall be re-established in representative waters when feasible.

Fishing

7. Fishing shall be maintained in waters designated for fishing primarily by reliance upon wild self-sustaining populations of fishes and shall be regulated so that the total catch does not exceed the natural replenishment capabilities of individual fish populations.
 - a. Native species shall receive first consideration in management for sport fishing.
 - b. Nonnative fishes, designated as sport species, may be utilized in management for recreational fishing when it is impracticable to replace the nonnative fishes with native species.

Principles (con.)

8. Fishing may be maintained and managed in waters designated for sport fishing, secondarily, by judicial use of hatchery or transplanted fishes in waters in which natural spawning is absent or inadequate to support the desired level of fishing. (See Chapter 3 "Guidelines for Fish Stocking," for principles governing the planting of fishes in natural and historic areas.)

- a. Populations of native species may be supplemented by periodic stocking of hatchery fishes of native strains or species.
- b. Populations of nonnative species may be supplemented by periodic stocking of hatchery or transplanted fishes when restoration of native forms is impracticable.

9. Fishing shall be excluded from specific waters when adequate investigations determine that fishing and associated activities impair wildlife, scenic, scientific, ecological and historical values of primary significance.

Regulations

10. Regulations shall provide for the protection and perpetuation of aquatic resources and shall govern fishing activities. (See Chapter 5 "Regulations and Law Enforcement.")

Public Information About Fishing

11. Public information releases about fishing in natural and historical areas shall be factual but not promotional in purpose. It shall emphasize the quality of the recreational and esthetic values of the angling experience rather than the catch as the primary reward of this visitor-use activity. (See Chapter 6 "Public Information About Fishing.")

Principles (con.)Investigations and Research

12. The facts required to achieve the objectives shall be secured through investigation and research of the park aquatic ecosystems and studies of visitor-use activities, including fishing. Aquatic life resources and waters and fishing activities shall be inventoried. Fishing that originates from park-lands may be directed toward: (1) resources over which the National Park Service has jurisdiction, or (2) resources that are located outside area boundaries and the Service's realm of responsibility.

Long-Range Aquatic Resources Management Plan

13. A long-range plan shall be drawn up to provide continuity and direction for the annual aquatic resources management program in areas where aquatic resources or fishing activities are significant. In areas where aquatic resources are of minor importance, and fishing activities directed toward them are limited or totally lacking, an aquatic resources status statement shall be prepared. (See Chapter 2 "Aquatic Resources Management Program," for guidelines for the development of the plans and the operation of the annual program, and for the preparation of the status statements.)

Cooperative Activities

14. Cooperation with the U. S. Fish and Wildlife Service, the U. S. Public Health Service and other Federal agencies, and the appropriate State agencies in the management of aquatic resources shall be encouraged within the scope of National Park Service responsibilities. (See Chapter 7 "Cooperative Activities.")

MANAGEMENT PROGRAMS

Introduction

Intensity of the aquatic resources management program within an individual area shall be determined by: (1) the unique scientific nature of the aquatic resources, and (2) the magnitude of the fishing activities directed by park visitors toward the aquatic resources contained within the area or toward resources present in waters located adjacent to the park.

Major Programs. An active management program, guided by an approved long-range aquatic resources management plan, shall be operated in each natural and historical area in which significant marine or fresh-water resources require major consideration, and in which fishing is an important visitor-use activity. Instructions for the development of a long-range plan and its implementation as an active operational program are contained in this chapter.

Minor Programs. In areas where aquatic resources are of minor importance and fishing activities directed toward them are limited or totally lacking, these resources shall be identified and recognized in an aquatic resources status statement. This statement shall be prepared in lieu of a long-range management plan and the operation of an active program. Requirements for the preparation of this statement are contained in this chapter.

Areas for which a long-range aquatic resources management plan shall be prepared to direct active management programs, and the areas for which status statements will be sufficient are tentatively identified on charts in Appendix 1 of this chapter.

Status Statements for Minor Programs

1. Purpose. The aquatic resources status statement, in narrative form, shall serve to identify the aquatic resources and to provide recognition of their significance, and the role of fishing activities in the park program in each **area** in which these resources are of minor recreational and scientific importance. (See Appendix I for a list of areas for which a status statement is required.)

2. Contents. The narrative statement shall contain, but not necessarily be limited to, the following information: (1) names of lakes and streams and other major aquatic ecosystems, and a brief description of each, including acres of lakes and the miles of streams; (2) a list of the fishes and other important aquatic life; (3) the amount of fishing pressures expressed in terms of angler-use-days per year; (4) brief history of past and present management activities; (5) the anticipated use of the resources by fishermen; (6) specific management objectives; and (7) bibliography of major reports or publications relating to aquatic resources found within the area.

3. Responsibilities of the Superintendent. The Superintendent is responsible for the preparation of the status statement. He shall send two copies to the appropriate Regional Director who will review it, and will send one copy to the Director. Although approval at the Regional or Director's levels is not required, the Superintendent is responsible for keeping the statement up-to-date by revising it when significant changes occur in the status of the aquatic resources including: knowledge of the resource, physical and biological changes in the aquatic environments, or changes in the level of fishing activities.

4. Reports and Programs Not Required. Superintendents of areas, designated to provide a status statement, normally are not required to submit a long-range aquatic resources management plan, a projected aquatic resources management program, or an annual aquatic resources report; however, a projected program and an annual report shall be submitted when important management activities are anticipated or have been accomplished which are not covered in the status statement.

Major Active Programs

An active aquatic resources management program shall be developed to implement the Service objectives within the framework of the management principles and guidelines established in Chapter 1 in areas in which aquatic resources and fishing activities are of major importance. Phases of an active program are: (1) development of the long-range aquatic resources management plan; (2) projection of the annual resources management program; (3) operation of the annual program; (4) reporting upon the accomplishments of the annual operational program; and (5) maintenance of individual management folder file. These elements are described and discussed below.

1. Long-Range Management Plan.

- a. Purpose. A long-range plan, prepared for each area designed on the Chart in Appendix I, shall provide recognition of the significant aquatic resources and shall establish the purpose, direction, and continuity of the program for the management of the aquatic resources, and of fishing activities within the individual park.
- b. Content. A completed plan shall: (1) identify and evaluate original conditions, existing status of aquatic resources and sport and commercial fishing activities, and past and current management activities; (2) project trends in resource perpetuation and fishermen use; (3) establish specific management objectives; (4) classify park waters; (5) designate fish species; (6) define specific management principles for individual area; (7) prescribe future management activities, including a long-term stocking schedule where applicable; and (8) outline needs for additional information about aquatic resources and angler-use activities to be secured through investigations and research.
- c. Duration. The plan will cover a period of five to ten years. Its duration will depend upon the nature of the park's particular resources, and the state of current knowledge about them.

Major Programs (con.)

- d. Preparation. The Superintendent shall be responsible for the preparation of the long-range plan.
- e. Approval and Distribution. Upon completion, three copies of the plan recommended by the Superintendent shall be submitted to the Regional Director. After the Regional Director has reviewed the plan and concurs with the Superintendent's recommendations, he will sign the three copies and send them to the Director for approval.

Upon final approval, the original copy of the plan will be returned to the Superintendent; a copy will be sent to the Regional Director; and a copy will be retained in the Washington Office. The Superintendent may wish to distribute additional copies of the approved plan to the Bureau of Sport Fisheries and Wildlife, the State Fish and Game Agency, and other agencies which actively participate in the area's aquatic resources management program or are especially concerned.

- f. Revision of Long-Range Plan. Subsequent information received from additional studies and research which reflect changes in the biological conditions, in the intensity of fishing pressures, and other considerations may indicate the need to revise the approved plan. Major amendments to the plan shall be prepared and recommended by the Superintendent and transmitted, in triplicate, to the Regional Director for concurrence and submission to the Director for approval. Upon approval, signed copies will be returned to the Superintendent and the Regional Director.

Minor changes in stocking schedule and lesser modifications of the plan shall be justified and incorporated in the Projected Aquatic Resources Management Program which the Superintendent submits annually to the Regional Director for approval.

g. Format for Plan. A standardized format is suggested for the presentation of the long-range plan. It provides relative uniformity. It is recognized, however, that some deviation from the suggested format may be desirable and necessary to meet particular situations in an individual area.

The format outline, with explanatory notes, is as follows:

- Recommended: _____
Superintendent Date
- Concurred: _____
Regional Director Date
- Approved: _____
Director Date

- October 1966**

Major Programs (con.)

activities, modifications of waters and fish populations resulting from man's activities, and fishing activities; and a projection of anticipated management and angler-use activities.

- (c) Objectives: Within the framework of the broad approved Servicewide objectives, stated in Chapter 1, page 1, specific objectives for an individual park shall be identified in brief, concise statements that cover the restoration of natural conditions and native fishes and the types of fishing opportunities and other types of aquatic uses to be perpetuated. Application of the broad general park objectives will be reflected in the classification of each park lake and stream.
- (d) Designation of Fishes: All fishes found within the park shall be listed; identified as native or as nonnative forms; and designated for management purposes as: (1) sport fish, (2) commercial fish, (3) scientific-aesthetic fish, or (4) undesirable nonnative fish. The degree and types of management and angler-use which shall be applied to each species within a specific park will be governed by these designations. (See "Designation and Names of Fishes," Appendix V, Chapter 2, for definitions of terms.)
- (e) Classification of Park Waters: Each park lake or stream section shall be classified biologically according to the types of fishes present and shall be designated administratively according to the management objectives applied. In this section of the plan, the classification of park waters is discussed.

The classification of individual park waters will be tabulated on charts included in the Appendix of the long-range plan. Criteria for each classification system and instructions for composing the classification charts are outlined in Appendix II and Appendix III of this chapter.

Major Programs (con.)

- (f) Aquatic Resources Base Map: A topographic map of the park on which all waters are: (1) identified by name and number, and (2) designated according to management classification shall be incorporated in the Appendix of the long-range plan. Labeling should be done with permanent ink. Names and numbers of waters shown on this base map shall agree with names used on the Classification Charts, on the Long-Range Stocking Schedule, and in the Annual Aquatic Resources Management Program.

Management classification, designated for each lake or stream section, shall be indicated by a line drawn around the lake or along the stream section with permanent ink according to the following color code: Red: Class I (waters managed for purposes other than fishing); Blue: Class II (waters managed for fishing without stocking); Green: Class III (waters managed for fishing with periodic stocking).

- (g) Management Activities: The long-range program of aquatic resources management activities for the specific park shall be defined in broad, general terms. Elements of the program may include, but not necessarily limited to, the following activities:

- (i) Fish Stocking. Specific management principles directing fish stocking within an individual park shall be stated. These principles will designate the species and numbers of fishes to be planted, the frequency of stocking, and the methods. General guidelines established to govern fish stocking activities are outlined in Chapter 3.

A ten-year stocking schedule on which the long-term requirements for hatchery fishes are tabulated will be appended to the long-range plan. The format for the schedule may be adopted to meet the local requirements, but in

Major Programs (con.)

general it should include the following information: name of park; period covered by stocking schedule; the names of waters involved; and the species, size and number of fishes; and the planting methods to be used in each. A suggested format is contained in Appendix IV.

- (ii) Restoration of Native Species and Natural Aquatic Conditions. Representative waters in which the restoration of native species and natural aquatic conditions are contemplated within the ten-year period should be identified. Details about the actual operations will be presented in connection with the submission of subsequent projected Aquatic Resources Management Programs.
- (iii) Fact Finding Activities. Goals and schedules for undertaking inventory surveys, angler-use studies, and follow up investigations of park waters during the ten-year period shall be outlined. (See Chapter 9, for description and discussion of several types of angler-use studies or creel census studies which may be utilized to secure information on angler-use.)
- (iv) Cooperation with other Agencies. The present and anticipated role of other Federal and state agencies in the management of the park aquatic resources shall be discussed.
- (h) Research Needs: Certain basic facts may be secured from studies of an inventory or reconnaissance nature; other fundamental information may be secured only through detailed and long-term research projects. These research needs should be identified and briefly described. All research projects, of course, must be supported by RSP statements; see "Natural Sciences Research Handbook."

Major Programs (con.)

- (i) Bibliography: List of the basic reports and publications which relate specifically to the individual park's aquatic resources.
- (3) Appendices to Long-Range Plan.
 - (a) Classification of Park Waters Charts;
 - (b) Designation of Park Fishes Chart;
 - (c) Ten-Year Stocking Schedules; and
 - (d) Base Map of Park on which park waters and their designated management classification are identified.

2. Projected Aquatic Resources Management Program.

To implement the approved long-range plan, a projected aquatic resources management program will be drawn up annually by the park staff to outline the specific activities to be undertaken during the coming year. These activities may include: investigations, angler-use studies, restoration projects, fish stocking, egg-taking operations, and other operations proposed. This information will be tabulated on Form 10-752, which will be submitted together with the Annual Aquatic Resources Report. (See Appendix VI for sample forms and "Reports Management Handbook," Part II, NPS(OR)-7, for further instructions.)

The Superintendent will recommend the projected program to the Regional Director. The Regional Director may approve a program which is based upon a long-range aquatic resources management plan previously approved by the Director. After the Regional Director has approved the projected program, he will return one signed copy to the Superintendent, and send one copy to the Washington Office, and retain one copy. The Park Superintendent may wish to distribute additional copies of the approved projected program to other agencies that actively participate in the park's aquatic resources management program.

Major Programs (con.)

3. Annual Operating Program.

The actual operating program will be the carrying out of the approved projected program.

4. Reporting Annual Accomplishments (Annual Aquatic Resources Report).

Accomplishments on the projected aquatic resources management program and a summary of the recreational and commercial use of the aquatic resources will be reported in the Annual Aquatic Resources Report, NPS(OR)-37, on Form 10-751. An Annual Summary of Fish Planting, Form 10-751A, will accompany the report for areas in which stocking was undertaken. (See Appendix VI for sample forms and "Reports Management Handbook," Part II, NPS (OR)-3 for further information.)

5. Individual Management Folder File.

An individual management folder shall be maintained for each major park water. This folder will contain all available information relating to the specific water resulting from investigations and angler-use studies; past and current management programs; recommendations for the future management of the water and its fish populations; fish-stocking records; and maps and photographs. In essence, it will constitute the basic fact file for a particular body of water.

PLANNING AND REPORTING REQUIREMENTS

The planning and reporting requirements for natural and historical areas tentatively recognized as containing aquatic resources and fishing activities are designated on the accompanying lists. It is intended that completion of these requirements will provide an inventory of the aquatic resources located in all natural and historical areas, and the status of fishing activities directed toward resources found either within the area or in the adjacent waters. A status statement is required from all areas which possess such resources even if omitted from the listings.

Name of Area		Status Statement	Long-Range Mgmt. Plan	Projected Program	Annual Report
Southeast Region	Buck Island Reef NM		x	x	x
	Colonial NHP	x			
	Cumberland Gap NHP		x	x	x
	DeSoto NM	x			
	Everglades NP		x	x	x
	Fort Jefferson NM		x	x	x
	Fort Pulaski NM		x		x
	George Washington Birthplace NM	x			
	Great Smoky Mtns. NP		x	x	x
	Horseshoe Bend NMP	x			
	Mammoth Cave NP		x	x	x
	Manassas NBP	x			
	San Juan NHS	x			
	Shenandoah NP		x	x	x
	Virgin Islands NP		x	x	x

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Management Programs
Planning and Reporting Requirements

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		Status	Long-Range	Projected	Annual
Name of Area		Statement	Mgmt. Plan	Program	Report
Midwest Region	Agate Fossil Beds	x			
	Badlands NM	x			
	Bent's Old Fort NHS	x			
	Big Hole NB	x			
	Black Canyon of the				
	Gunnison NM	x			
	Colorado NM	x			
	Devil's Tower NM	x			
	Dinosaur NM		x	x	x
	Effigy Mounds NM	x			
	Fort Laramie NHS	x			
	Glacier NP		x	x	x
	Grand Portage NM	x			
	Grand Teton NP		x	x	x
	Homestead NMA	x			
	Pipestone NM	x			
	Rocky Mountain NP		x	x	x
	Scotts Bluff NM	x			
	Theodore Roosevelt NMP	x			
	Wilson's Creek NBP	x			
	Wind Cave NP	x			
	Yellowstone NP		x	x	x
Southwest Region	Bandelier NM		x	x	x
	Big Bend NP		x	x	x
	Bryce Canyon NP	x			
	Canyon de Chelly NM		x	x	x
	Canyonlands NP	x			
	Capitol Reef NM	x			
	Grand Canyon NM	x			
	Grand Canyon NP		x	x	x
	Great Sand Dunes NM	x			
	Mesa Verde NP	x			
	Montezuma Castle NM	x			
	Organ Pipe Cactus NM	x			
	Pipe Spring NM	x			
	Platt NP		x	x	x
	Timpanogos Cave NM	x			
	Zion NP		x	x	x

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	Name of Area	Status Statement	Long-Range Mgmt. Plan	Projected Program	Annual Report
<u>Western Region</u>	Cabrillo NM	x			
	Channel Islands NM		x	x	x
	City of Refuge NHP	x			
	Crater Lake NP		x	x	x
	Death Valley NM		x	x	x
	Devil's Postpile NM		x	x	x
	Glacier Bay NM		x	x	x
	Hawaii Volcanoes NP	x			
	Katmai NM		x	x	x
	Lassen Volcanic NP		x	x	x
	Mount McKinley NP		x	x	x
	Mount Rainier NP		x	x	x
	Muir Woods NM	x			
	Olympic NP		x	x	x
	Pinnacles NM	x			
<u>Northeast Region</u>	Sequoia-Kings Canyon NP		x	x	x
	Yosemite NP		x	x	x
	Acadia NP		x	x	x
	Antietam NBSC	x			
	Chesapeake and Ohio Canal NM		x	x	x
	Gettysburg NMPNC	x			
	Harper's Ferry NHP	x			
	Hopewell Village NHS	x			
	Isle Royale NP		x	x	x
	Perry's Victory and International Peace Memorial NM	x			
	Vanderbilt Mansion NHS	x			

CRITERIA FOR THE CLASSIFICATION OF PARK WATERS
FOR AQUATIC RESOURCES MANAGEMENT PURPOSES

For aquatic resources management purposes, park waters are classified according to two systems: (1) Management Classification designates the type of management to be applied; and (2) Biological Classification describes the water according to the presence or absence of fishes and the nature of the existing fish populations.

Management Classification Criteria

Class I: Waters Managed for Purposes other than Fishing.

Class I waters are managed for the perpetuation of the undisturbed natural aquatic ecosystems including native fishes rather than for sport fishing. No species of fishes or other forms of aquatic plant or animal life shall be stocked in these waters and applicable regulations shall provide protection for these aquatic resources. One or more of the following criteria characterize Class I waters:

1. Waters are now barren of fish life; fishes have never been introduced into them.
2. Waters are now barren of fish life; fishes previously introduced into them failed to become established.
3. Waters in which existing environmental factors are unsatisfactory for survival of hatchery fishes. (Examples of such adverse conditions include: oxygen deficiency, shallowness, unsuitable water temperatures, inadequate food supplies, short growing seasons which result in heavy fish mortality, poor growth, and overuse of food supplies.)
4. Waters in which fishing activities at any time would be detrimental to the preservation of native fish populations or other primary park values and uses or the enjoyment by other park visitors.
5. Water so remote or isolated from trails that anticipated fishing pressures would be insufficient to justify fish stocking.

Management Classification Criteria (con.)

Class II: Waters Managed for Fishing by Use of Populations of Wild Fishes.

Class II waters contain self-sustaining populations of native and nonnative sport and commercial fishes. Regulations on these waters are directed toward the perpetuation of wild populations of native and nonnative sport fishes and toward limiting the catch to the natural reproductive capabilities of established fish populations without supplementary replenishment by the use of hatchery fishes. Fishing activity on these waters will not endanger native fishes or be detrimental to other park resources or uses.

Class III: Waters Managed for Fishing by Periodic Stocking of Fishes.

Class III waters are lakes and streams designated for sport fishing in which fish populations are maintained at a fishable level by periodic stocking of hatchery fishes or the introduction of fishes transplanted from other waters. They contain one or more of the following conditions:

1. Biological conditions capable of supporting year-round populations of planted fishes.
2. Natural reproduction of fishes is limited or totally lacking.
3. Accessible to the degree that angler-use of planted fishes will be sufficient to justify stocking.
4. Fishing activities and introduction of fishes will not be detrimental to basic park values and other visitor uses.

Biological Classification Criteria According to Status of Fishes

Group A. Waters With Natural Conditions Unmodified by the Introduction of Nonnative Fishes,

1. Waters naturally barren in which fishes have not been planted.
2. Waters in which native fishes are perpetuated by natural reproduction.

Group B. Waters Modified by the Introduction of Fishes.

1. Nonnative fishes maintained by natural reproduction.
2. Native fishes maintained by periodic stocking.
3. Nonnative fishes maintained by periodic stocking.
4. Native and nonnative fishes maintained by natural reproduction.
5. Native and nonnative fishes maintained by periodic stocking.
6. Native fishes maintained by natural reproduction; nonnative fishes maintained by periodic stocking.
7. Nonnative fishes maintained by natural reproduction; native fishes supported by periodic stocking.
8. Fish populations in specific waters controlled in part by fishery resources originating outside park boundaries.

Group C. Waters Restored or Reverted to Natural Conditions.

1. Barren waters restored to a fishless condition following the failure of introduced nonnative fishes to become established because of unsuitable biological, physical or chemical conditions or lack of adequate spawning areas.

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Biological Classification Criteria (con.)

2. Waters in which native fish populations became extirpated but through the reintroduction of native species, self-supporting populations of native species are now being maintained by natural reproduction.

Tabular Summary: Biological Classification of Waters

Group	Waters Barren	Present Populations Maintained by:				Populations Influenced By Outside Mgmt.
		Natural Reproduction		Periodic Stocking		
		Native	Nonnative	Native	Nonnative	
<u>A</u> — Waters & Populations Unchanged by Introduction of Nonnative Fishes						
A-1	X					
A-2		X				
<u>B</u> — Waters & Populations Altered by Introduction of Fishes						
B-1			X			
B-2				X		
B-3					X	
B-4		X	X			
B-5				X	X	
B-6		X			X	
B-7			X	X		
B-8						X
<u>C</u> — Waters & Populations Restored or Reverted to Natural Conditions						
C-1	X					
C-2		X				

INSTRUCTIONS FOR PREPARATION OF CLASSIFICATION CHARTS

Charts

Classification assigned to the individual park lakes and to specific stream sections shall be tabulated on separate charts. These charts shall be incorporated in the Appendix of the long-range aquatic resources management plan. Waters will be grouped on the charts according to drainage systems.

Suggested formats for each of these charts with descriptive explanations are contained on the following pages. It is recognized that the format may require some modification to cope with particular situations in an individual area.

Index

To facilitate locating the individual waters on the charts, an index should be prepared in which the names will be listed in alphabetical order with reference to the number assigned to the lake or the stream section.

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(Sample)

CLASSIFICATION OF PARK LAKES — (Name of Park)						
(1) Lake No.	(2) Lake Name	(3) Size (acres)	(4) Species Present	(5) Classification Biol.	(6) Mgt.	(7) Management Principles
<u>D Swift Creek Drainage</u>						
D-1	Heart	10	RbT, BT	B-4	II	7
D-2	Red	15	BT	B-1	II	7
D-3	Circle	27	RbT	A-2	II	7
D-4	Lone Pine	18	RbT	B-2	III-1-4	8

Explanations:

- (1) Lake No.: Use number assigned to the lake.
- (2) Lake Name: Use name of lake shown on the aquatic resources map.
- (3) Size: Area in surface acres.
- (4) Species Present: Use abbreviations indicated in Appendix V, Chapter 2, to designate presence of sport species and unique species. List sport species in order of abundance.
- (5) Classification, Biological: Identify by applicable Group designation (A, B, or C) and the appropriate subnumeral in accordance with criteria prescribed in Appendix II. (Example: B-4 indicates that the lake has been modified by the introduction of fishes and that both native and nonnative species are now maintained by natural reproduction.)
- (6) Classification, Management: Identify by applicable Class number and the appropriate subnumeral in accordance with criteria prescribed in Appendix II. (Example: Class II indicates that the lake is managed for sport fishing based upon populations of fishes maintained by natural reproduction without stocking, and that fishing activities are not detrimental to other park values in this lake.)

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Sample Lakes Chart, Explanations (con.)

- (7) Management Principles: Based upon management principles outlined in Chapter 1. (Example: 7 - Fishing maintained by natural reproduction and regulated so that fishing will not exceed natural reproductive capabilities of wild fish populations.)

(Sample)

CLASSIFICATION OF PARK STREAMS — (Name of Park)								
Stream No.	Stream Name/ & recipient stream, if named in ()	Stream Size			Species Present	Classification		Mgmt. Princ.
		Length (miles)		Width est.		Biol.	Mgmt.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OH Ohanapecosh River Mgmt. Unit								
OH-1	Ohanapecosh River	13.0	25.4	15	RbT, CT, BT	B-4	II	7
OH-2	Olallie Creek (Ohana R.)	5.3	1.4		(RbT, CT, BT)	B-4	I	
OH-3	Boulder Creek (Ohana R.)	2.4	8.5			A-1	I	1
OH-4	Chinook Creek (Ohana R.)	5.9	5.9	10	RbT, CT, BT	B-4	II	7

Explanations:

- (1) Stream No.: Number assigned to stream or stream section.
- (2) Stream Name & Recipient Stream: Name of stream used on aquatic resources map. Recipient stream is the stream into which the first stream flows.
- (3) Main Stream Length: Main stream course including multiple channels of divided streams.
- (4) Minor, unnamed tributaries of the named stream:
- (5) Average width of mainstream; minor tributaries not included. Estimate as closely as possible.
- (6) Species Present: Refers to main sections of stream.
- (7) Classification, Biological: Refers generally to the main section of the stream.
- (8) Classification, Management: Ditto
- (9) Management Principle: Ditto

SUGGESTED FORMAT — TEN-YEAR STOCKING SCHEDULE

Recognizing that the format for the presentation of a ten-year stocking schedule may have to be modified to meet local requirements in individual parks, the following sample will serve as a guide:

(Sample)

ROCKY RIDGE NATIONAL PARK
FISH STOCKING SCHEDULE, 1966-1975

Name (1)	No.	Fish(2)			(3)	Year(4)									
		Sp.	No.	Size		66	67	68	69	70	71	72	73	74	75
Lone Pine Lake	D-4	Rb	5,000	2"	A	X			X			X			X
Robin Lake	A-2	BT	10,000	2"	T		X		X		X		X		X

Explanation:

- (1) Name: No. Name and number assigned to particular lake or stream.
- (2) Fish: Sp. Species to be planted; use abbreviations listed in Appendix V.
- No. Number of fish to be planted in an individual year.
- Size. Length of fish to plant.
- (3) Method: Method to be used for stocking: A-Airplane; T-Truck; P-Packstock or backpack; B-Boat.
- (4) Year: Indicate by X, the years in which fish are to be planted.

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A year-by-year summary of stocking requirements is included at the end of the ten-year stocking schedule. The following is a suggested format:

(Sample)

Year-by-Year Summary	Fish		Year									
	Species	Size	66	67	68	69	70	71	72	73	74	75
Annual Totals by Species (in thousands)	Rbt	2"	15	25	20	15	14	22	17	16	20	17
	BT	3"	5	11	9	12	13	7	9	11	10	7
	BnT	2"	—	7	—	7	—	7	—	7	—	7
Number of Lakes			5	10	7	8	11	9	5	8	7	6
Number of Streams			1	3	—	3	—	3	—	3	—	3

DESIGNATION AND NAMES OF FISHES

Designation

Each species of fish found within the park shall be listed; identified as native or nonnative species; and designated for management purposes as: (1) Sport Fish; (2) Commercial Fish; (3) Scientific-aesthetic Fish; or (4) Undesirable Nonnative Fish.

Sport and commercial fishes shall receive partial protection in that they may be taken by fishermen under regulations that control the catch. Scientific-aesthetic fishes shall receive full protection and given every assistance in their survival. Undesirable nonnative species are subject to eradication and control by approved restoration procedures.

Definitions

Sport Fish: A species that may be taken for recreational purposes by means and methods prescribed by applicable Federal and State regulations.

Commercial Fish: A species that may be taken for commercial purposes by means and methods prescribed by applicable Federal and State regulations.

Scientific-aesthetic Fish: A native species that is of scientific value as part of the native fauna of the park and has not been specifically designated as a sport or commercial fish.

Native Form: A fish that originally occurred in the water in which it is now present.

Nonnative Form: A fish that has been introduced or has intruded into a body of water in which it did not occur naturally.

Undesirable Nonnative Fish: A nonnative fish that has not been designated as a sport and commercial fish that it is desirable to control or eliminate in the interest of restoring natural conditions or to remove competition for desirable species.

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Standardized Use of Names of Fishes

Common and scientific names of fishes shall conform with those prescribed in A List of Common and Scientific Names of Fishes from the United States and Canada (American Fisheries Society, Special Publication No. 2, 1960) which has been adopted as the standard by the National Park Service. The complete set of standards and guidelines for the uniform use of names of vertebrate animals and plants are incorporated in the information handbook, "It's to be Published," Appendix A, pages 33-40.

Abbreviations

Abbreviations for the names of the more common species of fishes, adopted for Service use in aquatic resources management programs, are listed on the chart that follows. For fishes not included on the list, individual abbreviations may be developed to fit local needs. It is suggested that an appropriate abbreviation may be formed by using the first two letters of the first and second parts of the common name. (For example: SaSq for Sacramento squawfish; LoSu for long-nose sucker).

Abbreviation	Common Name	Scientific Name
T	Trout	<u>Salmo, Salvelinus</u>
GT	Golden Trout	<u>Salmo aguabonita</u>
CT	Cutthroat Trout	<u>Salmo clarki</u>
RbT	Rainbow Trout	<u>Salmo gairdneri</u>
BnT	Brown Trout	<u>Salmo trutta</u>
BT	Brook Trout	<u>Salvelinus fontinalis</u>
DV	Dolly Varden	<u>Salvelinus malma</u>
LT	Lake Trout	<u>Salvelinus namaycush</u>
S	Salmon	<u>Salmo, Oncorhynchus</u>
AS	Atlantic Salmon	<u>Salmo salar</u>
PS	Pacific Salmon	<u>Oncorhynchus</u>
PPS	Pink Salmon	<u>Oncorhynchus gorbuscha</u>
CPS	Chum Salmon	<u>Oncorhynchus keta</u>
CoPS	Coho Salmon	<u>Oncorhynchus kisutch</u>
ChPS	Chinook Salmon	<u>Oncorhynchus tshawytscha</u>
SPS	Sockeye Salmon	<u>Oncorhynchus nerka</u>
K	Kokanee (landlocked sockeye)	<u>Oncorhynchus nerka kennerlyi</u>

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Abbreviations (con.)

Abbreviation	Common Name	Scientific Name
Gr	Grayling	<u>Thymallus arcticus</u>
W	Whitefish	<u>Prosopium</u> , <u>Coregonus</u>
MW	Mountain Whitefish	<u>Prosopium williamsoni</u>
RW	Round Whitefish	<u>Prosopium cylindraceum</u>
PW	Pygmy Whitefish	<u>Prosopium coulteri</u>
LW	Lake Whitefish	<u>Coregonus clupeaformis</u>
S	Sunfishes	<u>Lepomis</u> , etc.
BS	Bluegill	<u>Lepomis macrochirus</u>
GS	Green Sunfish	<u>Lepomis cyanellus</u>
PS	Pumpkinseed	<u>Lepomis gibbosus</u>
B	Bass	<u>Micropterus</u> , <u>Ambloplites</u>
LMB	Largemouth Bass	<u>Micropterus salmoides</u>
SMB	Smallmouth Bass	<u>Micropterus dolomieu</u>
RB	Rock Bass	<u>Ambloplites rupestris</u>
C	Crappie	<u>Pomoxis</u>
WC	White Crappie	<u>Pomoxis annularis</u>
BC	Black Crappie	<u>Pomoxis nigromaculatus</u>
NP	Northern Pike	<u>Esox lucius</u>
Ca	Catfish	<u>Ictalurus</u>
ChCa	Channel Catfish	<u>Ictalurus punctatus</u>
B	Bullhead	<u>Ictalurus</u>
BB	Black Bullhead	<u>Ictalurus melas</u>
YB	Yellow Bullhead	<u>Ictalurus natalis</u>
BrB	Brown Bullhead	<u>Ictalurus nebulosus</u>

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Form 10-752
(Nov. 1966)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Report NPS(OR)-7

PROJECTED AQUATIC RESOURCES MANAGEMENT PROGRAM FOR 19 _____

AREA _____

I. CONTROL OF AQUATIC PLANTS AND FISHES FOR RESTORATION OR MANAGEMENT PURPOSES

PROJECTS PROPOSED

☐ Yes ☐ No

If "Yes," briefly describe below, projects; state justifications and preliminary investigations completed or scheduled.

PROPOSALS SUBMITTED FOR
APPROVAL

☐ Yes ☐ No

If "No," give date when proposals will be submitted _____. (Allow ample time to provide for adequate review and approval by the Federal Committee on Pest Control prior to desired time of application if pesticides are to be employed.)

II. INVESTIGATIONS - SURVEYS, FOLLOW-UP STUDIES, CREEL-CENSUS, ETC.

(List and briefly describe, studies and investigations scheduled for year. Indicate purposes, individuals and agencies of these studies.)

TITLE	PURPOSE	INDIVIDUALS	AGENCY

III. FISH PLANTING

PLANTING PROPOSED

☐ Yes ☐ No

If proposed planting does not conform to schedule contained in Approved Long Range Aquatic Resources Management Plan, list changes and reasons. (Include species, size, waters involved.)

IV. EGG-TAKING OPERATIONS

PROPOSED

☐ Yes ☐ No

If "Yes," state below species, waters and agencies involved and purpose of these operations.

V. OTHER ACTIVITIES

(List and describe additional activities on reverse)

RECOMMENDED BY (Superintendent)

DATE

APPROVED (Regional Director)

DATE

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Form 10-751
(Nov. 1966)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Report NPS(OR)-3

ANNUAL AQUATIC RESOURCES REPORT FOR 19_____

The Annual Aquatic Resources Report provides a summary of fishing use and of the accomplishments on the annual aquatic resources management program. It recognizes significant changes in status of the aquatic resources. Answers may be carried over onto a continuation sheet if space allotted is not sufficient. Attach to this report copies of new informational materials released during the year and the Fish Planting Summary (Form 10-751a), if stocking was done. The projected Aquatic Resources Management Program for the subsequent year will accompany the report.

AREA	DATE
------	------

1. STATUS OF AQUATIC RESOURCES (Discuss significant changes in status as presented in long-range plan, in previous reports or in aquatic resources status statement. Include details on natural phenomena and man-caused disturbances which adversely altered the aquatic resources and use by fishermen, etc. If no important changes, state none.)

2. RECREATIONAL FISHING - ESTIMATED ANGLER-USE-DAYS
(Angler-use-day: A fisherman fishing any portion of a day)

NUMBER OF ANGLER-USE DAYS	A. IN WATERS UNDER NPS JURISDICTION	B. IN WATERS NOT UNDER NPS JURISDICTION (Adjacent to area but fishing use originated from within area)
Fresh water.....		
Salt water.....		

NUMBER OF AREA VISITS DURING FISHING SEASON:

3. COMMERCIAL FISHING: ☐ Yes ☐ No (If "Yes," attach brief statement on current status of this activity.)

4. MANAGEMENT ACTIVITIES
(Accomplishments on projected Annual Aquatic Resources Management Program)

A. RESTORATION AND CONTROL PROJECTS (List and briefly describe, mention if covered by previously submitted reports.)

- B. FISH STOCKING (If "Yes," attach Form 10-751 which summarizes these activities. Discuss any new or special methods used in fish stocking.)

☐ Yes ☐ No

- C. EGG-TAKING OPERATIONS (If "Yes," discuss purpose, agencies participating; park waters and species involved; number of eggs taken; distribution of resulting fishes; and related information.)

☐ Yes ☐ No

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D. FISHING REGULATIONS AND LAW ENFORCEMENT (Discuss briefly related problems.)

E. SPECIAL FISHING PROJECTS (Discuss application and success of special angling programs.)

5. MANAGEMENT INVESTIGATIONS

(List current management investigations and results conducted by park staff or cooperating agencies.)

6. REPORTS AND PUBLICATIONS

(List by title, author, date, publisher, pages, etc., all reports and articles relating to park aquatic resources and fishing activities published during year.)

7. AQUATIC RESEARCH

(List RSP projects and titles which relate to management of aquatic resources and use by fishermen.)

8. PUBLIC INFORMATION

(Attach copies of informational materials, press releases, list of fishing waters, etc., handed out to public if not previously submitted.)

SUPERINTENDENT (Signature)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ANNUAL SUMMARY OF FISH PLANTING FOR 19

AREA

DATE SUBMITTED

NUMBER PLANTED BY SPECIES		a. Brook Trout	d. Golden Trout	g. Kokanee	i.	m.					
		b. Rainbow Trout	e. Grayling	h. Lake Trout	k.	n.					
		c. Brown Trout	f. Cutthroat Trout	j.	l.	o.					
PLANT NO. 1/	NAME OF WATERS PLANTED (Lakes and stream sections planted are designated in RED INK on attached map.) 2/	DATE OF EACH PLANT	SPECIES PLANTED	WEIGHT OF FISH (No. per lb.)	NO. OF FISH OF EACH PLANT	NO. OF FISH PLANTED BY LENGTH GROUPS			SOURCE OF FISH (Name and location of hatchery. Indicate S-State or F-Fed.)	CHECK (X)	
						Below 4"	4" to 6"	Over 6"		S	F
TOTALS											

1/ Each plant designated by number. Number used on map to show location of each planting.

2/ Map not required if long range aquatic resources plan which contains an aquatic resources map has been approved.

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GUIDELINES FOR FISH STOCKING

Purposes

1. The stocking of hatchery fishes or the transplanting of fishes from other waters shall be:
 - a. To reestablish populations of native fishes; or
 - b. To maintain fishing in waters designated for sport fishing in which natural reproduction of wild fishes is insufficient to support the desired level of recreational fishing.
2. When hatchery fishes are planted, they shall be stocked for long-term benefit to the sport fishery. They shall be stocked sufficiently ahead of the anglers and at a size that will insure that the fishes are essentially wild in color, form, and wariness when caught.
3. Stocking of hatchery fishes for short-term benefit or to provide fish for immediate return to the fishermen during the current season, frequently termed "put-and-take-stocking," shall not be undertaken. Such stocking supports and encourages an artificially created recreational experience incompatible with the fundamental concept of resource management within natural and historical areas.

Species

4. Fishes native to the water being stocked or to the immediate drainage shall be given first consideration in stocking operations.
5. No species of nonnative fishes, other aquatic animals and aquatic plants shall be introduced into waters in which the species is not already present.
6. Nonnative fishes may be stocked to support fishing in designated waters in which the species are now present after adequate investigations have demonstrated that the elimination of existing populations of nonnative fishes and the restoration by native fishes are impracticable and that the desired level of fishing can be maintained only by supplementary planting of fishes.

Species (con.)

7. Nonnative fishes shall not be stocked in a water when there is danger that the fishes resulting from the planting may move into other waters, located inside or outside the park boundaries, and prove detrimental to established populations of other species.

Size

8. Fingerling trout may be stocked in lakes designated for sport fishing in which the need for supplementary stocking has been established.

9. Stocking of eyed eggs, fry or fingerling trout in streams will normally be confined to operations directed toward the restoration of populations of trout following the eradication of nonnative species or the reduction of fish populations due to natural catastrophies such as floods or droughts. (Various reliable studies on streams of varying sizes throughout the Nation have demonstrated that where conditions are suitable for the survival of trout, natural wild populations are maintained at maximum carrying capacity by natural reproduction and that the stocking of trout at fingerling size or less results in negligible or no benefit to the sport fishery.)

10. Adult fishes may be transplanted from waters containing wild populations of native species for use in:

- a. The reestablishment of native species; or
- b. The replenishment of native fish populations.

Numbers

11. The number of fishes stocked in a specific water during any year shall depend upon the prevailing natural conditions, the size and species composition of existing fish populations, the anticipated fishing pressure, and an evaluation of the success realized from previous plantings made in the particular water. Numbers of fish planted shall be limited to those necessary to reestablish a native species or to support the desired level of fishing without overutilizing natural aquatic foods or without resulting in retarded growth of the fishes due to overcrowding.

Numbers (con.)

Definite numbers of trout actually used in an individual planting operation will depend upon the size range of fishes available in the hatchery. The number shown on the stocking schedule will be for fish within a definite size range and the number may have to be increased or decreased according to size available to achieve the desired stocking objective.

Frequency

12. Frequency of stocking shall depend upon existing biological conditions and upon anticipated fishing pressures. Rotation of stocking over a period of years in back-country lakes located in close proximity will result in dispersal of fishing effort and the impact upon the environment and fish populations. (See: "Trout Stocking-Frequency Cycles and a Device to Determine Age Classes of Trout Present" by O. L. Wallis, Progressive Fish-Culturist 25: (1), January 1963, pages 15-22, for further discussion of this subject.)

AQUATIC PLANT AND ANIMAL CONTROL
FOR RESTORATION AND MANAGEMENT PURPOSES

Introduction

The restoration and perpetuation of natural conditions in aquatic environments or the management of certain waters for recreational fishing, swimming, and boating in natural or historical areas administered by the National Park Service may necessitate the control or the eradication of nonnative fishes or aquatic vegetation.

Control programs shall be based upon an approved plan and no control measures shall be initiated until the proposed project has been approved by the Director.

Control of aquatic life may be accomplished by chemical or by mechanical methods. Either means will create disturbances to the environment and to other forms of plant and animal life but an operation shall be planned and conducted so that these disturbances will be as temporary in nature and as restricted in extent as possible.

Native species of fishes and other aquatic life shall not be intentionally eliminated or controlled solely in the interest of improving conditions for recreational fishing.

Investigations

Control programs shall be based upon the findings of adequate investigations that have been conducted to determine and evaluate the following factors:

1. Biological characteristics of the water: status of native and nonnative fishes and other animal and plant life; the feasibility of restoring natural conditions and native species.
2. Physical features of the water: temperatures, depth, width, volume, type of bottom, water flow and fluctuations, etc.
3. Chemical composition of the water.

Investigations (con.)

4. Measures that may be employed to eliminate or control nonnative fishes or aquatic plants most effectively, but with the least detrimental effects to other aquatic life above, within, or below the waters to be treated.

5. Action that may be necessary to assure that sufficient numbers of all endemic species are rescued and subsequently reintroduced into the waters to insure their perpetuation, if it is anticipated that some native fishes, as well as nonnative fishes, may be killed or reduced in numbers incidentally during an authorized restoration program.

6. Availability of wild populations of native fishes or of hatchery stocks of desired strains suitable to use for restocking purposes.

Project Proposal

A proposal for an aquatic plant or animal control program, based upon adequate investigations, shall be drawn up by the Park Superintendent and forwarded to the Regional Director for review and transmittal to the Director for approval. The Superintendent may seek assistance from the Bureau of Sport Fisheries and Wildlife, other Federal agencies, or the appropriate state agencies in the conduct of the necessary investigations and in drawing up of the program proposal.

The control project proposal shall contain the following information:

1. Justification. Description of the situation and the needs for fish or aquatic vegetation control for restoration or management purposes. Identification of species involved. Outline of the immediate potential impact of the project upon established fishing activities or other visitor-uses or upon natural values of the area.

2. Physical, chemical and biological characteristics of the water involved.

Project Proposal (con.)

3. Precautions to be taken to confine the effects of the project to the specific waters and species involved.

4. Methods or chemicals proposed. (Amounts of chemicals, methods of application, etc.)

5. Measures to be taken to rescue native fishes from the waters being treated or to secure appropriate stock from other waters for subsequent reintroduction after the chemical has been diluted to a safe level.

6. Cost and manpower required to accomplish the restoration or control program. (Who will do the job? Who will pay the costs?)

7. Period when the project will be undertaken.

8. Anticipated degree of success of the control or restoration proposal. (Is this a one time proposition or an activity which will need to be repeated periodically?)

9. Long-range management plans for the water including stocking schedules.

10. Program for studies during the operation of the project to evaluate the effectiveness of the activity and to determine immediate and long-range side affects.

11. Program for follow-up investigations to examine and evaluate the results of the control or restoration project.

12. Interest of other agencies in participating in the restoration or control project.

Review of the Use of Toxic Substances

When toxic substances are proposed for use in the control of aquatic plants or animals, the program is subject to review by the Federal Committee on Pest Control. This group has been established to: (1) review all Federally operated, technically guided or financed chemical control projects; and (2) advise the various departments and agencies concerning problems relating to the use

Review of the Use of Toxic Substances (con.)

of chemicals. Purpose of this review is to insure that the program proposal is safe and sound, and that methods to be used are the most effective and economical to achieve the desired results with due consideration to the possible hazards to man, livestock, vegetation, fish and wildlife.

Programs in which chemicals are to be used are completed in the field and submitted in quadruplicate to the appropriate Regional Director. In the Regional Office, the proposal shall be evaluated for administrative and economical soundness, biological feasibility, and for completeness with regard to project data by the regional screening committee. Upon concurrence by this committee, the proposal will be forwarded, in triplicate, to the Director for review and submission to the Federal Committee on Pest Control for final review and approval. The program shall not be operated until it has been approved.

Although the Bureau of Sport Fisheries and Wildlife may have broad general authority for the use of certain chemicals for fish control purposes, the National Park Service must secure specific authorization for each program conducted within areas it administers.

Control Programs by Other Agencies

Fish and aquatic vegetation control projects may be proposed and conducted, from time to time, by other agencies in waters located outside the park boundaries. When such proposals and operations may have direct or indirect adverse influences upon aquatic resources within a park area, the Superintendent shall report this information with suggestions for the protection of park resources to the Director through the Regional Director.

Conclusion of Control Projects

All control programs and related biological studies shall be completely documented, and the pertinent documents and reports of findings shall be made available at all reviewing levels. When control projects are completed, a detailed report describing the effects of the chemical treatment program upon park resources shall be submitted to the Regional Director and to the Director.

REGULATIONS AND LAW ENFORCEMENT

Regulations governing aquatic resources and fishing activities are established and enforced to assist in the accomplishment of the objectives of the National Park Service in the management and protection of aquatic resources and in the provision of quality recreational fishing experiences and in the control of commercial fishing activities.

In the formulation and the revision of regulations relating to fishes and other aquatic resources and fishing activities, consideration shall be directed toward the following guidelines:

1. A specific regulation shall be established to serve a definite, justifiable purpose that has been verified by adequate investigations.
2. The number of regulations shall be limited to the minimum number required to achieve the management objectives.
3. Regulations shall be clearly written so that the intent and meaning can be understood by fishermen and worded so that their enforcement can be facilitated.
4. Regulations shall be periodically evaluated to determine their effectiveness in achieving the specific purposes for which they were established. It may be necessary to revise or to eliminate certain regulations to meet current situations.
5. Special regulations shall provide necessary restrictions for matters that are not sufficiently covered by "General Rules and Regulations" or by prevailing state laws. Duplication of restrictions that are adequately covered by existing laws and regulations should be avoided.
6. To the extent possible, regulations shall conform to state fishing laws. Some regulations, however, may need to be more restrictive than state laws to achieve park management objectives.
7. Special regulations may provide for the opening or closing of specific waters to fishing; may designate special seasons and special hours; may define specific methods for taking fishes and other forms of aquatic life; and may establish catch, possession, and size limits.

Regulations and Law Enforcement (con.)

8. Before rules and regulations are put into effect, frequently, it may be desirable to have them subjected to review by appropriate state and Federal agencies concerned with fishery resources and local fishing interests.

Although notice of proposed rule making is published in the "Federal Register," this notice may not come to the attention of individuals and organizations most concerned; therefore, it may be desirable to concurrently issue news releases to the local newspapers.

In the case of any proposed regulation change that involves great public interest, it may be desirable to hold public hearings prior to the publication of the initial notice.

Full consideration should be given to views and recommendations of biologists, administrators and fishermen. It is the intention of the National Park Service that all concerned shall have an opportunity to express their views before a regulation is established.

Issuance of Rules and Regulations

Procedures for the issuance of rules and regulations and guidelines for the preparation of documents to amend Title 36, "Code of Federal Regulations" are contained in Part 9 (Rules and Regulations) of the National Park Service Organization Volume.

Law Enforcement

Enforcement of rules and regulations relating to aquatic resources is covered in the "Law Enforcement Handbook." Other matters of special concern in aquatic resources management such as the types of jurisdiction and the areas with each type and the limitations on National Park Service authority are discussed in that volume.

It is the policy of the National Park Service to enforce all laws, rules, and regulations that lie within the scope of its legal jurisdiction. All law enforcement actions must be handled with judgment, dignity and intelligence, and applied as uniformly as practicable with regard for the particular circumstances involved in each violation.

PUBLIC INFORMATION ABOUT FISHING

Information about recreational fishing in natural and historical areas presented by the National Park Service shall emphasize the quality of the recreational and aesthetic values of the angling experience and an appreciation of the unspoiled environment, rather than the catch as the primary reward of this visitor-use activity.

Information regarding angling opportunities shall be factual and realistic with respect to fishing conditions. Conservation of aquatic resources, the significance of park fishes and aquatic environments, fishing regulations, care of fishes by anglers, place of angling in a national park visit experience are examples of nonpromotional material.

Promotional types of publicity which unrealistically glamorize or exaggerate the fishing opportunities or emphasize the fish stocking programs are types of promotional publicity which shall be discouraged.

An illustration of angling activity adds interest to informational presentations, but in such a picture the angler should be shown in a relationship that is subordinate to the scenic background. Such pictures illustrates the Service's theme of "recreational angling amid highly scenic surroundings in an unspoiled wilderness." Pictures which show anglers prominently displaying the catch should not be used as they are promotional in nature in natural and historical areas.

COOPERATIVE ACTIVITIES

In the management of the aquatic resources within natural and historical areas, administered by the National Park Service, cooperation shall be encouraged with the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries, agencies of the U. S. Fish and Wildlife Service, and the appropriate state agencies within the scope of Service responsibilities and authority.

A Memorandum of Understanding between the National Park Service and the Bureau of Sport Fisheries and Wildlife, was approved by Assistant Secretary Stanley A. Cain on August 5, 1966, to outline the realms of cooperative activities between the two agencies. (See NPS "Administrative Manual," Organization Volume, Part 10, Chapter 1, Section 2.10, page a, for complete text of this Memorandum.)

A memorandum is also being developed with the Bureau of Commercial Fisheries.

Guidelines are to be drawn up to implement each of these agreements. Until these guidelines are released, FO 15-63, December 18, 1963, concerning channels of communications with the Bureau of Sport Fisheries and Wildlife on fishery management services and fish stocking matters will remain in effect.

THE BASIC REFERENCE LIBRARY

A basic reference library consisting of the following books and publications will prove to be indispensable in the development and operation of a park program for the management of aquatic resources and of recreational and commercial fishing activities. It should be supplemented by regional publications and books which relate to the specific park. (Prices shown are subject to change.)

Books

Bennett, George W.

1962. MANAGEMENT OF ARTIFICIAL LAKES AND PONDS.

Reinhold Publ. Corp., Book Division, 430 Park Avenue,
New York, N. Y. 10022. 283 p. \$8.95.

Calhoun, Alex, Editor

1966. INLAND FISHERIES MANAGEMENT.

Calif. Dept. Fish and Game. 546 p. \$3.84 (plus 16¢
sales tax for Calif. residents)

Available from: Office of Procurement, Documents
Section, P. O. Box 1612, Sacramento, Calif. 95807.

Eddy, Samuel

1957. HOW TO KNOW THE FRESHWATER FISHES.

Wm. C. Brown Co., 135 S. Locust Street, Dubuque, Iowa.
253 pp. \$3.25 bound. \$2.75 paper.

Edmondson, W. T. and others

1959. FRESHWATER BIOLOGY. 2nd edition.

John Wiley and Sons, Inc., 605 3rd Avenue, New York,
New York 10016. 1248 p. \$38.00.

Fassett, Norman C.

1960. MANUAL OF AQUATIC PLANTS. 2nd edition.

University of Wisconsin Press, Box 1379, Madison,
Wisconsin, 53701. \$6.50.

Hubbs, Carl L. and Karl Lagler

1964. FISHES OF THE GREAT LAKES REGION.

University of Michigan Press, 615 E. University,
Ann Arbor, Michigan 48106. 213 p. 251 figs. \$6.95.

Books (con.)

- Lagler, Karl F.
1956. FRESHWATER FISHERY BIOLOGY. 2nd edition.
Wm. C. Brown Co., Dubuque, Iowa. 360 p. \$6.75.
- Lagler, Karl F., John E. Bardack, Robert R. Miller
1962. ICHTHYOLOGY, The Study of Fishes.
John Wiley and Sons, Inc., 605 3rd Avenue, New York,
New York 10016. 545 p. \$12.50.
- LaMonte, Francesca
1945. NORTH AMERICAN GAME FISHES.
Doubleday and Co., Inc., 501 Granklin Avenue, Garden
City, New York 11531. 202 p. 73 pls. (some in
color) \$4.50.
- Muenschner, J. C.
1944. AQUATIC PLANTS OF THE UNITED STATES.
Comstock Publishing Associates (Cornell University
Press, 124 Roberts Place, Ithaca, New York).
374 p. \$6.75.
- Needham, James G. and Paul R. Needham
1962. A GUIDE TO THE STUDY OF FRESH-WATER BIOLOGY. 5th ed. rev.
Holden-Day, Inc. 728 Montgomery Street, San Francisco,
California 94111. 107 p. \$2.25 paper.
- Pennak, R. W.
1953. FRESH-WATER INVERTEBRATES OF THE UNITED STATES.
Ronald Press Company, 15 E. 26th Street, New York,
New York 10010. 769 p. \$15.00.
- Reid, George K.
1961. ECOLOGY OF INLAND WATERS AND ESTUARIES. 2nd printing.
Reinhold Publ. Corp., Book Division, 430 Park Avenue,
New York, N. Y. 10022. 375 p. \$7.50.
- Roundsefell, George A. and W. Harry Everhart
1953. FISHERY SCIENCE, ITS METHODS AND APPLICATIONS.
John Wiley and Sons, Inc., 605 3rd Avenue, New York,
New York, 10016. 444 p. \$9.50.

Books (con.)

Welch, Paul S.

1948. LIMNOLOGICAL METHODS.
McGraw-Hill Book Company, 330 W. 42nd Street,
New York, New York 10036. 381 p. \$9.95.

Welch, Paul S.

1952. LIMNOLOGY. 2nd edition.
McGraw-Hill Book Company, 330 W. 42nd Street,
New York, New York 10036. 538 p. \$12.00.

Periodicals

PROGRESSIVE FISH CULTURIST. Issued quarterly for fishery
biologists and fish culturists. Bureau of Sport Fisheries
and Wildlife, U. S. Fish and Wildlife Service,
Washington, D. C. 20240. Free to libraries upon
application.

SPORT FISHERY ABSTRACTS. An abstracting service relating to
fishery research and management. Issued quarterly by
the Bureau of Sport Fisheries and Wildlife, U. S. Fish
and Wildlife Service, Washington, D. C. 20240. Free
to libraries upon application.

SFI BULLETIN. Issued monthly by the Sport Fishing Institute,
719 - 13th Street, N. W., Washington, D. C. 20005. Also
issues monthly news notes, ITEMS FOR FISHERY SCIENTISTS
FROM THE SPORT FISHING INSTITUTE. Free upon application.

TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY. Quarterly.
American Fisheries Society. Secretary, 1404 New York
Avenue, N. W., Suite 504, Washington, D. C. 20005.

WILDLIFE MANAGEMENT
Aquatic Resources, Natural and Historical Areas

HANDBOOK
Part II
Chapter 9
Page 1

ANGLER-USE STUDIES

To be completed and supplied at a later date.

