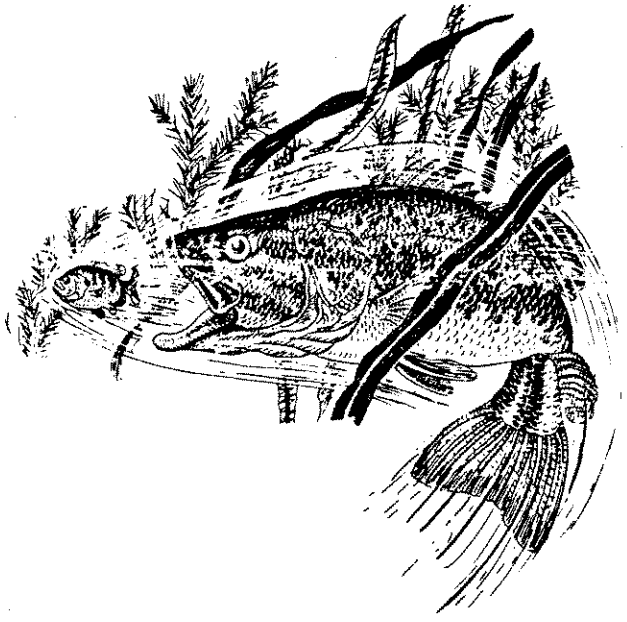
MONTANA
WARM WATER FISH
MANAGEMENT PLAN



Prepared by
Montana Department of Fish, Wildlife and Parks
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INTRODUCTION

Nearly ten years ago I stood in line at a grocery store in Miles City. A fellow who had obviously just moved to town was asking an acquaintance, "Is the fishing any good around here?" He replied, "No, you have to go all the way to Billings to get good fishing."

The aquaintance was of course considering the only good fishing to be trout fishing. A newcomer might not get the same answer today, but not because there is better trout fishing any closer to Miles City.

There has been an awakening on the high plains of eastern Montana. No longer are the fishermen content to look west with envy. Nor do they sit silent and wait. The fishermen from eastern Montana want more of what eastern Montana's waters produce best, warm water fish.

The activism on the plains was most evident in the formation of Walleyes Unlimited in 1983. Today they boast a membership of 3,500 fishermen in 25 chapters throughout central and eastern Montana. This enthusiasm for warm water species is also catching on in western Montana.

The surge of interest could not have come at a better time. In 1982, the department got word that the federal government was going to stop operating the only warm water fish hatchery in Montana which is located in Miles City.

The state had the option to take over the hatchery, but it was apparent that the hatchery facility and water supply would need to be upgraded. The legislature authorized a study of two alternative sites. This study determined that construction of a new hatchery at Fork Peck Reservoir would cost $6.6 million while modernizing and expanding the Miles City hatchery could be done for $4.9 million.

After a review of site selection criteria and public comment, the decision was reached to seek authorization from the legislature to improve the hatchery at Miles City. Walleyes Unlimited and other interested groups and persons worked hard to gain the support of their local legislators. As a result the department was successful in getting the needed authorization from the 1985 Legislature.

Like most of the cold water reservoir fisheries in western Montana - the success of the warm water fish program is dependant on a reliable supply of hatchery fish. The Miles City operation is scheduled to produce 42 million walleye fry, over two million walleye fingerlings, over five million northern pike fry and fingerlings and over a million bass, crappie and catfish fingerlings. The hatchery expansion project is scheduled to

begin during the summer of 1986 pending full transfer of the land, ponds, and buildings to the State.

Meeting hatchery production goals will not be easy. Warm water fish production is notably uncertain. It will require developing sources of eggs from several lakes or reservoirs for species such as walleye and northern pike. Large crews will be needed during the spring to collect and transport the eggs. For example, it is estimated that 100 million walleye eggs will need to be collected each year to meet production goals. Bass production is frustrated by problems related to rearing fish in ponds. One problem is you have no idea how many bass you successfully reared until you drain the ponds to load them in the trucks for transport.

Such problems mean that it will take a number of years before all waters suitable for warm water fish can be considered for stocking. Guidelines have been developed to determine which waters will be stocked and how many fish will be stocked in different sizes of lakes and reservoirs.

The hatchery may be used for experimental rearing of saugeye, a sterile walleye/sauger cross being considered for west of the Continental Divide. The hatchery may also be used in efforts to sterilize walleye or other predators for use in areas where we do not want these species to spread.

STATUS

Warm water fishing occurs in over 250 ponds, lakes and reservoirs across the state. Fishermen spent an estimated 171,000 days fishing in these lakes and ponds in 1982. Thus warm water fishing comprised 10 percent of the total statewide fishing use in lakes. Montana residents accounted for 90 percent of that use. Fort Peck Reservoir was the most popular of these waters.

An equal amount of warm water fishing occured in over 4,000 miles of prairie streams in 1984. This fishing is supported by natural reproduction. Fishing in warm water streams made up 10 percent of the stream fishing statewide. Montana residents accounted for 95 percent of this use. These fisheries include sauger, walleye, channel catfish, sturgeon, northern pike, smallmouth bass, burbot and paddlefish. The Yellowstone and Missouri rivers were the most heavily used of these waters.

Warm water fish generally include largemouth and smallmouth bass, sunfish, crappie, black bullheads, and channel catfish. Most of Montana's waters are not well suited for these species because of cool temperatures and short growing seasons. Even eastern Montana is a transitional zone on a large scale between the cold water fisheries in the western mountains and the warm water fisheries in the midwest and south. Species better suited to these transitional waters have been referred to as "cool water" fish. They include northern pike, sauger, walleye and yellow

perch. For purposes of this document all of these species will simply be referred to as warm water species or by their common names.

This document is the first comprehensive statewide warm water fisheries management plan for Montana. It includes a brief overview and history of the program and a look at warm water programs in each of the department's seven regions (Figure 1).

GOAL

The goal of the warm water fish program is to increase opportunities for warm water fishing by increasing the number of waters producing warm water species and/or enhancing the production from waters presently producing warm water fish, and to preserve or enhance the habitat in waters that support warm water fisheries. Montana anglers seek a diversity of fishing opportunities depending on each fisherman's preference of species, size and number caught, type of gear used and more. Not all preferences can be met on all waters or at all times. Balancing the capabilities of the waters with the demands of fishermen is the art of management.

The objective of the plan is to identify problems we face in maintaining or improving these warm water fishing opportunities and to propose strategies to address the problems. The plan also offers the public an opportunity to become more directly involved in planning the management of specific waters. It is not a set of final answers, rather it is a set of possible answers which can be implemented and then evaluated. It is an action plan.

Patrick Graham
Chief of the Fisheries Management Bureau
Helena

HISTORY

Historically, warm water fish have been introduced into every corner of the state. Records of when the first warm water exotic species were stocked into Montana are scarce. Evidence suggests the earliest introduction occurred in 1902 when yellow perch were planted in the Missouri River impoundments at Great Falls and Helena (Brown, 1972). Other introductions followed. Since the department began maintaining records in 1927, nearly 80 million warm water fish have been stocked in Montana. While the majority of fish have gone into waters in the eastern regions of the state, every region and major drainage has been stocked with warm water fish.

During the 1930's, 40's and 50's, warm water fish management was based on intensive fish propagation and indiscriminate stocking methods. Many of the early plants occurred with a rancher scattering bass across the country-side from a cream can. Few of the early plants survived to provide much of a fishery.

Warm water fish production has occurred at the Miles City Fish Hatchery since the 1930's. The state built and operated the original hatchery which was located near the Yellowstone River. Largemouth bass and bluegills were raised intensively in two earthen ponds and were freely distributed throughout Montana. Control of the hatchery changed from state to federal in the mid-1930's and a new station was built at the existing site in the 1950's. The U.S. Fish and Wildlife Service managed the facility until 1983 when federal cutbacks forced the closure of the hatchery. The department acquired control of the hatchery on April 1, 1983 and has managed it since (Table 1). Other warm water fish management has been accomplished by transplanting desired species from one water to another.

CURRENT MANAGEMENT TRENDS

The current priority in Montana is toward establishing viable walleye and bass populations. Walleye are generally suited to medium to large-sized lakes and reservoirs with areas of rubble which provide spawning substrate. Largemouth bass are generally used in small, warm water reservoirs or ponds. Smallmouth bass are utilized in cooler ponds with gravel bottoms and in prairie streams. Other species of interest include black and white crappie which are being used in larger waters in association with predator populations to provide forage and additional recreation. Northern pike prefer large lakes with shallow, weedy bays for spawning and are found in the larger prairie rivers. Common limiting factors in warm water fisheries and management measures to overcome them are outlined below:

Problems and Strategies

(1) There is an inadequate supply of fish from the warm water hatchery and the egg supplies are inconsistent.

- Expand the capacity of the Miles City Fish Hatchery to meet projected demands for fish (Table 2).
- Develop a more stable supply of walleye eggs by increasing introductions of walleye into Fort Peck Reservoir and other suitable waters.
- Increase capability to spawn walleye in the lower Yellowstone River.
- Continue fish egg and fry exchanges with other states.

(2) Forage fish base is often inadequate to support warm water fisheries.

- Identify factors which contribute to poor forage fish populations.
- Introduce forage fish after careful assessment of their suitability to existing habitat conditions and the habits of the predator.
- Evaluate forage fish introductions, particularly those new to the state or a drainage, to insure their success and identify any possible negative side affects.

(3) Natural reproduction of game and forage fish is often inadequate due to limited habitat or fluctuating water levels.

- Document impacts of water level fluctuation on reproductive success and identify opportunities to modify reservoir operations to provide stable or rising water levels during egg incubation.

- Stock fry or fingerlings when supplies of fish are adequate and sufficient public interest exists.

- Implement walleye stocking guidelines to determine regional and statewide priorities when fish numbers are limited. (Attachment A).

(4) Overharvest results in smaller size and fewer fish.

- Alter fishing regulations by reducing creel limits, initiating minimum size limits, or restricting gear.

- Increase stocking rates or increase production capability by improving habitat or forage base.

(5) Fisheries habitat is degraded by water level fluctuations, presence of rough fish or other factors.

- Improve cover and spawning habitat for game and forage fish by negotiating changes in water levels if possible.

- Reduce rough fish numbers by chemical treatment on smaller waters to enhance forage base, improve catchability and reduce severity of winter kill.

(6) Access to and availability of warm water fishing sites are limited in some areas.

- Develop informal agreements with landowners to allow public access in exchange for state stocked fish.

- Work with sportsmen's groups to resolve disputes on private waters which often result because of inconsiderate sportsman's actions.

- Encourage public land managers to develop warm water fishing opportunities.

- Expand program to acquire and develop reservoirs specifically for fishing.

- Improve access and facilities on priority waters where access is limited and the fishery can withstand increased use consistent with the management objectives.

Public Interest

Public interest in warm water fishing was evident by the formation of Walleyes Unlimited in 1983. It has grown to over 3,500 members and 25 chapters primarily in central and eastern Montana. Although initially interested in improving walleye fishing in Fort Peck Reservoir their goals have broadened to include improving fisheries in many other waters.

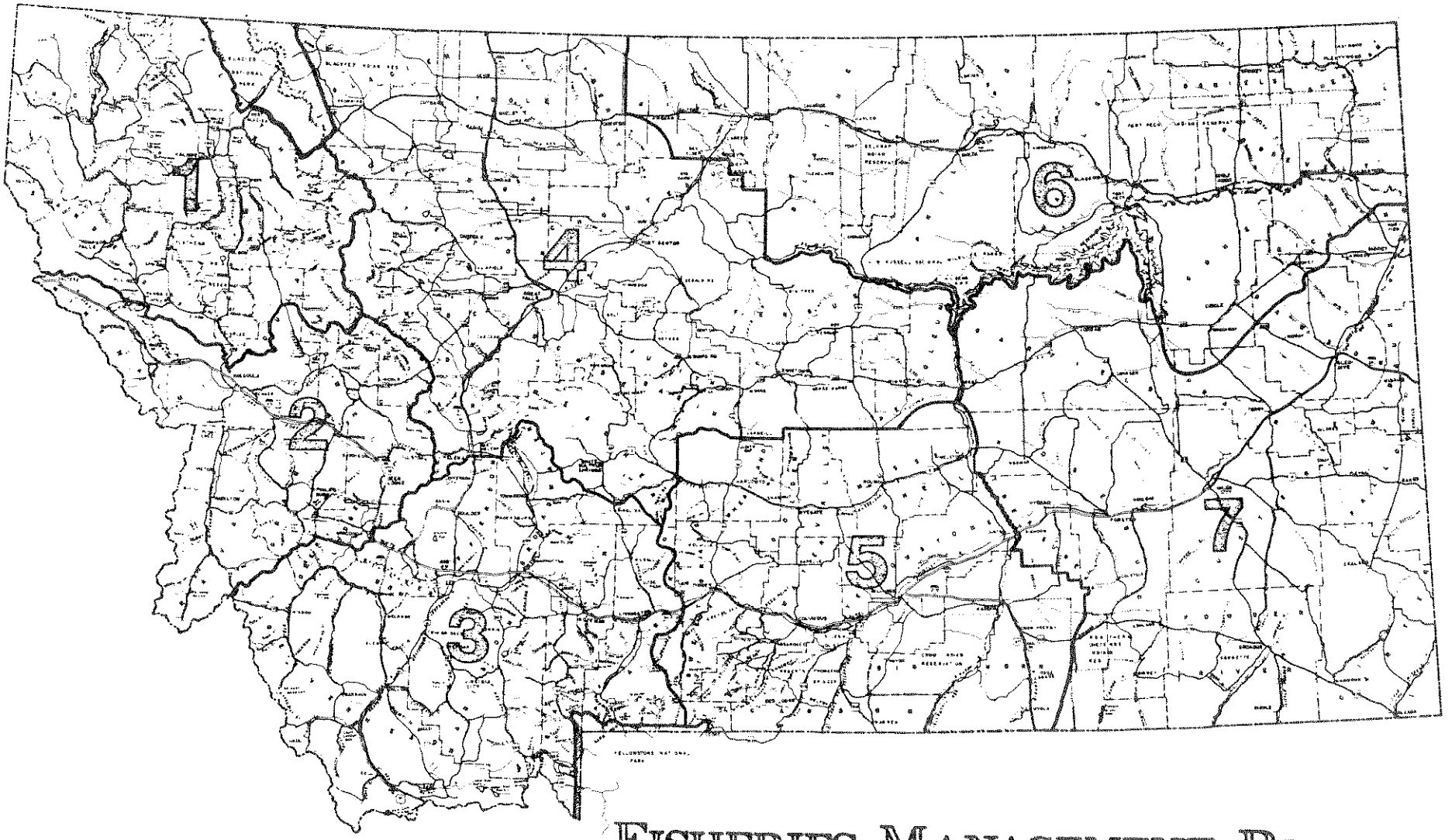
Local chapters have initiated many projects including: developing artificial reefs in Fort Peck and Fresno reservoirs and Priest Butte Lake and Lake Frances; building perch fences in Fresno Reservoir; and supporting the search for developing new reservoirs in the Billings - Great Falls areas. They actively supported funding for the Miles City hatchery expansion and other fisheries programs before the 1985 legislature.

This enthusiasm has brought increased interest by some western Montana residents to see walleye introduced west of the continental divide or extend their range upstream in the Missouri River system. The department has refused to make these introductions because of the potential impact on existing trout fisheries and because of the limited and uncertain supply of walleye eggs and fry. The department has developed guidelines for the use of the existing hatchery supply of walleye (Appendix A).

When a sufficient supply of walleye eggs and fry becomes available in the future to allow consideration of expanding the

range of walleye an EIS would be prepared before any action is taken. Efforts are presently underway to evaluate other possible actions such as use of a walleye/sauger hybrid which is supposed to be sterile.

The department hopes that development of this plan will satisfy those impatient to see the spread of walleye and other species into new waters. Following an illegal plant of northern pike west of the divide in 1953, they have now been illegally spread to 41 additional lakes and streams. This has come at the expense of trout, bass and perch fisheries once enjoyed by other fishermen. These thoughtless actions are illegal and basically irreversible.



FISHERIES MANAGEMENT REGIONS

MARCH 1979
REVISED AUGUST 1980

FIGURE 1

Table 1. Past production and expected future production for expanded Miles City Hatchery.

Species	1980	1981	1982	1983*	1984	Expansion Goal
Walleye fry	950,000	550,000	100,000	4,200,000	19,400,000	42,000,000
Walleye fingerling			17,000	200,000	358,000	2,100,000
Northern pike fry	684,000	800,000	766,000	4,000,000	5,000,000	5,000,000
Northern pike fingerling						550,000
Largemouth bass	10,200	193,000	191,000	59,000	76,200	500,000
Smallmouth bass	70,000	145,000	2,000	127,000	38,000	500,000
Crappie				30,000	127,800	300,000
Channel catfish					14,000	25,000
Forage - at hatchery					1,411,000	300,000
Forage - other location			2,500	185,000	8,500,000	10,000,000

* First year Fish, Wildlife and Parks operated the hatchery.

300/26/11

Table 2. Projected stocking needs for warm water species for Montana, by Region.

Water	Walleye	Northern Pike	Largemouth Bass	Smallmouth Bass	Crappie	Channel Catfish	Other	Forage
Region One								
Noxon Rapids Res.				100,000				
Region Three								
Dailey Lake	15,000 fing.							
Region Four								
Lake Elwell	1,000,000 fry				200,000			As needed
Lake Frances	500,000 fry							As needed
Split Rock								As needed
Eyraud Lakes			10,000		20,000			
Priest Butte			10,000		20,000		Perch as needed	
Petrolia		50,000 fry						
Morony	100,000 fry						100,000 sauger	
	25,000 fing.						if needed	If needed
Pishkun								Spottail Shiners
Bynum	500,000 fry						Perch as needed	Spottail Shiners
Lake Helena			20,000	20,000	50,000			
Farm Ponds			50,000		25,000		Perch as needed	Minnow Species
Cut Bank Cr.				10,000			20,000 sauger	Evaluate
Upper Marias R.				10,000			100,000 sauger	
Lower Marias R.				10,000				
Warm Spring Cr.				10,000				
Region Five								
Bighorn Res					2,000 adult			
Bighorn R. (sect. 01)				150,000				
Cooney Res	1,000,000 fry							
Farm ponds			150,000		10,000			

300/26/12

Table 2. (Cont.)

Water	Walleye	Northern Pike	Largemouth Bass	Smallmouth Bass	Crappie	Channel Catfish	Other	Forage
Region Six								
Fort Peck	30,000,000 fry							
Res.	1,000,000 fing.							Cisco-as needed
Reser Res.						4,000		
Beaver Cr. Res	75,000 fry			20,000				
Beaver Cr. (sect. 01)				5,000				
Milk R. (sect. 04)				15,000				
Farm ponds		10,000 fing.	50,000		10,000	10,000		As needed
Region Seven								
Tongue River Reservoir	30,000 fing.	1,000,000 fry 30,000 fing.						
Yellowstone R.				30,000				
South Sandstone	5,000 fing.	10,000 fing.						
Castle Rock L.	2,000 fing.			10,000				
Baker Lake		20,000						
Farm Ponds	1,000,000 fry 10,000 fing.	2,000,000 fry 10,000 fing.	50,000	20,000	40,000			As needed

300/26/13

REGION ONE

GOALS

To increase the recreational opportunity for warm water fishing in the region through increased management of waters suitable for bass and pike and evaluate the potential for walleye.

BACKGROUND

Initial warm water fish introductions into northwestern Montana waters probably occurred near the turn of the century. Fish were transported from the midwest by railroad cars equipped with aeration systems for hauling long distances and planted in lakes along the rail route. First to arrive were pumpkinseed sunfish and largemouth bass. By 1905, Echo Lake in Flathead County was reported to have excellent bass fishing. Smallmouth bass were stocked in 1906. Yellow perch introductions in northwest Montana were probably transplanted from waters east of the divide. Northern pike were introduced into Lone Pine Reservoir in 1953 by unidentified fishermen.

MANAGEMENT CONSIDERATIONS

A total of 97 valley-floor lakes in Region One have been identified as supporting warm water fish species. An additional 17 lakes and reservoirs support both warm and cold water fish species. Most early introductions of warm water fish were in unsuitable lake environments. Lakes in northwest Montana are generally too cold and infertile for warm water fish management. Some of these introductions also had negative impact on native or introduced trout species by competition for food and space or by predation.

Since the early 1950's, numerous small lakes supporting undesirable warm water fish species have been and will continue to be converted to the management for trout through rehabilitation efforts and stocking. Such projects have been undertaken to meet increased demands for trout fishing and they have been largely successful.

There is also a growing demand by anglers for diverse warm water fisheries, both for food and sport. Warm water fisheries also provide fishing opportunity during the warm summer months when trout fishing traditionally slows down. Some warm water species can even coexist in the same lakes as trout to provide a "two story" fishery.

Presently Region One warm water fish populations are self-sustaining and despite sometimes high levels of harvest. Demands for more trophy fishing opportunities and more species introductions where appropriate will require more concentrated management in the future. A complete listing of warm water

species found in lakes and streams in Region One is presented in Table 3.

SPECIES MANAGEMENT

Bass (Largemouth and Smallmouth)

Warm water fish management emphasis in Region One has largely been directed toward bass. The average largemouth bass matures at 4 to 5 years, averaging from 9 to 11 inches in length. The age and growth of largemouth bass for some of the better bass lakes in Region One is shown in Table 4.

Within the past decade, bass angling has been growing in popularity. The Kalispell area now supports an active Bass Club. Increasing use has created some concern about fewer trophy-size fish. Although daily bag limits of bass have been reduced in recent years from 15 to 5 fish, the bass fishery continues to decline. Rate of harvest of adult fish, coupled with slow growth appear to be important factors regulating the bass fishery.

A bass management program should include the establishment of liberalized harvest limits to decrease densities in stunted populations and restrictive regulations to increase the opportunity to catch trophy-size bass in more productive waters. Largemouth and smallmouth bass should be introduced into suitable waters and eliminated from unsuitable waters.

A few introductions of large and smallmouth bass have been made to supplement wild populations or reintroduce bass where winter kills have occurred. Largemouth bass have probably been introduced into all suitable waters in Region One. Smallmouth bass may be better suited for many waters in northwest Montana because of their tolerance of cooler water temperatures and preference for clear, gravel-bottomed lakes. The distribution of all known largemouth and smallmouth bass waters in Region One is shown in Table 5.

Northern Pike

Northern pike occur in the Clark Fork, Flathead, and Kootenai river drainages (Table 6) including 36 lakes and 6 river systems. Northern pike have spread rapidly within the past 15 years through illegal and indiscriminate introductions by fishermen. In most cases, these introductions are believed to be detrimental to existing fisheries. Some waters produce fish over 30 pounds, others have stunted populations.

A liberal bag limit of 15 fish has been in effect for several years in an attempt to control the number of pike. Anglers are also allowed to spear pike and use tipups through the ice on selected lakes. An assessment is needed to determine which lakes should be managed for northern pike and those waters where pike should be controlled or eliminated.

Yellow Perch and Pumpkinseed

Yellow perch and pumpkinseed are present in the majority of the 96 lakes and 17 reservoirs inhabited by warm water species. They tend to overpopulate and their resulting small size makes them unacceptable to most anglers. There are about a half dozen waters in the region which produce quality fishing for these species.

Past management techniques include partial poisoning of shoal areas (Middle Thompson Lake), but this control method met with little success. Possible population control measures might include fluctuating water levels during spawning on lakes with water control outlet structures, introduction of a predator, or establishment of commercial netting operations.

MANAGEMENT PLANS

Management plan guidelines for waters of primary and secondary value for warm water fish in Region One are presented in Table 7. These waters do not include warm water lakes on the Flathead Indian Reservation. A narrative description of lakes with the best potential for warm water management follows.

Echo, Abbott, and Peterson Lakes

These lakes, located approximately 15 miles southwest of Kalispell, probably receive the heaviest fishing pressure per surface acre in the region for largemouth bass and northern pike. They are interconnected during high water and should be managed collectively. The management objective is to provide for 10,000 days of fishing for largemouth bass, northern pike, and yellow perch.

The current management includes periodic fish population surveys which include gillnet surveys and night shoreline observations to assess the relative size and abundance of largemouth bass. A winter spearing season is allowed for northern pike, but the lake is closed to rubber or spring-propelled spears to minimize the illegal harvest of largemouth bass during the summer.

In recent years, there is evidence that the catch success for largemouth bass has declined. A summary of catch records from bass tournaments from 1981 to 1985 shows the catch per angler dropped from 4.0 in 1982 to 1.8 in 1985.

Limiting factors to the fishery include natural water fluctuations (seasonal and annual), increasing shoreline development reducing spawning and rearing habitat, and competition with northern pike limiting bass numbers. Research needs include determining the exploitation of adult bass through creel census interviews and tagging studies, obtaining age and growth data, and conducting a food habitat study for largemouth bass and northern pike. In addition, water temperature and

oxygen profile data should be collected to determine if a two-story trout fishery can be established to complement the warm water fishery.

In 1986, the Western Bassmasters Club plans on placing brush shelters in Echo Lake to enhance spawning and rearing habitat for largemouth bass.

Lake Mary Ronan

Lake Mary Ronan is located approximately 35 miles southwest of Kalispell. The lake supports 30,000 days of fishing annually and has three resorts catering almost entirely to fishermen. The lake is managed for kokanee, westslope cutthroat trout (stocked annually) and wild rainbow trout. These species comprise 99 percent of the harvest.

Largemouth bass, present in the lake since the early 1900's, are becoming more popular.

The management objective is to provide 1,000 angling days for largemouth bass and an adequate number of large adults.

Angler concern for the decline of large adult bass could be the result of a combination of factors. This could include excessive harvest, slow replacement of adult fish, increasing shoreline development (resulting in loss of spawning and rearing habitat), the decline in numbers of principal forage species (pumpkinseed) and late season water drawdown for irrigation purposes.

There is a need to evaluate the impact of shoreline development, to conduct a creel census and a food habit study. In 1985, three brush shelters were placed in the lake to provide additional cover for bass spawning and juvenile fish.

Middle Thompson Lake

Middle Thompson Lake is located approximately 40 miles west of Kalispell bordering U.S. Highway 2. The management emphasis is for cold water species which include naturally reproducing kokanee and hatchery plants of rainbow trout. Largemouth bass occupy the littoral areas and from cursory observations appear to be present in substantial numbers. Management objectives are to provide 2,000 angler days annually for largemouth bass, yellow perch, and pumpkinseed.

The current management for largemouth bass and yellow perch is limited to gillnet surveys conducted on a periodic basis. Yellow perch and pumpkinseed populations are very abundant and for the most part their small size makes them unacceptable to the majority of anglers. Control methods of reducing perch population in the middle 1950's by partial poisoning of shoal areas were unsuccessful.

Largemouth bass spawning habitat appears to be adequate, but abundant yellow perch populations may limit survival of fry and fingerlings. Limiting factors to bass catch success may be attributed to cold water temperatures and bass feeding activity.

Research should include a creel census to determine exploitation rates and age and growth rates. At present, the only management plan is to provide improved boat access at the State Park.

Noxon Rapids Reservoir

Noxon Rapids Reservoir is an 8,600 acre run-of-the-river hydroelectric impoundment operated by Washington Water Power Company on the lower Clark Fork River. The dam was completed in 1958 and the impoundment was chemically treated shortly thereafter to remove the existing fish population. Following treatment the reservoir was stocked with a total of 2.5 million rainbow trout fingerlings from 1959 through 1962. The initial stocking produced excellent fishing in 1959. Harvest and movement studies conducted in the mid-1960's using tagged fish showed significant outmigration from the reservoir correlated with the drawdown spilling of water. Angler catch rates of rainbow trout were extremely low after the first year in the reservoir. Other factors contributing to the poor trout fishery include low productivity due to the high water exchange rate, fluctuating water levels exposing productive shoal areas and competition from increasing numbers of rough and nongame fish species.

In recent years the management emphasis has been directed to largemouth and smallmouth bass and brown trout fisheries. Objectives are to provide 10,000 angler days annually for largemouth and smallmouth bass. Limiting factors to the warm water fishery include reservoir drawdowns, inadequate forage base, lack of suitable spawning habitat, and the unreliable hatchery source of smallmouth bass for supplemental stocking.

An initial introduction of approximately 170,000 2-inch smallmouth bass was made in 1982 and 1983. Preliminary sampling efforts using beach seining and hook and line fishing in 1984 and 1985 were successful in collecting a number of 8 to 12-inch fish. The initial introduction looked promising and sampling efforts will continue in 1986.

Largemouth bass have been in the system for many years but have never developed into a substantial fishery. They are frequently caught in the shallow bay areas with some individuals reaching 7 pounds.

The department recently negotiated a reservoir operation agreement with Washington Water Power which would limit annual drawdown to 10 feet with some exceptions. Terms of the agreement include a maximum 4 foot drawdown from May 15 to September 30.

Current management plans include monitoring the size and relative abundance of both bass species, assess spawning potential and conduct a food habits study. Contingency plans include providing habitat improvement structures for cover and spawning and continued stocking of fingerling smallmouth bass.

Smith Lake

Smith Lake is located 10 miles west of Kalispell and is regarded as having one of the best yellow perch fisheries in Region One. Presently the lake supports about 8,000 angler days per year and gets use both in the winter and summer. The catch is 99 percent yellow perch.

Although periodic die-offs occur due to low winter oxygen, the population levels remained adequate to sustain a fishable population. In fact, reductions of perch numbers can stimulate increased growth. Management objectives are to provide 10,000 angling days annually for the yellow perch fishery.

Limiting factors to the well being of the perch population could be the possible introduction of northern pike from Lone and Monroe lakes further upstream in the Ashley Creek drainage. Lake level fluctuation and periodic winter die-off can either diminish or enhance the fishery depending on their severity.

Research needs include conducting a year-round creel census to determine the present harvest rate and size of perch, monitoring late winter dissolved oxygen during severe winters with prolonged ice cover, and periodic sampling to assess age and growth.

Swan Lake

Swan Lake is located approximately 35 miles southeast of Kalispell. Within the past 5 years a trophy northern pike fishery, with fish reaching a maximum of 30 pounds, has developed as a result of an illegal introduction. From May 1983 to May 1984, anglers expended an estimated 21,734 hours of fishing effort. Northern pike were second in order of fish caught. They averaged 24 inches in length. The total estimated pike harvest was 1,238 at a catch rate of 0.21 fish per hour.

Peamouth and northern squawfish were most abundant fish in gillnets during 1983. They were followed in numbers by kokanee and once abundant yellow perch.

Several years ago, prior to northern pike introduction, largemouth bass were relatively abundant in Swan Lake, but are now only caught on rare occasions.

Limiting factors for northern pike management in the future will probably be attributable to the decline of the forage fish population, primarily yellow perch.

Research is needed to assess the possible impacts of northern pike on bull trout populations. Currently the northern pike provide a trophy fishery, but as the forage fish population becomes depleted, the size of northern pike could diminish.

RECOMMENDATIONS

1. Continue to monitor the smallmouth bass fishery in Noxon Rapids Reservoir and continue plants of yearling smallmouth bass for the next three years.

2. Increase efforts to monitor largemouth bass fishery in Echo Lake and northern pike fishery in Swan Lake and recommend regulations for the management of a trophy fisheries.

3. Convert waters inhabited by a poor quality warm water fishery to trout waters through lake rehabilitation.

4. Restock fingerling or adult bass into waters subjected to occasional winter kills from low dissolved oxygen levels.

5. Augment or reintroduce smallmouth bass populations in Lake Five, Horseshoe (Ferndale), Loon (U.S. 2 West), and Halfmoon lakes.

6. Work with the Confederated Salish and Kootenai Tribe to develop an environmental assessment of the introduction of smallmouth bass into the Flathead drainage including Lake Blaine, Little Bitterroot Lake, and Flathead Lake.

7. Develop a dependable source of largemouth and smallmouth bass through the Miles City Hatchery or other sources.

8. Delay consideration of walleye introductions into Region One waters until adequate and stable supplies of eggs become available and an EIS is prepared by the State.

9. Evaluate the potential for use of sterile hybrid crosses (walleye x sauger) in suitable waters on an experimental basis.

10. Pursue aquisition of new or additional fishing access sites on the following waters in order of priority (first = highest): Lake Blaine, Lynch Lake, Peterson Lake, Lake Five, Egan Slough, Swan Lake, Echo Lake, McCaffery Lake, Milnor Lake, and Lost Coon Lake.

Jim Vashro
Region One Fish Manager
Kalispell

Table 3. Warm water species for Region One lakes and streams.

Common Name	Scientific Name	Abbreviation	Drainage[1]
Sunfish Family			
Largemouth Bass	Micropterus salmoides	LMB	F,C,K,
Smallmouth Bass	Micropterus dolomieui	SMB	F,K
Pumpkinseed	Lepomis gibbosus	PS	F,C,K,
Bluegill	Lepomis macrochirus	BGILL	K
Crappie[2]	Pomoxis sp.	CR	C
Pike Family			
Northern Pike	Esox lucius	NP	F,C,K,
Perch Family			
Yellow Perch	Perca flavescens	YP	F,C,K
Catfish Family			
Black Bullhead	Ictalurus melas	BULL	F,C,K
Yellow Bullhead	Ictalurus natalis	BULL	F

[1]Drainage: F - Flathead, C = Clark Fork, K = Kootenai

[2]Undesignated

Table 4. Average total length in inches of largemouth bass, northwest Montana* collected in 1979.

	AGE OF FISH										
Lake	3	4	5	6	7	8	9	10	11	12	13
Ninepipe Resv.	-	11.6	13.1	13.3	-	-	-	-	-	-	-
Upper Thompson	-	-	13.5	13.7	14.0	15.0	16.0	21.0	-	-	21.8
Lake Five	8.2	-	-	-	-	13.0	-	-	-	21.0	-
Little Loon	-	-	12.0	13.0	-	-	-	-	-	-	-
Lk. Mary Ronan	9.5	10.0	-	14.4	15.3	16.4	-	-	-	-	17.0
Echo	-	-	-	10.5	14.0	-	16.0	-	-	-	-
Lake Blaine	-	10.7	-	-	-	-	16.0	-	-	-	-
Island	-	-	13.3	15.3	16.0	-	-	-	-	-	-
Average	8.9	10.8	12.8	13.3	14.8	14.8	16.0	21.0	-	21.0	21.8

*We acknowledge the help of the Northwest Montana Bass Masters Association who were invaluable in their contribution of data.

Table 5. Distribution of all known largemouth and smallmouth bass waters in Region One as of April, 1986.

CLARK FORK RIVER DRAINAGE

Cabinet Gorge Reservoir
Eli
Lower Thompson
Middle Thompson
*Noxon Reservoir
Smiley's Slough
Thompson Falls Reservoir
Upper Thompson

FLATHEAD RIVER DRAINAGE

Abbott
Blaine
Blanchard
Blue
Church Slough
Cibid
Double
Echo
Egan Slough
Fennon Slough
Five
Flathead
Halfmoon
*Horseshoe (Ferndale)
Kicking Horse Reservoir
Lake Mary Ronan
Lion
*Loon (Ferndale)
Lost Coon
McAffery
Metcalf
Mud
Ninepipes Reservoir
Pablo Reservoir
Parker
Peterson
Pothole Lakes
Rattlebone
Skyles
Smith
Spill
Swan
Swan River Backwater
Swimming
Tamarack
Upper Sunday
West (private)
Whitefish

KOOTENAI RIVER DRAINAGE

Alvord
Bull (Troy)
Carpenter
Crystal
Dickey
Horseshoe (Hwy. 2)
Island
*Little Loon (Hwy. 2)
*Loon (Hwy. 2)
Lynch
Milnor
Murphy
Rainbow (Hwy. 2)
Salvage
Slee (private)
Sophie
Troops (private)
Upper Slee (private)

*smallmouth bass

Table 6. Distribution of all known northern pike waters in Region One as of April, 1986.

CLARK FORK AND FLATHEAD DRAINAGES

*Abbott Lake
*Blanchard Lake
Cabinet Gorge Reservoir
*Church Slough
Clark Fork River (Flathead River to border)
*Dog Lake
*Echo Lake
*Egan Slough
Fennon Slough
Flathead Lake
*Flathead River--lower
(Kerr Dam to Mouth)
Flathead River--upper
(Lake to Old Steel Bridge)
Hidden Lake
*Lake Blaine
Lake Five
*Lion Lake
*Little Bitterroot River
Lone Lake (Middle Ashley Lake)
Noxon Rapids Reservoir
*Lonepine Reservoir
Loon Lake (Ferndale)
*Lost Coon Lake
Lagoni Lake
*Lower Stillwater Lake
Martin Lake--lower
Martin Lake--upper
*Monroe Lake (Lower Ashley Lk)
Mud Lake (below Lake Five)
*Peterson Lake
Smith Lake
*Stillwater River
Sunrise Lake
*Swan Lake
Swan River (Mouth to Porcupine Creek)
Tally Lake
*Upper Stillwater Lake
*Whitefish Lake
*Whitefish River

KOOTENAI DRAINAGE

Bull Lake (Troy area)
*Dickey Lake
Loon Lake (Hwy. 2)
Milner Lake
Murphy Lake

*Fishable populations

Table 7. Management plans for warm/cool fish in Region One.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Echo Lake T27N R19W S. Acres: 725 Abbott Lake T27N R19W S. Acres: 46 Peterson Lake T27N R19W S. Acres: 106	To provide 10,000 angler days annually for LMB, NP, and YP	Periodically survey fish populations. Winter NP spearing season. Close to rubber spring propelled spears.	Water fluctuating (both seasonal and annual). Possible overharvest of LMB. Shoreline development limiting suitable spawning and rearing habitat. Competition with NP limiting bass numbers.	Conduct creel census to evaluate exploitation rate of adult bass. Obtain age and growth data. Conduct food habitat study LMB and NP.	Construct brush shelters to provide spawning habitat for LMB. Introduce trout or salmon to create two-story fishery.
Lake Mary Ronan T25N R22W S. Acres: 1,505	To provide 1,000 angler days annually for LMB.	Mgmt. emphasis on Kok and trout. Annual gillnet sampling. Install brush shelters (3) to improve bass cover for spawning and juveniles.	Possible overharvest of adult bass. Decline in numbers of principle forage (PS). Increase shoreline development resulting in loss of spawning and rearing habitat. Seasonal water drawdown.	Limit shoreline development. Conduct creel census to evaluate exploitation of adult bass. Conduct food habitat study to determine use of crayfish for forage.	None at present.
Mid. Thompson T26N R27W S. Acres: 602	To provide 2,000 angler days annually for LMB, YP, and PS.	Management emphasis for cold water species (Rb, Kok). Periodic fish sampling.	Stunted YP populations may limit bass reproduction.	Conduct creel census to determine harvest rates (bass). Obtain age and growth data.	Improve boat access.
Noxon Rapids Reservoir T26N R33W S. Acres: 8,600	To provide 10,000 angler days annually for SMB and LMB	Monitor size, growth and relative abundance of LMB & SMB; assess spawning potential; conduct food habit study.	Fluctuating water levels. Inadequate forage fish base. Limited SMB habitat. Poor survival of LMB. Inability of obtaining SMB fingerlings for stocking.	Obtain minimum drawdown agreement with WWP to sustain water level fluctuation. Stock 100,000 SMB per year.	Provide habitat improvement structures for bass. Continue stocking fingerling SMB.

Table 7. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Smith Lake T27N R22W S. Acres: 440	To provide 10,000 angler days annually for YP.	Periodic gillnet surveys.	Water level fluctuation. Occasional winter kill. Possible NP infestation from upstream lakes. Excessive vegetation.	Age and growth study. Food habitat study. Creel census to determine total fishing pressure and harvest.	None at present
Swan Lake T25N R18W S. Acres: 2,680	To provide 5,000 angler days annually for NP, LMB, YP.	Periodic gillnet sampling. Recent creel census.	Forage fish base depleted. Bass on decline. Probably related to increasing NP population. Perch population declining.	Assess NP impact on bull trout population. Need NP population in check.	None at present.
Alvord Lake T32N R34W S. Acres: 56	To provide 1,000 angler days annually for LMB and YP.	Periodic gillnetting.	Access to lake. Possible overharvest of adult bass.	Age and growth food habits study--bass. Creel census study.	None at present.
Blanchard Lk T30N R22W S. Acres: 225	To provide 2,000 angler days annually for LMB, NP, PS, YP.	Periodic gillnetting. Winter NP spearing season. 3 lines permitted through ice. Closed to summer spear fishing.	Access site needs improved. Bass size diminishing. Excess aquatic vegetation. Limited bass spawning areas. Competition for bass with NP introduction.	Bass food habitats and age and growth study. Increase NP harvest.	Improve access site. Conduct census to determine catch rates of game and nongame species.
Cabinet Gorge Reservoir T27N R34W S. Acres: 3,228	To provide 3,000 angler days annually for LMB.	Monitor size, growth and relative abundance of LMB & SMB; assess spawning potential; conduct food habitat study.	Fluctuating water levels. Inadequate forage fish base. Limited SMB habitat. Poor survival of LMB. Inability of obtaining SMB fingerlings for stocking.	Obtain minimum drawdown agreement with WWP to sustain water level fluctuations.	Provide habitat improvement structures for bass. Continue stocking fingerling SMB.

Table 7. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Carpenter Lake (Tetrault Lake) T37N R27W S. Acres: 94	To provide 1,400 angler days annually for LMB and BGILL.	Management emphasis on Wct. Limit of 20 LMB. Periodic gill net sampling.	Over abundance of LMB and stunted growth.	Evaluate bass population dynamics since introduction of forage base-BGILL. Conduct age and growth of BGILL population.	None at present.
Egan Slough T28N R20W S. Acres: 266	To provide 2,000 angler days annually for LMB and NP.	Periodic population surveys.	Excessive aquatic vegetation. Stunted populations of bullheads and YP. LMB winter killed.	Improve bass spawning habitat.	Reintroduce LMB.
Flathead Lake (south end) T22N R19W S. Acres: 120,000	To provide 5,000 angler days annually for YP.	Current year study by BPA to assess perch abundance, age and growth, movements and food habitat study.	Limited access. Annual 10' drawdown detrimental to bass reproduction. Possible reproduction potential reduced by competition from YP.	Perch research in progress.	Pending until BPA contract is completed and management recommendations are proposed.
Horseshoe Lake T26N R19W S. Acres: 35 (near Ferndale)	To provide 500 angler days annually for SMB and PS.	Periodic sampling of fish population. Closed to use of spear guns. Produced current state record SMB.	Limited access. Probable overharvest of SMB. Bass and PS infected with black grub worm. Slow growth.	Assess spawning success. Need food habits and age and growth studies.	Supplemental stocking of SMB or regulations to improve recruitment.
Island Lake T29N R26W S. Acres: 225 (near Marion)	To provide 1,000 angler days annually for LMB and PS.	Periodic net sampling.	Overabundant PS population and rough fish species.	Age and growth and food habits study for LMB.	None at present.

Table 7. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Lake Blaine T29N R20 W S. Acres: 372	To provide 1,500 angler days annually for LMB, and NP.	Periodic population (net) surveys. Closed to spear fishing.	Competition (Bass) with NP. Decline in spawning habitat due to increased shoreline development. Possible overharvest of adult bass. Fluctuating water levels. Poor fishing access.	Limit shoreline development. Conduct creel census to evaluate explotation of adult bass.	Introduce SMB.
Lion Lake T30N R19W S. Acres: 35	To provide 1,000 angler days annually for LMB and NP.	Periodic surveys. 3 lines allowed thru ice. Winter NP spearing. Closed to summer spearing.	Possible overharvest of adult bass. Competition by NP on bass population. Over population of NP.	Creel census. Age and growth, food habits study on bass.	None at present.
Loon Lake T27N R28W S. Acres: 238 (Hwy. 2 W)	To provide 1,000 angler days annually for LMB and SMB.	Management emphasis on wild Rb trout. Periodic gillnetting.	Poor boat access. Poor bass recruitment. Excess populations of squawfish.	SMB age & growth and food habits study.	Supplemental stocking of SMB.
L. Thompson T26N R27W S. Acres: 240	To provide 2,000 angler days annually for LMB and YP.	Periodic fish sampling.	Stunted YP population. May limit bass reproduction.	Conduct creel census to determine harvest rate and size structure. Obtain age/growth on bass and perch.	None at present.
Lynch Lake T28N R26W S. Acres: 80	To provide 500 angler days annually for YP and LMB.	Periodic gillnet sampling.	Occasional winter kills. Excessive vegetation. Overabundant perch population. Limited bass spawning habitat.	Improve lake access. Increase perch harvest.	Supplemental stocking of adult LMB lost from previous winter kill.

Table 7. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Skyless Lake T31N R22W S. Acres: 39	To provide 500 angler days annually for LMB	Periodic population sampling.	Illegally introduced LMB and PS populations conflict with trout mgmt. Landowners resist rehab efforts.	Age, growth, and abundance study on LMB. Develop trout/bass mgmt. alternatives and develop public involvement in mgmt. decision.	None at present.
Spencer Lake T30N R22W S. Acres: 32	To provide 500 angler days annually.	Periodic population survey.	Illegally introduced LMB and PS populations conflict with trout mgmt. Landowners resist rehab efforts.	Age, growth, and abundance study on LMB. Develop trout/bass mgmt. alternatives and develop public involvement in mgmt. decision.	None at present.
Upper Thompson T27N R18W S. Acres: 232	To provide 1,500 angler days annually for LMB and YP.	Periodic fish sampling.	Stunted YP population may limit bass reproduction.	Conduct creel census to determine harvest rate and size structure. Obtain age and growth data.	None at present.
Upper Stillwater T33N R23W S. Acres: 630 Lower Stillwater T32N R23W S. Acres: 248	To provide 2,000 angler days annually for NP.	Period net sampling. 3 lines allowed thru ice, NP winter spearing.	Overabundance of NP beginning to stunt out.	Age and growth and abundance study on NP.	None at present.
Flathead River Sloughs and other regional lakes with warm water species--approx. 50.	To provide 20,000 angler days annually.	Periodic population surveys.	Cold water temperatures. Overpopulation of PS, YP, LMB, and NP.	Consider rehab where needed & feasible. Restock with suitable trout. Manipulate gamefish & forage fish densities thru regulations, habitat manipulation, and fish introductions (new species or predator) to improve catch rates and/or average size.	None at present.

REGION TWO

GOALS

To increase recreational fishing opportunity for warm water species in suitable waters by evaluating existing fisheries, use of special regulations, stocking and other management options.

BACKGROUND

Four species of warm water fish are well established in the region's waters. There are largemouth bass, yellow perch, pumpkinseed sunfish and northern pike. Largemouth bass, yellow perch and pumpkinseed sunfish have developed naturally reproducing populations in the region since the late 1920's. Brown's Lake had a walleye population in the early 1950's until the lake was chemically treated to remove rough fish in 1958. Northern pike occurrence in the region began in the mid 1970's in the Bitterroot River from an illegal plant of adult fish apparently hauled from the Flathead system. A growing number of fishermen are giving more attention to warm water fish in this area and are requesting fishing opportunities for warm water fish species.

Management of warm water species in Region Two has not been a priority in the past because of the emphasis on trout management. There is also concern about the potential conflicts and irreversible impacts of warm water fish introductions or enhancement efforts on trout populations both in western Montana waters and downstream states. This has resulted in a lack of suitable information on lakes that may support warm water fish.

The emphasis on trout management will continue to dominate fishery management in this region because of the dominance of trout habitat and scarcity of good warm water habitats in the area. However, some opportunities to improve fishing for warm water species do exist.

SPECIES MANAGEMENT

Largemouth Bass

Largemouth bass occur in the Blackfoot, Bitterroot and Clark Fork River drainages in Region Two. The best fisheries occur in the larger lakes like Seeley and Placid lakes. The Forest Service installed several sunken log cribs to enhance juvenile bass rearing in Seeley Lake in 1984. Bass also occur in several small ponds in the Seeley Lake area and in the Clearwater River. Sloughs and ponds along the Bitterroot River provide some bass fishing. Some potentially excellent largemouth bass fishing could be provided on the Lee Metcalf Refuge but it is currently not open to fishing to protect waterfowl. The Clark Fork River contains a small population with concentrations of fish in warm springs near Bearmouth, however, the bass are small. Frenchtown

Pond also has a small bass population. Seeley, Placid and Salmon lakes appear to offer the most potential for largemouth bass management. However, opportunities for improving the naturally reproducing fishery at this time appear limited. Close contact with avid bass anglers will provide some indication on the condition of these fisheries.

Yellow Perch

Yellow perch and pumpkinseed sunfish occur throughout the Bitterroot, Clark Fork and Blackfoot River drainages in many of the same waters where largemouth bass occur. Yellow perch also occur in Upsata Lake, Lake Alva, and Lake Inez in the Clearwater drainage. In nearly all these lakes, the over-abundance of yellow perch apparently inhibited the development of trout populations. For example, Upsata Lake had an abundant plankton and crustacean population that produced an excellent fishery for rainbow trout which were stocked through the late 60's and 70's. Yellow perch were absent during this period until they were reintroduced illegally. The perch population began to increase and after a couple of "good" years of yellow perch fishing (perch reaching 16 inches) a perch population explosion the lake once again produced a poor perch fishery (4-6 inch perch) and rainbow trout introductions have failed.

The management implications of the yellow perch in Placid, Seeley, Alva, Inez and Upsata are that we can produce large perch that are desirable to anglers but we must establish controls on perch numbers.

The feasibility of chemical lake rehabilitation appears unlikely because of the large size of the lakes. Identifying a suitable predator fish holds significant promise.

Northern Pike

The northern pike was first confirmed in this area by an angler catching them in 1983 in the Hayden Lake area near Lolo. An unconfirmed report was received in the late 1970's of an angler releasing some adult fish near Florence Bridge that were caught from the Flathead River. Northern pike are presently commonly observed in sloughs and backwater areas of the lower Bitterroot River primarily below Stevensville. An abundant northern squawfish population which also uses backwater areas should provide a good forage base for the pike.

A concern is whether pike will damage the trout fishery of the lower Bitterroot River. In time we will be able to answer that question. Expansion of the northern pike population upstream in the Bitterroot River is doubtful because of the good trout habitat in the upper river. Some additional expansion downstream to the sloughs of the Clark Fork River is probable.

Northern pike are popular with some groups of fishermen. Management alternatives for northern pike populations should consider their unique presence in this area. Also managing for large northerns may help limit population size because of their predatory nature.

Other Warm Water Species to Consider

Full utilization of the productive capabilities of some lakes in Region Two may best be realized with the use of warm water fish species. All the lower elevation Clearwater drainage lakes have abundant crayfish populations, a preferred food source for predators such as smallmouth bass. The large perch populations and suckers in the Clearwater drainage may also support an expanded warm water fishery. However, expanding the range of predatious warm water fish must be done cautiously to prevent irreversible damage to existing fisheries in the area as a result of fish migrations or illegal transplants. Such actions must also consider the ability to supply fish if stocking will be required, the potential for developing fish of suitable size and other factors.

RECOMMENDATIONS

1. Complete necessary evaluation and testing for development of sterile warm water predator fish including walleye, pike, and bass.

2. Develop warm water species management plans for our warm water fisheries.

3. Begin developing an EIS on warm water fish introductions in western Montana.

4. Evaluate the potential to provide a limited fishery on the Lee Metcalf Refuge which will be consistant with the waterfowl objectives.

Dennis Workman
Region Two Fish Manager
Missoula

REGION THREE

GOALS

To maintain adequate fish population levels in Canyon Ferry Reservoir and Dailey Lake to meet recreational demands.

BACKGROUND

Several species of warm water species have been stocked into Region Three waters. Dailey Lake, a 200 acre lake in the Yellowstone Valley, has received most of the warm water management efforts in the region. Largemouth bass, yellow perch, sunfish, crappie and more recently walleye have been stocked in the lake. Yellow perch provide some angling opportunity but tend to overpopulate and become stunted. The introduction of walleyes to help control perch abundance has had limited success (Table 8).

Canyon Ferry Reservoir has received perch and channel catfish introductions. Perch are highly sought after in the winter ice fishery. Life history information on yellow perch in the reservoir is sparse. Investigations on spawning locations, recruitment and food habits should be conducted. Channel catfish have not shown up in any great numbers although an 11 pound fish was taken in the Missouri River below Toston Dam in the fall of 1984. Current management emphasis on Canyon Ferry is rainbow trout, but in the event that rainbow fail to meet the objectives of the reservoir, walleye could be considered as an alternative.

Four small ponds along the Jefferson, Missouri and Madison rivers provide a limited fishery for trophy largemouth bass. These ponds are important for local interest only and are not well publicized. Largemouth bass fingerlings may be used to supplement natural reproduction as needed. East Three Forks Pond also provides some warm water opportunity for largemouth bass, perch and bluegills. The pond is popular with young fishermen of the area and it is expected the pond will take care of itself.

RECOMMENDATIONS

1. Plant 15,000 walleye fingerlings in Dailey Lake annually.

2. Monitor Dailey Lake populations and partially rehabilitate when perch are no longer at a desirable size.

3. Canyon Ferry Reservoir study be continued with additional efforts on yellow perch life history.

4. Projected annual stocking needs are shown in Table 8.

Jerry Wells
Region Three Fish Manager
Bozeman

Table 8. Management plans for warm/cool fish in Region Three.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Canyon Ferry Reservoir	To maintain current fishery for 8 inch + yellow perch.	Monitor perch populations twice a year.	None	Investigation of life history of perch.	Evaluate rainbow trout fishery.
Dailey Lake T6S, R7E, S36 22-7644-03	To provide opportunity to catch 7 inch + perch and 18 inch walleye.	Stock walleye fingerlings partial rehab of perch population.	Perch overpopulate and stunt.	15,000 walleye fingerlings annually fish tox for partial rehab every 4 years.	None
E. Three Forks Pond	To provide opportunity to catch largemouth bass, perch and bluegills.	None	None	None	None
Small ponds near Madison, Missouri, Jefferson River	To provide trophy largemouth bass fishery.	Stock largemouth as needed.	None	1,000 largemouth bass fingerlings as needed; investigate forage base.	None

300/26/38

REGION FOUR

GOALS

To provide 60,175 man days of fishing opportunity annually for walleye, northern pike, largemouth bass, crappie and perch in 19 reservoirs and 25 ponds (Table 9). To increase awareness of the opportunities for warm water fisheries in many miles of streams in Region Four.

BACKGROUND

Introductions of warm water species in Region Four waters date back to before the turn of the century. Early introductions of warm water species were made without regard for habitat requirements. Most introductions failed and a few flourished. Recent efforts in warm water fish management have been directed toward ponds and reservoirs. One major deterrent to a successful management program has been the lack of a reliable source of fish for stocking. Most pond management has relied on the transfer of the desired species from an established population to the new habitat. While this has been effective on a local basis, the unreliable nature of fish availability prevents the development of a sound management program.

Another problem is water availability which is presently affecting pond and some major reservoir management programs. Many of the ponds and reservoirs are subject to periodic drought conditions. Most reservoirs are affected by drawdown for irrigation purposes. Many ponds are located on lands administered by the BLM. Increased watershed planning and development by BLM has caused water availability problems in several ponds. Newly constructed ponds in the upper watersheds catch much of the available water. Construction of fewer, larger reservoirs could provide fisheries benefits.

Lake Frances, a 5,500 acre reservoir in Pondera County received the first major effort toward warm water management in the region. From 1969 to 1977, about 3.3 million walleye fry were planted and by 1979, a good walleye population had become established in the lake. Increased fishing use resulted in a reduction of the limit to five fish in 1983. About 4,000,000 walleye fry were introduced into Lake Elwell (Tiber Reservoir) from 1971 to 1974. These plants also survived and are now providing a good walleye fishery. Both reservoirs also support a northern pike fishery (origination unrecorded) and the two predators have impacted the forage (yellow perch and white sucker). Annual drawdowns typical of prairie reservoirs plague both reservoirs. Efforts to increase the forage potential have included plants of black and white crappie in Lake Elwell and plants of spottail shiners in both reservoirs. The water level fluctuations and forage problems found in Lake Frances and Lake Elwell are common in Montana's warm water reservoirs and warrant management considerations (Table 9).

War Horse Reservoir (1,000 acres) and Petrolia Reservoir (550 acres) in Petroleum County represent another typical warm/cool water management problem. Water use patterns, availability of water and water quality make maintaining fish populations difficult. Both reservoirs are heavily infested with rough fish. Introductions of northern pike fry have had only limited success. The use of rearing ponds to increase the size of planted northerns should enhance their survival.

Bynum Reservoir has been managed with various salmonids for several years with limited success. The best utilization of this reservoir for sport fishing may be to convert it to a walleye fishery. The reservoir is relatively shallow, somewhat turbid and suffers from drastic water level fluctuations. It appears to have enough rubble and gravel shoreline for successful walleye reproduction. Since interest in walleye by sportsmen in the area is relatively high, plans are to convert this reservoir to walleye in 1986. If available, forage species (yellow perch and spottail shiners) will be introduced in 1986.

Pishkun Reservoir has been intensively managed for northern pike since 1969. Northerns were started by an unauthorized plant in the late 1950's or early 60's. Rainbow trout stocking was terminated in 1964 because surveys revealed high predation by northern pike. Kokanee were introduced in 1970 with the expectation that they could better co-exist with northern pike. A fair kokanee fishery developed and sportsmens interest in this fish has increased to the present time.

A considerable number of anglers enjoy the northern pike fishery offered at Pishkun Reservoir. Increased harvest of northern pike in 1970 prompted a reduction in creel limits in 1971. Northern pike populations peaked in Pishkun Reservoir in the early 1970's and now appear to have stablized at much lower levels. The lower population level is thought to be related to food supply. Pishkun Reservoir water is low in mineral content, so production of forage species is very limited. The main forage species are yellow perch and white suckers. Spottail shiners are being considered for introduction to improve the forage base.

Angler demand for trout fishing at Pishkun Reservoir prompted stocking of about 25,000 six-inch rainbow trout in 1977. This number has been stocked every year through 1984. Surveys and creel checks reveal that rainbow contribute very little to the fishery apparently due to predation by northern pike.

In 1951, a total of 500,000 walleye fry were stocked in Lake Helena, a backwater impoundment on Big Prickly Pear Creek created by Hauser Dam on the Missouri River. Survivors and progeny from this plant spread to Hauser and Holter reservoirs. The number of walleye has remained stable but the relatively low numbers has not produced a significant fishery. Netting surveys also indicate that there are some very large walleye in the population.

Since both Holter and Hauser reservoirs are intensively managed for salmonids (both rank in the top 25 waters statewide for fishing pressure), little attention has been given to walleye biology. Recruitment undoubtedly limits the walleye populations. It appears there are enough adult walleye present to populate these reservoirs. However, lack of suitable spawning area, extensive flushing of fry from the reservoir system, or predation may limit the number of walleye fry. Present investigations on both Hauser and Holter reservoirs with the assistance of the local Walleye Unlimited Chapter should provide information on the biology of walleye and yellow perch populations needed to develop future management plans.

Lake Helena, previously mentioned as a backwater portion of Hauser Reservoir, is a unique body of water in that it covers nearly 2,000 acres and is less than 15 feet deep. Historic records from 1926 to 1962 reveal thousands of sunfish, bullheads, largemouth bass, bluegill and perch were stocked in Lake Helena. Perch were also stocked in Hauser Reservoir, which is the only surviving species from these introductions. Poor water quality in Lake Helena at that time may have lead to the failure of these introductions. Recent creel studies reveal a few smallmouth bass being taken from Lake Helena. These fish are undoubtedly progeny from introductions made in the Helena Valley Regulating Reservoir in 1967.

Lake Helena may have potential for development of a warm water fishery if dissolved oxygen levels permit over winter survival of fish. Some dissolved oxygen monitoring is planned in 1987 and if oxygen levels look promising, it is recommended that either largemouth bass, smallmouth bass or crappie be stocked in the lake. The biology of these fish should not interfere with salmonid management if they migrate into Hauser or Holter lakes. Habitat structures may have to be considered in Lake Helena to enhance development of a warm water fishery.

Other warm water efforts have been directed at small farm and ranch ponds. These ponds range between 1 and 20 acres and support largemouth bass, crappie and perch. Management efforts on these ponds are generally less intensive than the major waters.

There are several reaches of rivers and streams that support, or are capable of supporting, warm water fisheries. These are Cut Bank Creek downstream of Cut Bank, Marias River upstream and downstream of Tiber Dam, Teton River downstream of Choteau, Sun River downstream of Muddy Creek, Missouri River downstream of Morony Dam, Warm Springs Creek near Lewistown, and Judith River downstream from the mouth of Warm Springs Creek. A summary of management plans for these waters is presented in Table 10.

Lower Cut Bank Creek and the Marias River above Tiber Reservoir appear to have potential for smallmouth bass and/or sauger. These streams are seasonally too turbid and warm for development

of a salmonid fishery. Surveys of forage fish and collections of water temperature data were initiated in 1985 to define habitat parameters present in these waters.

The lower Marias River suffers from low winter and spring flow as a result of water manipulation from Tiber Dam. This reach of the Marias is seasonally used as a spawning tributary for several species of fish inhabiting the Missouri River including shovelnose sturgeon, channel catfish, sauger, walleye, northern pike, various suckers and goldeye. Considerable angler use is expended on the lower Marias River during these spawning migrations. Increases in early spring flow from Tiber Dam could increase sauger, walleye, and shovelnose sturgeon spawning migrations, thereby enhancing fishing opportunity for these species in the lower river. Negotiations with the Bureau of Reclamation have been initiated to encourage flow releases to benefit the fish and wildlife resource in the lower Marias River.

The Teton River downstream of Choteau seasonally supports various species of warm water fish. The lower 15 to 20 miles of the river are commonly dewatered by irrigation withdrawals in late summer. Spawning fish found there during the spring/summer period are primarily migrants from the Missouri and Marias rivers. Poor water availability precludes any plans for enhancement of the fishery in the Teton River.

A small northern pike population exists in the Sun River in the vicinity of Vaughn near the confluence of Muddy Creek. These fish undoubtedly gained access to the Sun River from Split Rock Lake and irrigation canals draining from Pishkun Reservoir. A few anglers have reported taking northerns up to 20 pounds. Other than this, little is known about the status of this northern population. The lower 11 miles of the Sun River is heavily polluted by sediment from Muddy Creek. Curbing of sediment pollution from Muddy Creek could improve habitat conditions in the lower Sun River for management of species such as smallmouth bass.

The Missouri River from Cascade to Great Falls currently supports a population of walleye of unknown status. A few fishermen utilize this fishery and frequently catch 2 to 6 pound walleye. The department is currently negotiating for several fishing access sites, which will greatly enhance use of the area. As interest and demand on the fishery resource increases, an attempt to determine walleye population status and habitat parameter will be conducted.

An excellent fishery for sauger and freshwater drum exists in the Missouri River downstream from Morony Dam. Other sport species utilizing this reach of river include walleye, channel catfish, shovelnose sturgeon and northern pike. These species seasonally move upstream from the middle Missouri River areas to spawn and feed. Large numbers of sauger and drum move into the river section between Carter Ferry and Morony Dam to spawn in the

spring and they remain in the area throughout the summer. These fish are seldom utilized by fishermen because of limited access. Recent activity has been started to evaluate access possibilities to the uppermost reach of the Missouri River below Morony Dam.

The lower Judith River, a tributary to the Middle Missouri River, is used seasonally by spawning sauger, channel catfish and possibly shovelnose sturgeon. The lower Judith is in a remote area and little use is made of the fishery. Since this river probably contributes important spawning habitat for several species of fish inhabiting the Missouri River system, we should identify and maintain minimum flow requirements to protect the fishery resource.

Warm Spring Creek, a unique tributary to the Judith River, supports a population of smallmouth bass, sauger and several species of minnows and suckers. The primary flow of Warm Springs Creek arises from large springs about 20 miles above its mouth. The springs discharge a flow of about 150 cfs at a temperature of 68°F. Smallmouth bass were introduced into this stream in 1973, 1976 and 1977. They are established in the stream but have not become abundant. Anglers occasionally report catches of smallmouth up to three pounds. Electrofishing surveys reveal some natural reproduction occurs. It is believed water temperatures are too high for good smallmouth reproduction. Continued management of Warm Spring Creek with smallmouth bass may depend on periodic stocking with two-inch fish. Some years, sauger move into lower Warm Spring Creek from the Judith River for spawning and feeding. Minimum instream flow reservations need to be made to protect the unique fishery and recreational opportunities provided by Warm Spring Creek.

Warm water fish populations are presently found in a number of area streams and rivers but utilization of this resource is limited because of lack of public awareness and restricted access. Education of the public, procurement and development of public access, and introductions of new species where suitable habitat exists are all viable alternatives towards enhancement of warm water fishing within the region's streams and rivers. The potential for enhancing warm water fishing opportunity is particularly promising for several reaches of the Missouri River.

Other important factors limiting warm water fisheries within the region are availability of water and associated water quality problems. Future management emphasis should be directed towards determination, procurement, and reservation of adequate stream flows and improvements of water quality.

RECOMMENDATIONS

1. Continue to investigate predator/prey relationships in Lake Frances and Lake Elwell and introduce additional forage species as needed.

2. Stock walleyes and/or northern pike in Petrolia and War Horse reservoirs to establish sport fisheries.

3. Develop warm/cool water fishery in Morony and Bynum reservoirs by stocking walleye and forage species.

4. Evaluate fish habitat in Lake Helena and stock bass and crappie to establish sport fishery.

5. Coordinate water level management with managing units in order to provide better reservoir levels in Lake Elwell, Eyraud Lakes, and Bynum Reservoir.

6. Enhance forage fish populations in Pishkun Reservoir by introducing spottail shiners, continue to monitor northern pike/yellow perch interaction.

7. Acquire fishing access sites on the Missouri River downstream between Cascade and Great Falls and on the river below Morony Dam.

8. Work with local sportsmens groups to install artificial habitat structures in reservoirs as needed.

9. Initiate fisheries studies on the prairie streams of the region to identify existing habitat conditions, to protect instream flow needs and to improve habitat conditions.

10. Projected stocking for regional waters are shown in Table 9.

Al Wipperman
Region Four Fish Manager
Great Falls

Table 9. Management plans for warm water fish in reservoirs and ponds in Region Four.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Lake Elwell T20N, R5E,	To provide 15,000 angler days per year for 5 to 8 pound northern pike and 2-4 pound walleye.	Evaluation of food habits, age and growth and relative abundance of northern pike and walleye. Evaluate spottail shiner and crappie introductions.	Fluctuating water levels prevent adequate reproduction, poor forage base.	Obtain satisfactory water levels through coordination with Bur. Rec. supplement natural reproduction with plants. Evaluation of lake trout.	Introduce other forage species if spottails and crappie fail to provide forage.
Lake Frances T29N, R5W	To provide 10,000 angler days annually with 4 to 8 pound northern pike and 2-4 pound walleye.	Evaluation of food habits, age and growth and relative abundance of sport fish populations and evaluate forage fish populations.	Irrigation demands cause fluctuating water levels. Forage fish inadequate.	Stock additional game fish to supplement natural reproduction; Evaluate artificial structures installed by Walleyes Unlimited.	Introduce other forage species if spottails fail.
Split Rock Lake T22N, R7W, S17	To provide 2,000 angler days annually for northern pike and yellow perch.	Periodically survey game fish populations and work with landowner to insure access.	Marginal water depth, prone to winterkill. Access no guaranteed.	Evaluate forage base and introduce forage fish as needed. Raise water level 3 to 4 feet.	Supplement natural reproduction of game fish as needed.
Eyraud Lakes (3) T26N, R3W.	To provide 2,000 angler days annually for northern pike and yellow perch.	Periodically sample fish populations.	Fluctuating water levels; Poor access in wet weather; low forage fish populations.	Improve access road introduce forage fish, largemouth bass and crappie; work with irrigation district to improve water levels.	Supplement natural reproduction of game fish; introduce other species to provide diversity of fishery. Conduct creel census to determine catch rates.

300/26/48

Table 9. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Priest Butte Lake T23N, R4W, S15.	To provide 3,000 angler days annually for various warm water species.	Evaluation of past introduction of largemouth bass, white and black crappie and perch.	Water quality marginal (alkalinity D.O.) waterfowl breeding area may delay fishing season.	Install artificial reefs and evaluate. Evaluate reproductive success. Evaluate forage base.	Supplement natural reproduction through stocking programs. Introduce forage species if needed.
Petrolia Reservoir T14N, R27E, S36.	To provide 3,000 angler days annually for walleye and northern pike.	Evaluate past introductions of northerns, walleye, perch, black crappie and burbot.	Severe water level fluctuations, poor northern pike spawning habitat.	Stock 50,000 northern pike fingerlings. Introduction of forage species.	Supplemental stocking of game fish and evaluation of forage base.
War Horse Reservoir T16N, R25E, S27	To provide 3,000 angler days for northern pike.	Evaluation of age and growth and relative abundance of game fish populations.	Dam need repair; prone to winterkill; over-abundance of rough fish; poor northern pike spawning habitat.	Explore commercial fishery for rough fish control; evaluate forage base.	Develop rearing ponds to increase survival of northern pike; stock additional forage species; supplement stocking of game fish.
Morony Reservoir T21N, R6E, S14.	To provide 1,000 angler days annually for walleye.	Introduction of walleye to provide base for sport fishery.	Flow through Res. results in heavy loss of fish during runoff; spawning area lacking; poor access.	Stock 100,000 walleye fry; plus 2-inch walleye from rearing ponds; evaluate forage base; develop access if fishery develops.	Stock larger walleye if plant fails; introduce sauger or smallmouth bass if walleye are unsuccessful.

300/26/49

Table 9. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Pishkun Reservoir T22N, R7W.	To provide 8,000 angler days annually for 4-6 pound northern pike and kokanee.	Annual plants of kokanee, monitor northern pike population levels and harvest; maintain northern pike spawning habitat. Introduce spottail shiner.	Low productivity; water level fluctuations questionable forage fish levels.	Increase forage base with additional species; stock 200,000 kokanee annually.	If forage is enhanced and kokanee fail, introduce bass or desirable game species.
Bynum Reservoir T25N, R7W, S26.	Provide 5,000 angler days for 2 pound walleye.	Annual plant of 500,000 walleye for four years beginning in 1986. Introduce yellow perch and spottail shiner.	Low productivity; severe water level fluctuations, large population of rough fish.	Evaluate walleye introductions. Introduce forage fish; install artificial structures and evaluate.	Supplement natural reproduction, evaluate other species; i.e. largemouth bass, white crappie, if walleye fail.
Ranch and Farm Ponds	To provide a diversity of warm water fishing opportunities.	Stock largemouth bass, crappie, yellow perch as needed.	Insufficient water levels and periodic winterkills.	Annual plants of bass, crappie and perch.	Evaluation of past management practices to determine best species combinations.

300/26/50

Table 9. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Lake Helena	To provide 4,000 angler days annually for bass and/or crappie	Monitoring of commercial fishery. Winter ice fishery for trout near causeway.	Shallow water may have oxygen depletion in both summer and winter.	- Water quality analysis - Introduce bass, crappie - Evaluate physical habitat.	- Introduction of larger fish, if fry or small fingerling plants fail.
Hauser Reservoir T11N, R2W	Primary objective is to provide 60,000 anglers days for salmonids. To maintain existing populations of yellow perch and walleye.	Monitoring population levels by surveys.	Poor natural recruitment of walleye Rapid flow through impoundment. Potential predation on salmonids Fishing access used to capacity.	Evaluate walleye biology. Conduct creel census to determine harvest. Increase fisherman access.	Conduct angler survey for future management direction Enhance walleye populations through stocking fingerlings.
Holter Reservoir T14N, R3W	Primary objective is to provide 100,000 angler days for salmonids. To maintain existing populations of yellow perch and walleye.	Monitoring population levels by surveys.	Poor natural recruitment of walleye. Rapid flow through impoundment. Potential predation on salmonids. Fishing access used to capacity.	Evaluate walleye biology. Conduct creel census to determine harvest. Increase fisherman access.	Restrict harvest on large walleye. Conduct angler survey for future management direction.

Table 10. Management plans for warm water fish in streams in Region Four.

Water	Management Objective (Target Species)	Species Present	Problems	Needs
Cut Bank Creek	To provide recreational opportunity with smallmouth bass/sauger.	Catostimids and cyprinids	Turbidity	Determine habitat conditions including temperatures. Evaluation of existing forage base.
Upper Marias River	To provide additional recreational opportunity with smallmouth bass/sauger.	Catostimids and cyprinids	Turbidity	Determine habitat conditions include temperatures. Evaluation of existing forage base.
Lower Marias River	To improve sauger spawning conditions.	Spawning shovelnose sturgeon, catfish, sauger.	Low winter and spring flows.	Increase early spring flow releases from Tiber Dam through negotiations with Bureau of Reclamation.
Teton River	To maintain current levels of fish use.	Spawning sauger and channel catfish	Late summer dewatering	Evaluate use of the Teton River by migrants from Missouri River and encourage angler use during good flow years.
Sun River	Improve water quality conditions and increase recreational potential with smallmouth bass.	Northern Pike	Sediment	Control sediment released from Muddy Creek through interagency cooperation.
Missouri River	To inform public of fishery potential for walleye, sauger and drum.	Walleye, sauger, fresh-water drum.	Lack of information on important game fish.	Initiate a study to determine status of walleye and sauger populations and to inform the public of fishery potential through local media. Improve fishing access.

300/26/51

Table 10. (Cont.)

Water	Management Objective (Target Species)	Species Present	Problems	Needs
Judith River	To identify fish population use and document instream flow needs for sauger, channel catfish and shovelnose sturgeon.	Sauger, channel catfish and shovelnose sturgeon.	Lack of information.	Initiate a study to determine fish population status, periodicity of use and to document instream flow needs to protect spawning fish populations.
Warm Springs Creek	To increase recreational opportunity for smallmouth bass.	Smallmouth bass, cyprinids and catostimids.	Lack of smallmouth bass reproduction.	Determine reproductive success for smallmouth bass in the creek and supplement natural reproduction as needed.

300/26/52

REGION FIVE

GOALS

To provide 50,000 man-days of recreational fishing opportunity for warm water species in two reservoirs, 50-100 small ponds and three prairie streams in Region Five. (Tables 11 and 12).

BACKGROUND

Region Five, like Region Four, sits in the transition zone between cold water and warm water fish management. While the philosophy has tended toward salmonids, warm water species have been introduced in the region. Early plants were hit-and-miss, when fish were thrown into any available waters. One of the earliest recorded plants of warm water species occurred in 1931 when largemouth bass, crappie and sunfish were stocked in Lake Elmo. This combination was popular during the 1930's through the 1950's.

Recent management trends have centered on establishing a walleye fishery in Bighorn Lake. Walleyes were introduced from 1966 through 1968 and have produced a good fishery. Wyoming continues to stock walleyes on a two year on/two year off schedule. As with other warm water reservoirs, forage was considered to be a potential concern. However, evaluation of fish population information suggests forage is not a problem. Water level control during the spawning season is the primary management concern.

Billings area anglers are placing more and more emphasis on developing warm water fisheries in the area. Interest in largemouth bass has grown considerably, but the availability of ponds is limited. A cooperative effort with BLM, SCS and others has been initiated to identify ponds in the area to increase fishing opportunities. Walleye were introduced into Cooney Reservoir, a 900 acre irrigation reservoir about 45 miles from Billings in 1984. Past management objectives for Cooney centered on rainbow trout, but an abundant rough fish population prevented the rainbow fishery from reaching its potential. Walleyes were stocked to offer a "two-story" fishery and with hopes they would prey on suckers. Early indications are that first year survival and growth was good but poor water conditions in 1985 suppressed growth the second year.

Three warm water streams offer management opportunities as well. Smallmouth bass were introduced in the Musselshell River and have developed a self-sustaining population. Severe dewatering problems in the Musselshell limit the potential development of the fishery. A smallmouth introduction is planned for the lower Bighorn River. The lower Bighorn is lightly fished in spite of good access. Fish population of sauger, burbot and channel catfish are present in the Yellowstone River and receive seasonal

attention. Access is the primary problem in the Yellowstone River from above Billings to Custer.

RECOMMENDATIONS

1. Increase efforts on Bighorn Lake to evaluate walleye populations and identify limiting factors (water level manipulation, forage base).

2. Stock 2,000 adult white crappie annually into Bighorn Lake to supplement forage and provide an additional game fish.

3. Continue to stock 1,000,000 walleye annually in Cooney Reservoir through 1987 to establish walleye fishery.

4. Complete pond survey in region and stock suitable warm water fish to improve diversity of the regions' fishery potential.

5. Complete fish population surveys of Yellowstone River and lower Bighorn River and introduce smallmouth bass plant into the Bighorn.

6. Continue to monitor smallmouth bass fishery in Musselshell River.

7. Maximize the urban fishery potential by utilizing existing habitats to their fullest potential.

8. Provide at least boat launching access sites on the Yellowstone River in or near Billings and about midway between Billings and Custer.

9. Projected fish needs are shown in Table 11.

10. Assess the possibility of introducing warm water predator species in Lebo Lake.

11. Evaluate the potential and suitability of Glaston Lake for experimental introductions of saugeye, a sterile hybrid cross between walleye and sauger.

Steve McMullin
Region Five Fish Manager
Billings

Table 11. Warm/cool water fisheries management plans for major lakes and reservoirs in Region Five.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Bighorn Lake	To provide 10,000 man-days of angler use in Montana portion.	Focus on good walleye fishery; attempt to diversify fishery.	Lack of information on impacts of water level fluctuations on forage and walleye reproduction; lack of fishery diversity; inaccessibility of fishery.	Stock 2,000 adult white crappie annually; evaluate forage and walleye reproduction; monitor catch rates on walleyes; increase public awareness of existing fishery.	Evaluate alternative species for increased diversity, improve spring water level management.
Cooney Reservoir	To establish and maintain a two-story fishery to support 20-30,000 man-days of fishing pressure annually.	Stock walleye fry for five years to establish population.	Heavy fishing pressure poor trout growth rates abundant rough fish population.	Stock 1,000,000 walleye fry in 1986-1988; stock 100,000 Arlee Rb annually; evaluate walleye survival and reproductive potential.	Supplement natural reproduction with walleye plants when needed; monitor forage fish populations and supplement if needed.
Small Ponds and Reservoirs	To increase angling opportunity by identifying and stocking ponds suitable for warm/cool water fish, particularly largemouth bass.	An inventory of all ponds in Region has identified 35 ponds with potential.	A large public demand for bass fishing exists in Billings area, but opportunity is severely lacking.	Locate and stock 50-100 ponds in region with emphasis on Billings area; work with local sportsmens groups to identify possible ponds.	Complete pond survey; develop list of potential reservoir construction sites; develop urban fisheries to maximum potential.

300/26/56

Table 12. Warm/cool water fish management recommendations for streams in Region Five.

Water	Management Objective (Target Species)	Species Present	Problems	Needs
Yellowstone River	To increase angling opportunities for sauger, walleye.	Sauger, burbot, channel catfish	Knowledge of fish populations is poor; access to river is limited.	Complete fish population surveys of river; increase public awareness of angling opportunities; improve access to river in Billings to Custer area.
Bighorn River	To increase angling opportunity for sauger, smallmouth bass.	Sauger, channel catfish	Knowledge of fish population is lacking.	Increase efforts to obtain fish population information collect information on physical habitat of lower Bighorn; evaluate possible smallmouth bass introduction.
Musselshell River	To increase angling opportunity for smallmouth bass.	Smallmouth bass	Knowledge of fish populations is limited; severe dewatering may limit fish populations.	Monitor smallmouth bass populations of river; explore need for additional stocking and the possibility for other species.

300/26/57

REGION SIX

GOAL

To provide 125,000 man days of angling opportunity on Fort Peck Reservoir, Nelson Reservoir and Fresno Reservoir for warm/cool water species, with particular emphasis on walleye and to manage 40 smaller reservoirs with largemouth bass, smallmouth bass, yellow perch, and crappie (Table 13).

BACKGROUND

Warm water angling opportunities in Region Six offer a wide diversity of choices, from the very large Fort Peck Reservoir to five acre farm ponds. Fisheries management in this area has concentrated on warm/cool water species since the first plants in the early 1930's. Efforts have been directed primarily at establishing northern pike, walleye and bass fisheries. Stocking records show over 44 million walleye and 14 million northern pike have been introduced in regional waters since the mid-1950's.

Efforts to improve the fishery in Fort Peck Reservoir over the years have included stocking of walleye, northern pike, lake trout, rainbow trout, brown trout, kokanee salmon, coho salmon, chinook salmon, largemouth bass, smallmouth bass, bluegill, black crappie, black bullhead, and yellow perch. The large size of the reservoir (245,000 acres) demanded new sampling techniques which were developed during the 1960's. Local rearing ponds were utilized during the late 1960's and early 1970's to improve survival of planted fish. Commercial harvest of non-game fish has been encouraged and closely monitored. Commercial gear was evaluated to develop special regulations and minimize conflicts between sport and commercial fishing. Many areas have been closed or restricted for commercial fishing, and a policy has been adopted to issue no new commercial fishing permits.

Recent efforts have dealt with establishing a good walleye fishery. Investigations of the forage base in Fort Peck suggested forage was in short supply and may be the factor limiting good walleye production. Also spawning in Fort Peck is limited due to water level fluctuations and lack of suitable spawning areas. Rainbow smelt initially produced favorable results in North and South Dakota reservoirs and sportsmen's groups asked the department to plant smelt in Fort Peck. A literature search identified the two best possible species for use in Fort Peck were spottail shiners and cisco. Spottail shiners were imported from Minnesota and introduced in 1982 and ciscos brought in from Minnesota and Saskatchewan were planted in 1984. Early indications are that both species have survived and have dispersed throughout the reservoir. Cisco plants continued through 1986.

Water level management in Fort Peck does not consider the need to recognize fisheries and recreation as an integral part of the

operation. Fort Peck Reservoir is a multipurpose project and is currently managed to provide water for hydroelectric power, irrigation, downstream navigation and flood control. The littoral zone of fluctuating reservoirs is unstable and Fort Peck is no exception. An unstable littoral zone reduces productivity of the fish population by reducing food supply, spawning substrate and cover for forage fish, as well as rearing areas for other fish species. The department has met with and/or submitted recommendations to the Corps of Engineers annually since 1965 to obtain suitable water levels in the spring. Efforts to negotiate the necessary water levels are continuing. If a suitable water level management plan is implemented, shoreline vegetation can be encouraged to grow and productivity of the littoral zone can be improved.

Another important aspect for management of Fort Peck Reservoir is the improvement of access. Primary concern should be upgrading existing roads to provide all weather access to already developed fishing access sites with boat launching facilities such as Hell Creek, Crooked Creek, Rock Creek State Park, Fourchette Bay, Pines, and Duck Creek.

Two other large irrigation reservoirs Fresno and Nelson, provide good recreational opportunities and are managed for walleye and northern pike. Forage conditions were judged to be poor and spottail shiners were introduced in both reservoirs in 1984. Diversity is enhanced in Region Six through the stocking of 40 small reservoirs (5-150 acres) with largemouth bass, smallmouth bass, northern pike, yellow perch and crappie.

Considerable fishing opportunities are available for sauger, walleye, northern pike, channel catfish, burbot, and drum in the Missouri and Milk rivers, which are the two major rivers in the region. Paddlefish are available to fishermen in the Missouri River above and below Fort Peck Reservoir. A boat ramp and access site are needed on the Missouri River near the mouth of the Milk River. Several medium-sized streams such as the Poplar River, Redwater River, and Beaver Creek also afford good fishing opportunities for a variety of species. Fishing pressure is low on the many warm water streams in this region. Fishermen key in on seasonal movement and specific reaches where fish concentrate and access is available. These streams are important for spawning tributaries and production of forage fish.

RECOMMENDATIONS

1. Continue efforts on Fort Peck Reservoir to improve the walleye fishery by stocking an adequate number of fry and fingerling and developing the forage fish populations.

2. Evaluate past forage fish introductions.

3. Continue to negotiate for a water level management agreement for Fort Peck Reservoir with the Corps of Engineers to improve the fishery.

4. Improve access to Fort Peck Reservoir by improving existing roads to provide all-weather access to existing fishing access sites.

5. Increase management activities on Nelson and Fresno reservoirs to include game fish population analysis and forage fish evaluations.

6. Continue to manage small reservoirs to maximize diversity of fishery in the region.

7. Projected fish stocking needs are shown in Table 13.

Bob Needham
Region Six Fish Manager
Glasgow

Table 13. Warm/cool water management plans for major waters of Region Six.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Fort Peck Reservoir	To increase the number and size of walleye and other important sport fish and to establish forage base.	Annual plants of walleye fry and fingerlings, stock chinook salmon and smallmouth bass, establish cisco population as forage fish; work toward suitable water level management monitor commercial fisheries.	Inadequate forage base; water level management unsuited for good reproduction; walleye fingerlings unavailable when needed.	Stock 30 million walleye fry and 1 million fingerlings annually; develop water level management agreement with Corps of Engineers.	Evaluate alternative game fish species for introductions into lake; consider alternative forage species if cisco and spottails prove inadequate; re-evaluate stocking programs if suitable water levels are obtained.
Fresno Reservoir	To enhance existing walleye fishery by improving forage fish populations.	Evaluate walleye and northern populations; diversify forage base; evaluate smallmouth introductions.	Inadequate forage fish population; excessive reservoir drawdowns.	Continue evaluation of forage introductions continued monitoring game fish populations.	Develop criteria for supplemental walleye stocking when recruitment is poor. Consider alternative forage fish species; evaluate management objectives in terms of water level management.
Nelson Reservoir	To provide maximum sustained yield of walleye.	Estimate population strengths of walleye and northern pike, periodically determine fishing pressure and harvest rates, improve forage base.	Inadequate forage base; excessive reservoir drawdowns.	Continued evaluation of walleye and northern pike populations; continued evaluation of spottail introductions and forage fish such as yellow perch.	Supplement plants of walleye fingerlings if natural reproduction fails; evaluate alternative forage species if spottails fail; evaluate need for artificial habitat structures; consider rough fish removal.

300/26/62

Table 13. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Small Reservoirs	To maintain fishable populations with a variety of fish species; develop and acquire additional reservoirs.	Ponds are maintained by initial stocks of largemouth bass, smallmouth bass, northern pike, yellow perch and crappie and/ or periodic plants of rainbow trout.	Lack of quality reservoirs with suitable depth; uncertain water levels result in periodic winterkill; private landowners unwilling to provide public access; high fertility results in heavy aquatic vegetation; ponds located distant from population centers.	More and better quality reservoirs near population centers; dependable supply of fish for stocking; improve assessment of past management; increase evaluation of various species combinations.	Develop program to bring better private ponds into management scheme; identify inducements for private landowners.

300/26/63

REGION SEVEN

OBJECTIVES

To provide 110,500 man days (an increase of 16 percent over 1984) of angling opportunity per year on four moderate-sized reservoirs, 100-200 small reservoirs and three prairie streams for walleye, northern pike, largemouth bass, smallmouth bass, crappie, channel catfish, sauger and paddlefish. (Tables 14 and 15).

BACKGROUND

Habitat suited for warm water fish management is more nearly typical in Region Seven than in other areas of the state. What the region lacks in large reservoirs, it makes up for in the myraid of small ponds that are managed for trout or warm water species of fish.

Cream can management techniques dominated early efforts in southeastern Montana. The old Miles City hatchery raised only largemouth bass and bluegills and a common distribution practice was to publicize the arrival of the fish truck in the local communities. Farmers and ranchers eagerly awaited their allotment of fish, carrying them to their ponds in cream cans, pails, buckets, and anything that would hold water and a couple hands full of bass and bluegills. While records are probably not complete, the first recorded plant in Region Seven occurred in 1926 when sunfish were planted in Baker Lake. From 1931 through 1983, recorded largemouth bass plants totalled 1.5 million fish. Bullheads were also very popular during the early years. The majority of these plants were unsuccessful, but a few ponds stocked in the 1930's are found on current management lists.

Intensive management of small ponds began in the mid-60's when habitat conditions were taken into consideration prior to recommending what species to plant. Most ponds average less than five acres, are generally shallow and are prone to occasional winterkill. Unless the pond is found to be of extremely poor quality, it is restocked following a die-off. Forage is another problem and various species combinations have met with success. However, efforts with bass/bluegill combinations generally resulted in stunted populations of both. A booklet outlining pond location and management history is updated annually and distributed to anglers to assist them in locating pond fishing opportunities.

Tongue River Reservoir, a 3,800 acre reservoir owned by the Department of Natural Resources and Conservation is the major moderate-size water in the region. Efforts to provide warm water fishing have been expanded since 1962 following the failure of an effort to provide a good rainbow trout fishery. Reservoir operation continues to impact development of a fishery. Low fall and winter water levels appear to decrease the survival of young

walleye. Northern pike, walleye and smallmouth bass are the prime species with black and white crappie and perch forming the forage base. Natural reproduction by northern pike is lacking, so the reservoir is stocked with fry or fingerlings. A rearing marsh was constructed in 1975 and has not been successful in providing better northern fishing in the reservoir. Walleye are able to reproduce, but supplemental stocking is necessary to maintain an adequate fishery. Attempts are being made to develop a brood population in the Tongue River Reservoir as a reliable source of walleye eggs in Montana. White crappie are the most abundant sport fish in the lake and provide the majority of the angler harvest.

Three smaller (100-165 acre) reservoirs add considerably to the angling opportunity of the region. Baker Lake is shallow and subject to periodic winterkill. It presently supports only black bullheads and a small northern pike population. Without additional planting the northern pike will not persist. Largemouth bass will be planted in an attempt to establish additional fishing. South Sandstone, a unique cooperative irrigation reservoir without fluctuation, offers fair fishing for yellow perch, walleye and nothern pike. The reservoir has not lived up to expectations because of a stunted black bullhead population. Castle Rock Lake, Montana Power's surge pond at Colstrip, provides excellent fishing for northern pike, crappie and bluegull.

The Yellowstone River and its major tributaries, the Tongue and Powder rivers, support good populations of walleye, sauger, channel catfish, shovelnose sturgeon and paddlefish. Tongue River is an important spawning stream for sauger, catfish and sturgeon. Additionally, a good smallmouth bass fishery exists in the river. The river and its fisheries are often negatively impacted by flow releases from Tongue River Dam. Sauger, catfish and shovelnose sturgeon also utilize the Powder River as a spawning and nursery stream. The lower Yellowstone River supports spawning runs of paddlefish and walleye in the spring from Lake Sakakawea in North Dakota. Both provide excellent recreational opportunities.

The prairie streams are utilized by anglers but could withstand more fishing pressure. A strong public information program describing the dynamics of the prairie river fishery could increase fishing use. Several public fishing access sites are in use on the Yellowstone River. However, long reaches of the Yellowstone River are without public access. Additional sites are needed and should include boat ramps.

RECOMMENDATIONS

1. Plant 1 million northern pike fry and 30,000 northern pike fingerling annually in Tongue River Reservoir.

2. Plant 50,000 fingerling walleye in Tongue River Reservoir as needed to supplement natural reproduction and to help establish a viable walleye egg source in Montana.

3. Negotiate satisfactory Tongue River Reservoir water levels and releases to the Tongue River with Tongue River water users and Montana Department of Natural Resources.

4. Stock 5,000 walleye fingerling and 10,000 northern pike fingerling annually in South Sandstone Reservoir.

5. Establish a smallmouth bass fishery in Castle Rock Lake by stocking 10,000 fingerlings annually.

6. Establish a largemouth bass population in Baker Lake with fingerling and yearling bass plants as available.

7. Continue to manage small farm and ranch ponds with largemouth bass, smallmouth bass, crappie, northern pike, yellow perch, and rainbow trout.

8. Monitor fish populations of lower Yellowstone River, Tongue River and Powder River with particular emphasis on sauger, walleye, shovelnose sturgeon, channel catfish, smallmouth bass and paddlefish. Documentation of fish populations in relation to flow conditions is necessary to defend the Yellowstone Instream Flow Reservation.

9. Aquire additional fishing access sites along the Yellowstone River which would inlcude:

Yellowstone River Mile	Site Location/Name
258	Hay Creek - Sanders
248	Wyatt Creek - Finch
215	Sweeney Cr. - Joppa
200	Steiger Cr. - Van Dyke
172	Kinsey RR Bridge - May
165	Hay Cr. - Shirley Pumping Plant
149	Powder River - Kalfell
141	Bill Balota
115	Cracker Box Cr.
102	Whoo-pup Cr.
81	Zahn
61	Burns Cr.
29	Sidney Bridge

10. Regional fish needs are shown in Table 14.

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Miles City

Table 14. Warm/cool water management plans for reservoirs and ponds in Region Seven.

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Tongue River Reservoir (3,800 acres)	Increase populations of northern pike and walleye; increase size of crappie.	Annual planting of walleye and northern pike; experimental pike marsh management to increase northern pike in reservoir.	No northern pike spawning; water level manipulation not favorable for juvenile fish survival.	Supplemental plants of northern pike and walleye; develop reliable source of walleye eggs.	If crappie population fails, evaluate alternative forage species.
Baker Lake (100 acres)	Increase size of bullheads and establish a fishable largemouth bass population.	Planting of large-mouth bass.	Overabundance and small size of black bullheads; periodic winterkill.	Consistent hatchery supply of largemouth bass.	Consider planting other fish species.
South Sandstone Reservoir (95 acres)	To increase walleye and northern pike numbers and improve size of bullheads and perch.	Northern pike and walleye are stocked annually.	Overabundant populations of black bullheads and yellow perch result in stunted fish; resistance of irrigators to drawdown and rehabilitation; anglers avoid the reservoir because of small fish.	10,000 fingerling northern pike and 5,000 fingerling walleye annually; cooperative agreement with water users to allow drawdown.	If authorization for drawdown is not obtained rehabilitate the entire reservoir.
Castle Rock Lake (165 acres)	To maintain present populations of crappie, bluegill, largemouth bass, and northern pike and increase walleye numbers.	Supplemental plants of walleye.	Abundant population of small (1-2 pound) northern pike; poor acceptance by angler.	Supplemental plants of walleye fingerlings; continue cooperative agreement with MPC to insure future public access.	Establish smallmouth bass population; evaluate forage fish conditions and investigate alternative species if needed.

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Table 14. (Cont.)

Water	Management Objective	Current Management	Problems/ limiting factors	Needs (research, mgmt, stocking)	Contingency Plan
Small Reservoirs	To maintain fishable populations of suitable species; increase the number of managed ponds by 50%.	Ponds are maintained by initial stocks of largemouth bass, smallmouth bass, crappie or periodic plants of rainbow trout.	Uncertain water levels result in periodic winterkill; private landowners unwilling to provide public access; high fertility results in heavy aquatic vegetation; ponds located distant from population centers.	More and better quality ponds near population centers; dependable supply of fish for stocking; field personnel to assess past management recommendations and to survey new waters.	Develop program to bring better private ponds into management scheme; identify inducements for private landowners.

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Table 15. Warm/cool water stream management plans for Region Seven

Water	Management Objective (Target Species)	Species Present	Problems	Needs
Yellowstone River	To provide optimal recreational opportunity for sauger, shovelnose sturgeon, channel catfish and paddlefish.	Sauger, walleye, shovelnose sturgeon, channel catfish and paddlefish.	Life history information sketchy; public interest in fisheries lacking.	Continued monitoring of important species to fill in data gaps on life history information; public awareness campaign concerning fisheries.
Tongue River	To provide spawning habitat for sauger and shovelnose sturgeon and to support smallmouth bass.	Sauger, shovelnose sturgeon and smallmouth bass.	Flow releases from Tongue River Dam inadequate during spring spawning season.	Develop strategy to allow adequate flow from Tongue River Dam during critical spawning seasons. Continue to monitor fish populations.
Powder River	To provide spawning habitat for sauger, channel catfish and shovelnose sturgeon.	Sauger, shovelnose sturgeon, channel catfish.	Low summer flows, high siltation.	Continued monitoring of migrant sauger and shovelnose sturgeon and evaluation of reproductive success.

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APPENDIX A

WALLEYE STOCKING GUIDELINES

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
WALLEYE STOCKING GUIDELINES

Montana is currently experiencing a demand for walleye stocking that exceeds both the supply of eggs to the Miles City hatchery and the present capacity of the hatchery. Because of this, the Montana Department of Fish, Wildlife and Parks has developed guidelines for stocking walleye based on a variety of factors to determine the most suitable waters. To that end, the following guidelines have been adopted:

BACKGROUND

Habitat Requirements and Limiting Factors:

Walleye are not native to Montana and currently do not occur west of the Continental Divide in this state. Walleye occur naturally in the eastern United States and Canada in medium to large-sized lakes and rivers with zones of rubble which provide spawning substrate. Walleye have been stocked in most states in all types of waters and with varying degrees of success.

Limiting factors commonly cited in the literature include the following:

A.) Inadequate forage. Walleye occur naturally and can coexist well with yellow perch or centrachid (sunfish) species. Yellow perch are the preferred food of walleye in most lakes. Walleye are, however, highly adaptable and have been known to prey on a wide variety of forage fishes. Inadequate forage fish usually results in poor growth and condition and a low population density of adult walleye. Forage shortages can be solved by reducing competion from other predators, introducing new forage species, or reducing walleye densities. However, all of the above are difficult to accomplish in wild populations.

B.) High predation on young walleye. This usually occurs in the presence of a large population of another predator such as northern pike. The combination of both walleye and northern pike can significantly reduce forage fish populations to the detriment of both species. Little can be done to control this situation, and it is likely that walleye introductions will not be successful.

C.) High fishing pressure. Symptoms include a low catch rate, small average size and lack of trophy-sized fish in the catch. However, it is important to note that these same symptoms are often indicative of other problems such as inadequate natural reproduction. Fishing pressure is presently not a problem in most Montana waters, but if and when it occurs, possible solutions include special regulations and/or modified walleye stocking rates. Note that caution must be used in this interpretation, and

problems due to overfishing need to be documented by creel survey and population analysis before corrective measures are warranted.

D.) Habitat degration. Water-level fluctuations; high rough fish populations (especially carp); pollution; inadequate water depths resulting in chronic winter kill, elimination of cover and suitable spawning habitat and other problems can lead to poor walleye populations. Corrective measures need to be identified and implemented. Water-level control is probably the single most important factor affecting the long term success of walleye populations. In cases where these degraded situations exist and cannot be corrected, walleye are a poor choice as a management species.

E.) Inadequate natural reproduction. This is usually due to one or more of the previously listed factors. First attempts should be made to enhance natural reproduction through water-level manipulation, forage fish improvement, etc. Failing this, increased stocking may be warranted.

GUIDELINES

1.) Higher priority will be given to lakes with potential to produce self-sustaining walleye fisheries. Such waters may also have the potential to provide future brood stock sources to increase the supply of walleye eggs. The stocking program for such lakes should be scheduled for intervals (e.g., 3 years on, 2 years off) to allow evaluation of natural reproduction.

2.) Higher priority will be given to medium and large-sized bodies of water where potential returns are greatest. Large lakes (over 5,000 acres) with self-sustaining walleye populations are difficult to evaluate and require massive numbers of stocked fish. Therefore a monitoring program should be developed specifically for each water. Small lakes (less than 100 acres) seldom provide acceptable walleye fisheries and should be low priority for walleye stocking. Rivers generally provide self-sustaining populations and should also be a low priority.

3.) Type of water and existing fisheries are important. Higher priority should be given to reservoirs that are marginal for trout, bass, or other species and that have failed to produce an acceptable fishery. Low priority should be given to waters suitable for trout. Also low priority should be given to stocking walleye in waters which already contain a healthy population of another predator fish.

4.) Waters in Montana outside the present range of walleye will be low priority for walleye plants 1) until an

adequate supply of fish exists to manage high priority waters, 2) until a stable supply of walleye eggs can be developed, and 3) until an EIS is completed to evaluate the implications of these introductions on existing fisheries and the increased possibility of illegal distribution. The current range of walleye is restricted to central and eastern Montana. Walleye have the potential to become a nuisance species in western drainages. The potential for experimental plants of saugeye outside the present range of walleye is being evaluated to determine 1) what percent of the saugeye are sterile, 2) the preferred habitat conditions of saugeye, and 3) the existence of a stable, long-term supply of eggs. Sterilization techniques for walleye are also being reviewed.

5.) Other concerns. Access and fishability of the water in question; public demand for walleye and the local availability and diversity of species in the area; and other specific needs will be considered.

As a guide for all but the largest reservoirs, walleye will be stocked at the rate of 500-1,000 fry per acre in the highest priority waters as fish become available. Fingerling stocking will be conducted, if fish are available, only in high priority waters where fry stocking has proven ineffective. High priority lakes will be stocked at adequate levels before medium and low priority waters are considered.

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