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FISHERIES PROGRAM

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS

JANUARY, 1989

PREFACE

The first state fish hatchery was built in 1908. For many years the fisheries program was quite simply a hatchery program. The first biologist was not hired until 1949. It was 1963 before the first stream protection law was passed.

The fisheries program today is more balanced with strong biological, habitat protection and hatchery functions. As the program has diversified and grown, so have the management problems we face. The complexity of these problems stem from the growing diversity of peoples interests, increasing use, and development activities which erode the resource base. Also, more groups want to get involved in management decisions including Indian tribes, federal agencies, outfitters, local coalitions, and other interests.

The position of the fisheries program has also evolved over the years from one often viewed as an adversarial underdog to becoming recognized as a legitimate, objective factor in development issues. This has placed a new burden on us. Before we waged war for an occasional win. Today we are increasingly being asked to come to the table with hard facts to develop mitigation or enhancement plans and at times put limits on development. This requires biological data which we often do not have the time or financial resources to collect.

The passage of the Wallop-Breaux amendments to the Federal Sport Fish Restoration program has provided an important increase in funding for the fisheries program. At this time, most of this money is being directed at repairing our infrastructure including rebuilding hatcheries, repairing dams, and developing fishing access sites.

One challenge for the future is to maintain the perception that the fisheries program is an asset and that maintaining a high quality resource base not only makes good sense but it also makes good "cents!" In so doing we can continue to maintain the political and financial support to maintain our 'world class' fisheries.

MISSION

The mission of the fisheries program is to preserve and perpetuate aquatic species and their ecosystems and to meet public demand for fishing opportunities in state waters. This is accomplished through a strong commitment to habitat protection; a wild trout stream fishery; an efficient hatchery stocking program in lakes and reservoirs, management of remaining native species; and maintaining adequate public access. Increasingly, public opinion is being sought to develop management objectives and regulations. Emphasis is also being shifted from reactive programs to increased public education.

FUNCTIONS

Administration

Administration functions for the division were reorganized in 1983 when the Ecological Services Division was disbanded and many responsibilities shifted to the Fish Division. The administration was reorganized again in 1987 to reflect addition of new functions, changes in priorities, and improved service.

Primary responsibilities include budgeting, planning, development of guidelines and policy, statistical and computer services, technical training, data base management and administration of program functions. Major program functions are described on the following pages. Additional functions and responsibilities are described below.

Biennial and annual budgets are prepared and allocated to approximately 80 projects statewide. Each project operates under an annual work plan. Those projects funded by federal Sport Fishing Restoration money also have five-year planning documents approved by the U.S. Fish and Wildlife Service.

The central staff provides statistical and design services for field projects, conducts statewide surveys, maintains a computer data base for stream and lake information, and designs computer programs for fish population estimates, use estimates, etc.

In 1987, the division conducted its first comprehensive assessment of technical training needs for each classification of employees. Training needs have been prioritized and training opportunities are selected to be presented primarily at annual division meetings.

Increased emphasis is being placed on developing needed policy and guidelines to aid implementation of the fisheries program. An inventory of existing policies and guidelines was conducted in December 1988. Priorities for new guidelines and policies are being developed.

Long range strategic planning is essential in natural resource management but it remains inadequate because so much time and resources are spent at the central staff level reacting to events. Clarifying guidelines for implementing programs will allow for redirecting some central staff time to the essential task of strategic planning.

Many of the priorities listed in following sections relate to program administrations. Others include:

1) Strengthen the internal planning and budget allocation process by refining the development of priority projects and integrating the various components of the program (access, stocking, etc.) into regional management projects.

2) Development of priority program policies and guidelines to aid program implementation.

3) Assess staffing needs in the regions.

4) Improve external communications through development of a newsletter.

5) Refine recently developed computer programs before initiating the more complex modeling programs.

6) Re-evaluate training program after 1989 division meeting.

Habitat Protection/Enhancement

Preservation of aquatic habitats in as natural a condition as possible is one of the highest priority objectives of the Fisheries Division. The division administers the nation's oldest state streambank alteration legislation, the Stream Protection Act of 1963 (SPA). The SPA requires all state, county and local governments to apply to the department for a permit to alter a stream bed or bank. Several federal agencies comply with the SPA through Memoranda of Understanding. A companion law to the SPA, the Natural Streambed and Land Preservation Act of 1975 (SB 310), applies to private landowners. SB 310 is administered by local conservation districts. Fisheries Division personnel serve as team members, inspecting proposed projects and making recommendations to minimize impacts to fish habitat. The department team member is granted authority to represent the Department of Health and Environmental Sciences, Water Quality Bureau in determining the need for a short term turbidity exemption to state water quality standards.

Several other permitting processes involve division personnel. The U.S. Army Corps of Engineers administers Section 404 of the Clean Water Act. Division personnel review applications under Section 404 for projects that would alter streams or wetlands. Land use permits issued by the Department of State lands are coordinated with other permitting processes. Division personnel review and comment on permit applications for the National Pollution Discharge Elimination System. Some coordination of stream permitting activities occurs on the Flathead Indian Reservation, where the tribes have initiated their own permitting process. In Flathead and Lake Counties, lake shore alterations are permitted under the Lakeshore Protection Act.

Other habitat protection efforts include review of other agencies programs and actions such as forest plans, grazing allotment management plans and environmental assessments of individual developments. In some areas, division personnel are involved in county planning and zoning board activities.

All of the habitat protection activities listed above are reactive strategies. The division also employs proactive strategies to preserve fish habitat. Stream mechanics workshops for conservation district supervisors, county government personnel and landowners are funded and co-sponsored by the division. A Landowners Guide to Stream Management is being published in installments. Work on a laymen's guide to stream bank protection is in progress. The division is actively involved in development and testing of alternative irrigation diversion structures to reduce streambed alterations.

Habitat enhancement efforts include numerous interagency projects and cooperative projects with sportsmen's groups. These projects are normally coordinated at the local level. The division contributes financial support to some projects through its Lake and Stream Enhancement and Education project.

Major issues and priorities in the habitat protection/enhancement area include:

1. Workload relief - Permitting activities occupy an increasingly large amount of time for division field personnel. Due to the reactive nature of permitting, the time spent is unscheduled and often disruptive to other planned activities. A pilot project is underway to assess the feasibility of contracting for review of routine projects.

2. Increased emphasis on information and education efforts including workshops, handbooks and pamphlets.

3. Continued investigation of alternatives to conventional irrigation diversion structures.

Water Resources

Maintenance of adequate stream flows and reservoir water levels is another important habitat protection area. The department holds instream flow rights on 12 "blue ribbon" trout streams (commonly called Murphy's rights) as a result of legislation enacted in 1969. These rights have priority dates of 1970 or 1971. In 1978, the department was granted an instream flow reservation for the Yellowstone River and numerous tributaries. By law, the reservation must be reviewed every 10 years. That review is in progress and a decision on whether or not to modify the 1978 order is expected in March, 1989. Applications for instream flow reservations in the Clark Fork and upper Missouri drainages are in progress. Defense of instream flow rights and reservations involves most division field professionals in review of new applications for water use. Division staff is involved in coordinating review and filing objections to new permit applications where they would significantly impact department rights and defend instream rights during droughts.

Instream flows below major impoundments are often maintained by informal agreements between the department and the dam operators. Informal agreements help maintain adequate flows in the Madison River below Hebgen Dam, Missouri River below Canyon Ferry Dam, Bighorn River below Yellowtail Dam, Beaverhead River below Clark Canyon Dam, Marias River below Tiber Dam, Ruby River below Ruby Dam and Missouri River below Fort Peck Dam. Instream flow protection for the Kootenai River below Libby Dam was negotiated during construction of the dam and were included as operational constraints. Flows in the Flathead River below its confluence with the South Fork (regulated by Hungry Horse Dam) are maintained at levels specified in the Columbia River Basin Fish and Wildlife Program. Flows in the Bitterroot River are augmented annually with department purchases of stored water in Painted Rocks Reservoir. Stored water has been purchased from Newlan Creek Reservoir to augment Smith River flows.

Many flow agreements also address water levels in the affected reservoirs. Regional and Helena fisheries staff are involved in negotiating and balancing flows and reservoir water levels.

Review of FERC license and re-license applications is a major component of the water resources function. Review of new licenses usually involves small hydroelectric facilities although occasionally applications for large projects are received. Re-licensing of existing projects occurs periodically. Eight main stem Missouri River hydroelectric facilities owned by Montana Power Company are scheduled for re-licensing in the next few years. Review of these

applications will require substantial efforts by division staff.

Major issues and priorities in the area of water resources are:

1. Enhancing stream flows in areas of severe water shortages. This will be a major topic in the 1989 Legislature. In addition, negotiations with DNRC continue to finalize the long term purchase of water from Painted Rocks Reservoir,

2. Ten-year review of the Yellowstone reservation,

3. Review of Clark Fork reservation EIS,

4. Completion of upper Missouri reservation application for submittal in July, 1989,

5. Relicensing of Montana Power hydro plants on the mainstem Missouri (8 plants) plus Milltown Dam on the Clark Fork, and Georgetown Dam on Flint Creek.

6. Negotiation of mitigation measures associated with relicensing of Kerr Dam, and

7. New license application for Jennings Rapids project near Libby.

Fisheries Management

The fisheries management function includes long term strategic and management planning and setting of sport and commercial fishing regulations. Management plans and fishing regulations are primarily based on angler preferences within the biological and economic limits for a given water. Most waters presently lack comprehensive management plans.

Internally, the division's management program is driven by a five-year plan which must be approved by the U.S. Fish and Wildlife Service. An improved expanded planning process was developed in 1987. The process integrated regional fish management and habitat goals, objectives and strategies by element. Those elements are cold water fish in streams, cold water fish in lakes, and warm water fish in streams and lakes. This marked the first time the entire management program was pulled together under one plan.

In addition, water specific management plans, based upon extensive public involvement are currently being developed for high priority waters. These plans are not limited to fisheries but include other water based recreation, parks, enforcement and habitat issues. A list of priority waters and guidelines for preparing plans were reviewed by the commission. Those presently underway include Rock Creek, Flathead Lake-River, Big Hole River, Stillwater River, Canyon Ferry-Hauser-Holter Reservoirs, Missouri River from Holter Dam to Great Falls and Fort Peck Reservoir. A plan for the upper Bighorn River was completed in 1987 and for the Smith River in 1988 (Parks division). A statewide warm water fisheries management plan was also completed in 1986.

Revision of sport fishing regulations is a major effort involving regional and division staff. A new regulation setting process to broaden public involvement and clarify important issues was adopted by the Commission in November, 1988. As water specific management plans are completed, they will help drive the regulations process. Major revisions in sport fishing regulations occur in odd-numbered years (only critical changes are made in even-numbered years). Commercial fishing regulations (for Fort Peck Reservoir) are revised in even-numbered years.

Fish population monitoring and collection of site specific angler use, preference and opinion data occurs in the regions. Recommendations for management strategies and regulations are based on the results of field monitoring. Demands for these services far exceed capabilities of our field staff.

Major issues and priorities in the fisheries management

area are:

1. Development of management plans in cooperation with Parks and other divisions for all major waters in the state in priority order,

2. Improve field monitoring capabilities to address problems created by increased use or habitat degredation by increasing field technicians and field operations budgets,

3. Implement a statewide and water specific angler use and harvest survey,

4. Development of statewide management policies (e.g. cold water lakes, stocking, native species),

5. Development of an effective aquatic education program.

Fishing Access

The fishing access function includes acquisition, development and maintenance of fishing access sites and administration of the motorboat access program (federal aid funding). Acquisition is funded by earmarked fishing license funds, with 25% of the earmarked funds dedicated to maintenance costs. Administration of this program was transferred from Parks to the Fisheries division in 1987. Once priorities are established, the Lands unit handles acquisition and the Design and Construction Bureau handles most development projects. The Parks Division implements the maintenance program.

During the last three years, the department has acquired an average of nine sites per year at an average cost of $341,326 per year. The department currently owns over 260 fishing access sites. Where possible, we buy the smallest parcel of land that will serve our access needs. A recent survey we conducted revealed that development and maintenance has lagged far behind acquisition due to inadequate funding.

When administration of the fishing access program was transferred from Parks to Fisheries, no funding or people transferred with the responsibility. In addition, the expansion of the Federal Sport Fish Restoration program includes a 10% earmarking of federal dollars which can only be used to develop motorboat access consistent with fisheries objectives. The biennial appropriation for FY90-91 is about $1.2 million. Administering this program creates an additional workload. Proposals to fund a 3/4-time position to coordinate fishing access program activities for fisheries and a full-time engineer for field services have been submitted to the Legislature.

A portion of the motorboat access funds will be dedicated to major improvements at selected park sites. Another portion of the funds would be set aside as a form of grants to fund projects at non-department sites contingent upon receiving administrative support staff requested above.

Major issues and priorities in the area of fishing access are:

1. Developing an adequate funding base for development and maintenance of sites,

2. Gaining approval for a fishing access coordinator and engineer to improve program administration and implement the Motorboat Access Program, and

3. Develop management plans for access sites.

Fish Hatcheries

In 1987 the division completed its first comprehensive five-year stocking program to aid in long-term planning. In addition, we implemented a new computer based cost accounting system and feeding inventory. The department's eight cold water hatcheries raised and distributed 8.1 million salmonids in FY88. The recently renovated warm water hatchery at Miles City planted 36 million fish (primarily young-of-the-year). The department has cold water hatcheries at Great Falls, Anaconda, Lewistown, Big Timber, Bridger, Arlee and Somers. Murray Springs Hatchery, near Eureka, was built by the Corps of Engineers. The department operates the hatchery under contract to the Corps as mitigation for the construction of Libby Dam. The Miles City hatchery was acquired from the federal government in 1983.

Most of our cold water facilities are more than forty years old and need extensive repairs. Renovation of the hatchery system began in 1984 with reconstruction projects at Big Timber and Giant Springs (Great Falls). Smaller scale reconstructions were completed at Anaconda and Lewistown. Major reconstruction is still needed at Anaconda (proposed to 1989 Legislature). Additional work at Lewistown and Arlee are also proposed for the next biennium. In the future, major construction will also be necessary at the Bluewater Hatchery (near Bridger).

The hatchery program has grown increasingly more efficient. In 1947 the hatchery budget was 22% of the total department budget, but today it is only 4%. Increased attention to fish genetics, nutrition, stress, and fish disease have contributed to our success. The department's fish disease biologist also monitors and assists private fish hatcheries.

Major issues and priorities for the hatchery system are:

1. Developing reliable, stable egg sources for walleye, northern pike and kokanee. Eggs for all of these species must be secured from wild sources annually, as brood stock cannot be held in the hatchery. We have experienced great difficulty in meeting our needs for all three species.

2. Completion of the hatchery reconstruction program and continued maintenance to avoid a reoccurrence of system decay.

Special Projects

Investigations into specific problems is an important function for the Fisheries Division There is no true research unit. Problems that require in depth investigation are handled with short term special projects (4-5 years). Four permanent staff biologists conduct special project investigations. These projects are relocated as necessary to address priority problems. Applied research problems are also addressed by annual grants to the Cooperative Fishery Unit at M.S.U.

Special projects currently underway that are staffed with permanent personnel include instream flow investigations needed to prepare the upper Missouri instream flow reservation application (two biologists), investigations into biology and management of the Canyon Ferry-Hauser-Holter Reservoir complex, and a study of fish populations in the Clark Fork River from Milltown to Paradise which may be affected by municipal and industrial effluents from the Missoula area.

Numerous temporary special projects are conducted by the division under contract to other agencies or private interests. These projects are generally designed to assess impacts of proposed resource development activities on Montana fisheries. The projects may be one month to several years in duration. In recent years, a large portion of the division's temporary special projects have centered around fulfilling elements of the Northwest Power Planning Council's Columbia Basin Fish and Wildlife Program. Funding for these studies has been provided by the Bonneville Power Administration (BPA).

The major issues and priorities in the special projects area are:

1. Species of special concern. Major data gaps exist concerning the biology of pallid sturgeon and fluvial arctic grayling, both of which are being considered as candidates for the threatened and endangered species list. Paddlefish is another species of special concern about which we need better information.

2. Lower Missouri instream flow reservation. After the upper Missouri reservation application is filed, we will need to begin gathering data for the lower river application (due to be filed July 1, 1991).

3. Blackfoot River. A long term decline in quality of the Blackfoot River fishery, coupled with renewed interest in mining the upper basin has elevated the

priority of the Blackfoot for baseline ecological studies.

4. Mid-Missouri reservoirs. Important aspects of the ecology of Canyon Ferry, Hauser and Holter Reservoirs are being investigated. One of the primary objectives of the existing study is to determine the effects of reservoir spill on rainbow trout populations. Also, the kokanee population of Hauser and Holter Reservoirs is expanding and may significantly alter future management of these waters. Interest has also been expressed in expanding opportunities to fish for walleye, but little is known about them in these systems.

5. There is uncertainty about the relative effectiveness of walleye fry vs. fingerling stocking. This and other aspects of warm water fish management need to be addressed to meet expanding demand.

6. Completion of Montana portion of Columbia Basin Fish and Wildlife Program. Several elements of this program have been completed while some studies are still in progress. The final aspect of most of the studies is to develop and justify mitigation strategies to be implemented by BPA.

PROGRAM ORGANIZATION

For planning and budgeting purposes, the fisheries program is broken down into four ecologically based elements - cold water streams, cold water lakes, warm water streams, and warm water lakes.

Cold Water Streams

Montana's trout streams are the bread and butter of the state's fisheries resources. Our 20,000 miles of trout streams support approximately 1.25 million angler days of use per year. Trout streams, including 541 miles of Class I (Blue Ribbon) streams, are managed almost exclusively for wild trout. Hatchery production is directed to lakes and reservoirs.

The foundation for wild trout management is built on habitat preservation. Streams that have adequate flows, good water quality and stable beds and banks will produce adequate fish populations naturally. Regulations are designed to maintain adequate numbers of adult fish. In heavily fished streams, special regulations with more restrictive limits are sometimes needed to maintain good fishing. The amount of use on trout streams is becoming an issue in some areas as boat use increases and as demands for special regulations impact bait anglers. Development of river management plans that involve the public in setting management goals is an important component of our cold water streams management program.

Cold Water Lakes

Approximately 1,900 cold water lakes totaling 400,000 acres provide one million angler-days of recreation in a variety of settings. Anglers seek salmon and trout in alpine lakes, large reservoirs and western Montana lowland lakes. Although naturally reproducing populations are found in some lakes, the majority of lakes require periodic stocking to maintain fishable populations. Rainbow trout is the species most commonly stocked. Several strains of rainbows are being tested to take advantage of specific traits. In some cases, new strains of rainbows have been introduced in hopes of establishing naturally reproducing populations. Reservoirs with adequate spawning tributaries may produce enough wild trout to sustain the fishery.

Most lakes and reservoirs have little or no potential for natural reproduction and are stocked with our domestic Arlee strain rainbows that perform well in put-grow-and-take situations. Kokanee, both wild and stocked, provide significant cold water lake fishing opportunities in northwest Montana. Cold water lake fishing is expected to grow in

popularity as Montana's population ages. More access, camping, and handicapped facilities will be needed on cold water lakes in the future.

Warm Water Streams

Warm water streams are an overlooked resource in Montana. Nearly all of our 4,400 miles of warm water streams occur east of the Continental Divide. The Yellowstone and Missouri Rivers provide warm water fishing for sauger, catfish, sturgeon and paddlefish in scenic, unspoiled settings. These rivers include some of the longest free-flowing reaches of warm water river fishing left in this country.

Most warm water streams are heavily impacted by agriculture. Sediment pollution from irrigation return flows and unstable stream banks due to farming up to river's edge are common problems. Access to many warm water streams is limited. More access areas are needed to encourage more use of these untapped resources. Current use is less than 100,000 angler-days per year.

Warm Water Lakes

Warm water lakes support approximately 110,000 angler-days of use per year spread over 350,000 acres of water. Settings range from small farm ponds throughout the state to massive Fort Peck Reservoir (250,000 acres). Angler interest in warm water lake fishing has grown rapidly as measured by the proliferation of Walleyes Unlimited and B.A.S.S. chapters across the state. Problems associated with management of warm water lakes are as varied as the habitat types. Access to small reservoirs near population centers is a major issue in southeast Montana. How to manage northern pike is northwest Montana is a controversial topic. The most important issue in warm water lake management is developing stable supplies of walleye, pike and bass for planting. Completion of the Miles City hatchery will improve the situation. However, reliable supplies of eggs are still needed.

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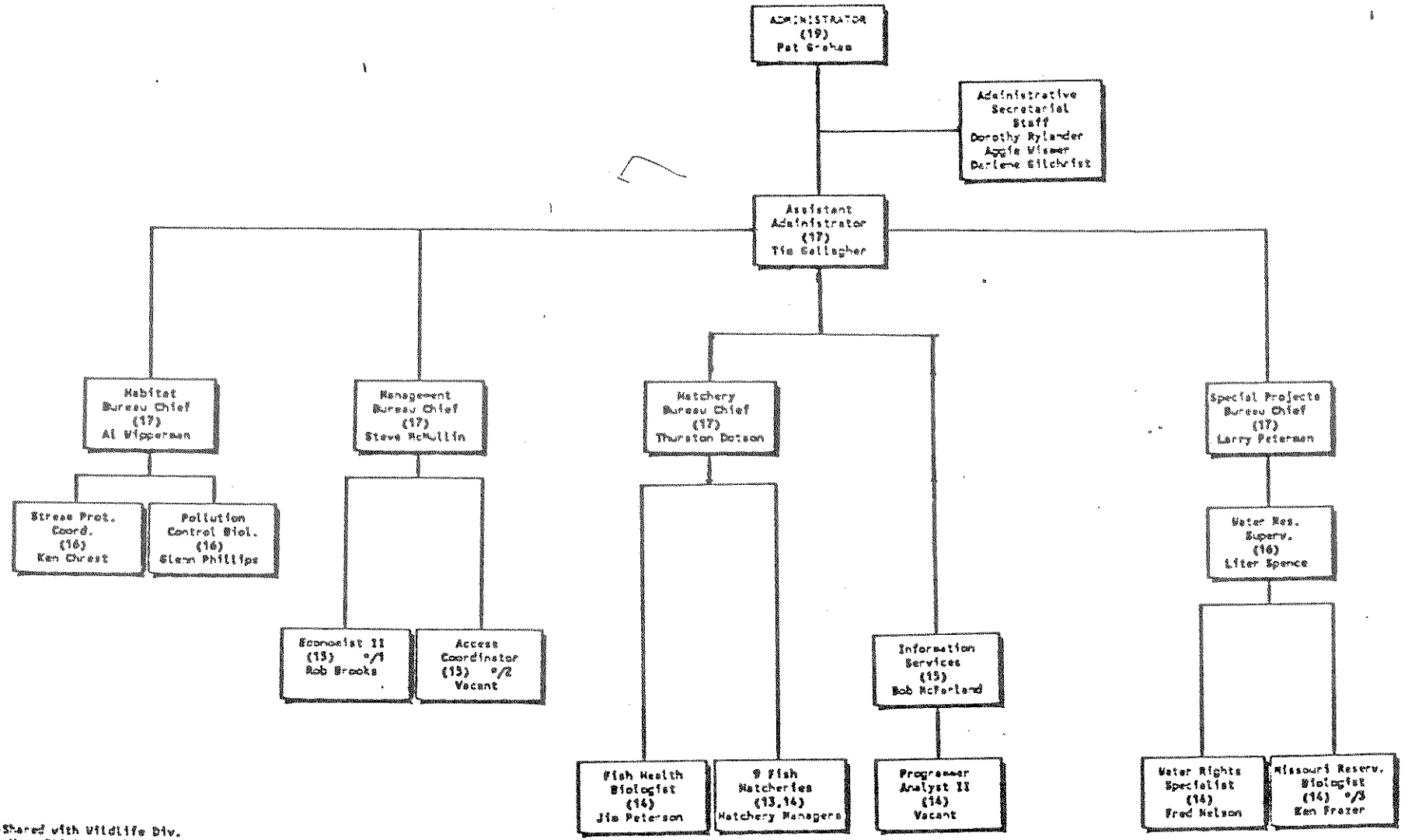

Half Time-Shared with Wildlife Div.
? Contingent Upon EPP Approval
3 Temporary Position
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FISHERIES DIVISION

The Fisheries Division is responsible for management of Montana's aquatic resources and, specifically, to maintain optimum fish populations in Montana waters.

Fiscal Year 1986 base budget is $3,861,000 with 100.84 FTEs. Primary sources of funding are license sales and Dingell-Johnson monies. We also have $1,363,000 of LCA funded projects (mostly contracts with the BPA in Region 1) that are staffed with 31.02 FTEs.

- The DINGELL-JOHNSON ACT (DJ) placed an excise tax on selected fishing equipment (e.g. lures, rods and reels). Dollars collected are apportioned back to the states based on land area and fishing licenses sold. About 900,000 DJ dollars are in our 1986 operations budget.

- The Wallop Breaux (WB) Act of 1985 greatly expanded the old DJ funding base by adding funds from taxes on Marine fuels, foreign-built yachts, electric trolling motors, certain types of electronic sounders, and some additional items of fishing tackle such as lines, landing nets and tackle boxes. For FY86, the increase is expected to be around $1.5 million, which is being used to fund the major portion of our $225,000 EPP program and to make payments on the $5.4 million of State Bonds which have been issued to fund three construction projects. These are expansion of the Miles City Hatchery and reconstruction of some deteriorating banks of raceways at Lewistown and Anaconda.

- The general fishing season in Montana runs from the third Saturday in May through November 30. Most lakes and reservoirs and many of our larger rivers are open year-around.

- The Department maintains seven fish hatcheries located in or near Anaconda, Arlee, Big Timber, Bridger, Great Falls, Lewistown and Somers. In addition, we operate one federal hatchery near Eureka under contract with the Corps of Engineers, and one federal hatchery at Miles City under agreement with the U. S. Fish and Wildlife Service.

- Montana waters are stocked with between seven and eight million fish annually. Less than five percent of these fish are planted in streams; the remainder go into lakes and reservoirs.

- Our last postal census estimated that 3.1 million fishermen days occur in Montana per year. This was distributed 40:60 between lakes and streams. Residents comprise over 55% of the state's fishermen.

- Over 11,000 individual waters in Montana support 84 species of fish. We consider 54 of these species to be native; the rest are introduced species.

- The rainbow trout is the most common game fish found in a Montana fisherman's creel.

- Blue Ribbon Waters

- Wild and Scenic Rivers

- Fish Records

- Game Fish Species

- Fishing Access Sites

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OVER THE YEARS

W. F. Scott - 1901
FIRST STATE GAME WARDEN

As game laws came into their own, a basic philosophy began to develop among the states. One of the guiding principles was a definition by the Supreme Court of California and upheld by the Supreme Court of the United States. The definition stated, "the wild game within a state belongs to the people in their collective sovereign capacity. It is not the subject of private ownership except insofar as the people may elect to make it so, and they may, if they see fit, absolutely prohibit the taking of it, or traffic and commerce in it, if it is deemed necessary for the protection or preservation of the public good." The state's powers to manage their own wildlife is being eroded, however. Through the Endangered Species Act, for example, federal agencies may effectively regulate a management of many species. Also, there are always a few strings attached to the many federal grant and aid programs.

The first bill relating to pollution found its way into state codes during 1881. It was drafted to prevent dumping of sawdust into streams. More recently in 1980, Montanans voted by referendum to prohib dumping radioactive wastes in the state.

In 1901 the first state game warden, W. F. Scott, divided the state into eight fish and game districts. One deputy game warden was stationed in each district and salaried $100 per month for all services and expenses.

BRIEF HISTORY OF LAWS, MANAGEMENT AND IMPORTANT EVENTS

1810-1850	Era of fur trade
1850's	Era of hide skinners
1860-1880	Buffalo gave way to domestic livestock - profound changes in rangelands from grazing.
1869	First game law - to protect quail and partridge
1872	First laws to protect big game (closed seasons)
1873	Killing of song birds prohibited
1875	First closed season on furbearers, ducks and geese
1877	Unlawful to kill game animals without using or selling me
1881	First stream pollution bill (prevent dumping sawdust in streams)
1883	All hunting closed in Yellowstone Park
1889	First game wardens - county commissioners empowered to hi one warden per county
1891	Sale of trout caught in public waters prohibited
1893	First year-round closed season on moose and elk
1895	Fish and Game Board authorized. Bag limits on game anima and prairie chickens for first time
1897	Bounty payments authorized
1901	First state game warden appointed (forerunner of department director

	First department organized - nonresident licenses required
1903	Guide and taxidermist licenses required
1905	First resident license required to take fish or game
1907	First fish hatchery provided
1911	First game preserve created
1913	Fish and Game Commission organized - Sun River Game Preserve created
1915	Daily limit placed on game fish
1917	Deer bag limits go from 2 to 1 statewide - some counties closed
1919	Large winterkill of Yellowstone elk from malnutrition
1921	Commission given power to open and close seasons - hunting districts established
1930's	Deer reached peak numbers - winter dieoffs began
1941	First biologists hired - scientific management begins to take form - large scale transplanting programs began - sharing federal funds (P-R)
1945	Hunting of moose resumed after five years of closed seasons
1949	Extensive magpie control program discarded
1953	First special bow and arrow season
1955	Department reorganized into seven regional districts - sale of special nonresident deer and antelope licenses authorized
1958	Buck-only seasons replaced by either sex deer season statewide
1959	Hen pheasant first became legal part of game limits - boat safety legislation enacted
1962	Last of bounties (mountain lion) discontinued
1963	Environmental legislation begins to appear with bill to prevent loss of stream habitat from construction
1965	State parks put under administration of fish and game - stream preservation bill given permanent status
1972	Game laws recodified - environmental bills given great emphasis (mined land reclamation, power line siting)
1973	Executive reorganization - add planning bureau - centralized services bureau - merged environmental control and information-education divisions
1974	Hen pheasants removed from game bag. Extensive winterkill of Yellowstone elk in both Gallatin and Yellowstone segments
1975	Permits required for taking either sex deer began to appear in hunting regulations
1979	This year the department underwent some reorganization - the environment and information division was split into two divisions: ecological services and conservation education - an associate director position was also established - the name of the agency was changed from Department of Fish and Game to Department of Fish, Wildlife and Parks
1980	During 1980 inflation made inroads into the department - travel was curtailed, all positions authorized were not filled and other austerity measures were taken.

FISH PROGRAM

Water resources in Montana are diversified and widely distributed throughout the state. Surveys and other field activities have identified over 9000 individual waters. Streams range from the small cold-water mountain stream to the large warm-water rivers such as the lower Yellowstone and Missouri. Natural lakes and reservoirs range from those of a few surface acres to those over 100,000 acres such as Flathead Lake and Fort Peck Reservoir. These waters support 80 species of fish, 16 species of amphibians and an undetermined number of aquatic invertebrates. Fifty two species of fish are native and the other 28 were introduced. The exotics include some of the more popular game fish such as rainbow trout, brown trout, brook trout, kokanee salmon and walleye.

The Montana Department of Fish and Game is charged by Montana statutes with the responsibility of managing, protecting and propogating fish and other aquatic organisms. Early laws dealt mostly with the animals of interest to recreational fishermen but more recent legislation has been oriented toward environmental conditions of aquatic habitat. The Department's current responsibilities include protection of all aquatic habitats as well as meeting the needs of recreationists.

The popularity of fishing, especially for recreation and to some extent as a source of food, has increased significantly in recent years. There has also been an increasing interest in aquatic organisms for nonconsumptive uses as well as an increasing awareness of the value of these animals as indicators of environmental well-being.

Fishery management philosophy has emphasized wild fish populations and the habitat necessary to maintain those fish. Activities and projects related

to habitat preservation will continue to be a major component of the management program. Basic resource inventories and special studies of the habitat requirements or the status of important species are also major activities of the program.

Regulations have been quite liberal in the past to allow the maximum level of utilization that could be sustained without damage to the resources. Some restrictions have recently been implemented on selected waters where fishing quality has declined or where crowding has occurred among recreationists.

Seven fish hatcheries are operated to provide trout and salmon for planting in Montana waters. Currently 98 percent of the fish produced at these stations are planted in lakes, reservoirs and ponds. Limited stream plants are made where natural reproduction is lacking or where a small plant would not impact a wild trout population. Repairs and maintenance on portions of the hatchery physical plant have been delayed because of budgetary limitations. It is not feasible to delay these repairs indefinitely so funds will be scheduled for hatchery repair during the next biennium.

Utilization:

Although these animals provide a variety of benefits only the recreational and commercial fisheries have been quantified. License sale data and creel studies indicate that more than one third of the state's residents who are 10 years of age or older participate in the fishery. The resident licensesales have increased about 3.5% a year during the past five years. An additional 75-90,000 nonresidents purchased fishing licenses during each of those years. Nonresident big game hunters are also entitled to fish on their combination licenses.

Nonresident sales dropped off in 1974 and resident sales declined slightly in 1975. These changes were probably due largely to gasoline price and availability in 1974 but may also have been influenced by a license fee increase that same year. Sales to both groups increased again in 1976.

Total angling pressure during the 1975-76 season was 3,100,000 man days. The use is about evenly distributed between streams and lakes, ponds or reservoirs on a statewide basis with variations among the regions. Residents accounted for 82 percent of the total fishing pressure and trout waters received a major portion of the use by both residents and nonresidents. The nonresidents showed a higher preference for trout waters, especially for trout stream fishing.

A limited commercial fishery for certain species has been permitted for several years. This fishery is limited to a few waters and is closely monitored to avoid damage to the recreational fishery or other aquatic resources. The average annual harvest in recent years has been about 500,000 ponds. A commercial harvest of bait fish is also permitted on some waters in the eastern part of the state.

Major Problems:

The competition for land and water resources will intensify with increasing human populations and demands for consumer goods. This will place additional pressures on the aquatic habitat that supports these aquatic animals. Several environmental laws provide a means of protecting habitat but an increasing effort will be required to accomplish the intent of these laws and to adequately protect aquatic resources.

The status and habitat requirements of many nongame species are not known so the affect of habitat degradations on these animals cannot be

adequately assessed. Public interest in the nongame animals is increasing but funding for projects needed to assess and protect these species has been limited.

Many of the prime fishing waters, especially streams, are bordered by private land. Public use is currently permitted on a large portion of this land but future access is not ensured. Changes in policy and/or ownership frequently result in more restrictions and the trend is toward less recreational use on these waters.

To ensure future availability the Department has purchased fishing access sites on important waters since 1954. This program will continue but its effectiveness is decreasing because of inflationary trends. Land values are increasing more rapidly than the funding for acquisitions. The competition for riparian lands is also increasing and many desirable sites are not available.

Montana statutes provide rights for anglers on navigable streams and those that are navigable in fact. However, legal determinations of navigability are on a stream by stream basis and only a few waters have been determined to be navigable in fact. The status of public use is undetermined on most water.

The protection and management of the fishery resource has traditionally been funded by license money or other user fees and by an excise tax on fishing tackle. Some contract money has also been available for special projects where proposed development would affect a fishery. Although license sales have expanded and fees have been increased, total funding has not kept pace with inflationary trends. These trends are expected to continue and adequate funding will become more critical in future years.

Proposed changes at the Federal level in allocation of excise tax funds and in license structures would reduce available funds for the program. These proposals include free license for some anglers and national or interstate licenses. If adopted, these changes could significantly reduce funding at a time when additional demands are exerted on the resource.

Montana's increasing population and the high level of national interest in the states fishing opportunities indicate that angling pressure will continue to increase. The more popular waters receive a disproportionate share of the use so special regulations will be needed to protect the resource and to provide an equitable distribution of fishing opportunties.

FISH PROGRAM GOAL:

To ensure the perpetuation of all aquatic species and their ecosystems and to meet the public demand for fish in state waters.

TROUT IN STREAMS

Montana streams support six species of trout in varying abundance with 12,000 miles supporting populations that provide most of the trout stream fishery. Many additional miles of smaller tributaries support the productivity of these 12,000 miles by maintaining flows and water quality and by providing spawning and nursery areas. The trout streams are largely in the western and central portions of the state but each administrative region has some stream fishing for trout.

Intensive land and water use and an increasing human population have taken a toll on these trout streams in the past through pollution, channel alteration and dewatering. This trend will continue or intensify as the state's population and the competition for land and water increases. Several environmental laws enacted by Congress and the Montana Legislature afford some protection to fishery resources through improved pollution control, constraints on the physical alteration of channels and greater consideration of wildlife values in water allocations. Continued fisheries management effort in the application of these laws will be necessary to protect and maintain our stream trout fisheries in an era of increasing competition for land and water resources.

Management

The management of trout populations in these streams is based on wild trout produced naturally in the streams. Very little can be done to increase production in these streams, but a major effort will be required to maintain present production through habitat preservation activities.

It has recently been determined that rainbow trout are native in a few streams in the Kootenai drainage. That subspecies and two subspecies of cutthroat trout have been designated species of special concern in Montana.

The existing trout populations can support a temporary increase in man days of recreational fishing through 1985 under more restrictive regulations. This increase will be offset in subsequent years by expected losses due to habitat deterioration.

Fishing regulations have been quite liberal in the past but will become more restrictive on some waters as use or harvest approaches the supply.

Utilization

Stream fishing for trout is a highly desired element of the state's fishery and is heavily used by both residents and nonresidents. The nonresidents show the highest preference for stream trout fishing attesting to the national importance of Montana's trout stream fishery. Over half of the nonresident angling effort was directed to trout in streams in 1975-76. Angling pressure is not distributed proportionately among Montana trout streams. The more productive streams are well known and receive a large share of the angling pressure while some other streams are lightly fished.

Current use on trout in streams is 1,280,000 man days and this is expected to reach 1,650,000 days by 1985. The anticipated use will approach the supply in some regions by 1985.

Many of the trout streams, especially the larger and more productive waters, flow through privately owned land where public ingress is not ensured. Approximately 70 percent of the trout stream fishery is bordered by private land. At the present time some ingress for fishing is permitted on much of this land, but the trend is toward more restricted access. Currently, public use is restricted to some degree on about 18 percent of the fishery. Public fishing on waters that cross Indian tribal land has been subjected to increasing restrictions in recent years, and it appears that this trend will continue.

Public fishing areas have been purchased on many trout streams with license fee and other recreational funds. This program will continue contingent upon available funds and the availability of desirable sites on important waters. Legal decisions regarding navigability have also enhanced public fishing on some streams.

The Future

Stream fishing for trout will continue to be an important element of Montana's fishery resource. The habitat base that supports this fishery cannot be increased so the future recreational opportunities depend upon how well that habitat base can be maintained. Several Federal and State laws provide the means of protecting these streams but a continuing effort on habitat preservation will be required to accomplish the intent of those laws.

As angling pressure increases, regulations will become more restrictive on some waters in order to maintain fishing quality and provide for an equitable distribution of the resource. Based on current fishing standards, the anticipated use on trout streams will approach the total supply in most regions by the late 1980's.

Increasing human populations and the resulting competition for land and water will influence the extent to which public use will be allowed on streams bordered by private land. The availability of these waters for recreational fishing will depend upon a continuation of the acquisition program and upon a favorable relationship between recreationists and landowners. Legal decisions regarding navigability determinations will also influence the availability of these trout streams.

Objective - 1985

To preserve or enhance the 12,000 miles of streams that support wild trout. To manage wild trout populations in streams to support an annual use of approximately 1,650,000 man days of recreational fishing within resource limitations and acceptable quality standards. To manage wild trout populations for scientific, aesthetic and other nonconsumptive uses.

WHITEFISH, KOKANEE AND GRAYLING IN STREAMS

The Mountain whitefish is native to Montana and is widely distributed in the large rivers and major tributaries in the western half of the State. Kokanee inhabit cold water lakes during most of their life cycle but they enter streams during their fall spawning season. The stream fishery on kokanee is a snag fishery on these adult spawners. The major fishing for this species occurs in the Flathead and Whitefish Rivers when spawners migrate from Flathead Lake. Runs also occur in a few streams of the Clearwater drainage and in tributaries of Georgetown Lake. Salmon also run into ditches from the Helena Valley Regulating Reservoir, Bynam Reservoir and Pishkin Reservoir when flows permit movement. The grayling was originally abundant in the Missouri River drainage above Great Falls but its range has been greatly reduced. Remnant populations still occur in 20-25 streams.

Management

The three species in this group have habitat requirements similar to those of the various trout species. Therefore, both groups of fish have benefited from laws and regulations dealing with pollution control, restrictions on channel alteration and water allocations. Angling regulations on the whitefish and kokanee have been liberal to encourage utilization of these two species.

The primary objective of grayling management has been to maintain equitable stream habitat conditions for the remaining populations. Regulations on

grayling have generally been the same as those on trout with the exception of a few waters where regulations have been more restrictive to protect limited spawning populations. The grayling has been designated a species of special concern in Montana streams.

Utilization

Although Mountain whitefish are abundant and widely distributed in Montana streams, angling pressure is low. They can be readily taken throughout the year but anglers show the greatest interest in this species during the winter. The kokanee fishery in the Flathead drainage has become increasingly more popular in recent years. Current annual use is 20,000 man days and this is expected to increase to 25,000-30,000 days by 1985.

If the spawning runs in the Flathead River system can be maintained at their present level, the anticipated angler use can be met through 1985. The salmon snagging opportunities at the other five sites are limited and variable from year-to-year. Anglers use these fisheries when they are available.

The grayling is of special interest because of its uniqueness and limited abundance. Most of the angler use on this species is incidental to trout fishing but some anglers seek out grayling waters for the opportunity to observe or catch this unique native fish.

The Future

The Mountain whitefish has been affected to some extent by habitat degradations but they will continue to be one of the most abundant species in streams. Angling pressure will increase but it will be relatively low in relation to the total supply. Consideration has been given to a limited commercial fishery for whitefish.

The Flathead River system will continue to be the main stream fishery for kokanee. The spawning run from Flathead Lake is stable at this time but it could be jeopardized by extensive developments in the drainage or by major changes in stream flow regimes. The other areas will continue to provide limited salmon fishing opportunities in some years. On a statewide basis the kokanee populations and stream fishing opportunities are expected to remain near the current levels.

Although the grayling is an important species in Montana's native fauna, it is unlikely that its current range in streams will be expanded. Management efforts will be directed toward maintaining the remnant populations through habitat protection. Limited fishing opportunity for this native fish will be available.

Objective - 1985

To preserve or enhance the habitat in 3600 miles of streams that support whitefish, grayling or kokanee. To manage these species to support an annual use of 183,000 man days of recreational fishing within resource limitations and acceptable quality standards. To manage these species for scientific, aesthetic and other nonconsumptive uses.

PADDLEFISH IN STREAMS

The ancient and unique paddlefish occurs in the Yellowstone and Missouri Drainages of eastern Montana. Fish grom Garrison Reservoir in North Dakota make spawning runs into these river systems. A major fishery occurs in the Yellowstone River at Intake Dam near Glendive. Paddlefish are also taken at the mouth of the Tongue River near Miles City and at a diversion dam near Forsyth. Fish from Garrison also move into the dredge cuts below Fort Peck Dam and into the Milk River.

Paddlefish from Fort Peck Reservoir run into the Missouri River above the reservoir. A major fishery occurs near the Fred Robinson Bridge before the fish move upstream. A few fish are also taken by anglers in upstream areas of the Missouri River.

Management

Although the paddlefish is native to Montana waters, it did not receive much attention until recent years. Their presence was known and a few were taken by anglers in earlier years but interest was low until the early 1960's. Anglers began to snag paddlefish at Intake Dam near Glendive and interest increased rapidly. The species was not a game fish so the harvest was unregulated. Concern for the welfare of the species prompted legislation that classified the paddlefish as a game species. This provided means of regulating the fishery and eliminated the commercial harvest of paddlefish. Initially the daily limit was two fish per day and this has recently been reduced to one per day to protect the species and to provide a more equitable distribution of fishing opportunity among the interested anglers. Consideration has also been given to an annual limit with a tagging system to allow more people to participat in the fishery. Life history data is incomplete so management of this species has been and will continue to be conservative. Because of its

limited distribution and abundance, the paddlefish has been designated a species of special concern in Montana.

Studies have shown that the magnitude and duration of spring high flows influence paddlefish spawning movements, so any water developments that alter flow regimes could adversely affect the status of this species. Very little is known about the spawning and rearing requirements of the paddlefish so a major effort is directed toward investigations of these life history stages. Paddlefish are long-lived and the females don't mature until they are 12 years or older. Therefore, information regarding natural reproduction and the impact of flows is essential to the preservation of this native species.

Utilization

Fishing pressure has varied from year-to-year with a trend toward increasing use on the major areas. In the mid-1960's the use was mostly by local residents but in recent years the fishery has attracted more out-of-area residents and nonresidents.

Many of the fish taken are released. The tendency to release fish is related to average catch rates. The recent average catch rate at Intake is 1.5 fish per day and 45 percent of the fish are released. The Missouri River fishery averages .3 fish per day and only 10 percent of the fish are released.

The fishery occurs in limited areas where fish concentrate in large numbers during the run. Most of these areas are on public land so ingress is not a major problem, but crowding and competition does occur among the fishermen at times.

The Future

The greatest threat to paddlefish populations is potential water developments that would alter flow regimes during the spawning season. If the needs of this species are adequately considered in development plans, the species can be maintained at current levels.

Objective - 1985

To preserve or enhance the habitat in those streams that support paddlefish. To manage paddlefish populations to provide an annual use of 9200 man days of recreational fishing within resource limitations and acceptable quality standards. To manage paddlefish populations for scientific, aesthetic and other nonconsumptive uses.

TROUT AND KOKANEE IN LAKES

The waters in this group range from small mountain lakes and farm ponds of a few acres to large reservoirs and natural lakes that exceed 100,000 surface acres. This recreational fishery is supported mostly by 1900 individual waters. Each region has some trout lakes but a large portion of the waters and the total acreage is in the central and western portions of the state. The trout ponds in eastern Montana add to the diversity of the fishery in areas that support primarily other species of game and sport fish. Seven species of trout are present in these waters in varying abundance. Kokanee are planted in several lakes in central and western Montana for recreational fishing. Coho salmon have been planted in a few lakes in past years but the species is rarely taken at this time. The major environmental problems in these waters are pollution, eutrophication, accelerated siltation rates and fluctuations in reservoir storage levels.

Management

Fishery management of these waters is based on wild fish populations where spawning facilities are adequate to maintain self sustaining populations. Spawning tributaries are lacking or limited in many of the lakes so the recreational fishery depends partially or completely on hatchery-reared fish.

Fishing regulations have been quite liberal in the past and will continue to be liberal on most waters. Year long fishing is permitted on most lakes except for a few where temporary closures are in effect to protect spawning fish, to conserve fish stocks or for public safety.

The migratory strains of the westslope and yellowstone cutthroat are classified as species of special concern.

Utilization

Trout fishing in lakes is popular with both resident and nonresident anglers. Over 40 percent of the total statewide pressure is directed to these waters with nonresidents showing a slightly higher preference than residents for this type of fishing. Most of the lakes are lightly fished but each region has some lakes that currently receive the maximum use that can be sustained without degrading the quality of the fishery.

The 1975-76 pressure survey indicated 1,307,000 man days on these lakes and the use is expected to reach 1,681,000 by 1985. Residents account for over 80 percent of the statewide pressure on trout lakes in 1975-76. Nonresidents use the trout lakes in all regions but regions one and three receive nearly three-fourths of the use by this group of anglers.

Approximately 55 percent of this fishery is on public land where public use is ensured and 30 percent is bordered by combinations of public and private ownership where availability is incomplete. The remaining 13 percent is on private land where ingress varies from uncontrolled to prohibited. Very few trout lakes are completely unavailable because of posting but several large lakes have shorelines which are only partially available to recreationists because of the interspersion of public and private land. The extent of use on these waters is affected by distance, weather, and boat use.

The Future

Lake fishing for trout and kokanee will continue to be a major element of the recreational fishery. Current management of most trout lakes is based on present fishing pressure rather than on the water's productive potential. As the need arises, management procedures can be adjusted on these lakes to provide additional fishing opportunity. These adjustments

will meet the anticipated increases in use through 1985 in all regions except region five. That region has many mountain lakes but relatively few lowland lakes or reservoirs that can be managed to support increasing amounts of recreational fishing. Those lowland waters are currently managed and utilized near their maximum potential so the additional fishing opportunities needed to meet anticipated demand cannot be provided in those waters.

An increasing human population and the resulting competition for space and water will increase the threat of habitat degradation in these waters. A continuing effort on habitat preservation will be required to maintain these aquatic ecosystems.

Objective - 1985

To preserve or enhance the habitat in 1900 lakes, reservoirs and ponds that support trout or kokanee. To manage trout and kokanee populations in lakes to support an annual use of 1,681,000 man days of recreational fishing within resource limitations and acceptable quality standards. To manage these species for scientific, aesthetic or other nonconsumptive uses.

OTHER GAME AND SPORT FISH IN STREAMS

This group includes sauger, walleye, northern pike, small mouth bass, burbot (ling), channel catfish, sturgeon and several species not legally classified as game fish. These fish are found mostly in streams of central and eastern Montana except for some introduced populations of pike and bass in the Flathead River drainage and the ling which is native in all drainages except the Clark Fork of the Columbia. This fishery occurs in approximately 2,500 stream miles. Additional tributary streams, some of which are intermittent, support these main streams and may support fish for short periods of time.

MANAGEMENT:

The sauger, burbot (ling), channel catfish and sturgeon are native species and the others were introduced into streams or have spread to streams from earlier plants in lakes or reservoirs. Hatchery plants were intended to establish the species and no maintenance plants are made to provide recreational fishing. The white sturgeon and the pallid sturgeon have been designated species of special concern in Montana waters.

Habitat deterioration has had an influence on these species throughout their range. Several environmental laws enacted by Congress and by the state Legislature afford protection to this resource through improved pollution control, constraints on channel alteration and greater consideration of fishery values in water allocations. Investigations of life history stages and habitat requirements have been conducted to obtain data needed to adequately protect these species.

Angling pressure has been relatively low on these species in streams so regulations have been quite liberal. It is unlikely that additional

restrictions will be needed on this fishery in the immediate future except for certain species such as the white sturgeon. An annual limit and a tagging system has been proposed for the species.

UTILIZATION:

The stream fishery for these species was used largely by resident anglers during the 1975-76 season. Total use for that period was 160,000 man-days with nearly 95 percent accounted for by Montana residents. Most non-residents prefer the trout waters in central and western Montana so the use of this fishery will continue to be primarily by resident anglers.

Angler use is expected to reach 205-210,000 man-days by 1985 based upon license sale and projected human population data. The total supply of fishing opportunity for these species will exceed that so the anticipated demand for recreational fishing can be met.

Although the supply of recreational fishing is high compared to anticipated use, the supply is not evenly distributed nor equally available to all potential users. In some communities the opportunity for recreational fishing or other water-based recreation is limited and the importance of a single body of water takes on special significance.

Most of these streams are bordered by private land where fishing is permitted with minimal restrictions. Although ingress is favorable for anglers at the present time, restrictions will become more common as recreational use increases and changes occur in land ownership or uses. Waters on Indian tribal lands have been subjected to increasing restrictions in recent years. Some stream reaches are also unavailable because of a lack of access roads.

THE FUTURE:

Recreational fishing for these species in streams will continue to be an important part of the state's aquatic resource, especially for the residents of eastern Montana. The anticipated demand for recreational fishing can be met through 1985 but a continuing effort will be required to prevent habitat deterioration in these streams.

Public use on these waters will be influenced by a variety of factors but it appears unlikely that posting will be a major or widespread problem in the foreseeable future. The future relationship between recreationists and landowners will have a great influence upon the availability of these waters for public fishing as well as other types of recreational use.

OBJECTIVE - 1985:

To preserve or enhance the habitat in 2500 miles of streams that support nonsalmonid species. To manage nonsalmonid populations in streams to provide approximately 210,000 man days of recreational fishing within resource limitations and acceptable quality standards. To manage these species for scientific, aesthetic or other nonconsumptive uses.

WHITEFISH AND GRAYLING IN LAKES

This group includes three species of whitefish and the arctic grayling. The Mountain whitefish is common in many lakes in the western half of the state but receives little attention from anglers. The Lake whitefish occurs in 10 lakes but is seldom taken on hook and line. The distribution of Pygmy whitefish is limited to a few deep cold-water lakes in the northwest part of the state where it is an important forage species for predator species. The grayling was abundant in the Missouri River and its tributaries above Great Falls but its current range has been reduced to remnant populations in a few waters. They have been introduced into a number of lakes and are currently present in 50 lakes. [redacted].

The four species in this element have habitat requirements similar to those of trout. Therefore they are influenced by the same degradations that affect trout populations in lakes and they also benefit from habitat preservation activities that are intended to preserve cold-water lake environments.

Management

The angling regulations have been liberal on whitefish to encourage utilization of an abundant game species. Angling is primarily for Mountain whitefish but a few Lake whitefish are also taken. The Pygmy whitefish is rarely taken by angling so it is not influenced by the sport fishermen.

Grayling have been introduced into a number of mountain lakes to increase their range and to make them more available to anglers. It is unlikely that the range of grayling in streams can be significantly expanded so lakes are used as substitute habitat to maintain this native species. This species does well in cold water lakes except for spawning. Like the trout, they

require clean gravel bottom streams for spawning so only lakes with high quality tributary streams are suitable for grayling management.

Utilization

A few anglers fish for Mountain and Lake whitefish but most of the limited harvest of these species is incidental to trout fishing. Total angler use on grayling is also low but some anglers do seek out these waters for the opportunity to catch and observe this unique native species.

The Future

The lake dwelling populations of these four species are expected to remain stable during the planning period. They will continue to support recreational fishing at a relatively low level.

Objective - 1985

To preserve or enhance the habitat in the lakes that support whitefish or grayling. To manage these species in lakes to provide an annual use of 16,500 man days of recreational fishing within resource limitations and acceptable quality standards. To manage these species for scientific, aesthetic or other nonconsumptive uses.

OTHER GAME AND SPORT FISH IN LAKES

This group includes the sauger, walleye, northern pike, largemouth bass, smallmouth bass, sturgeon, burbot (ling), channel catfish and several other species that are utilized by recreational fishermen but not legally classified as game fish. There are about 250 individual waters ranging from small farm ponds to large reservoirs that support these species. Most of these waters are in central and eastern Montana but each region has a few lakes that support one or more of these species.

Regions One, Two and Three have limited populations of these species that provide diversity in fishing opportunities in these areas where trout predominate. Northern pike have been established in some lakes in the Columbia River drainage and could adversely affect other game species. Burbot are native in the Missouri and Kootenai drainages and provide fishing in several large lakes and reservoirs. The yellow perch is not legally classified as a game fish but it is a popular species throughout the state.

A large part of Fort Peck Reservoir is unavailable because of a lack of roads or long distances required for boat travel so those areas were not included in total supply. Region Seven has a large number of waters that support these species but they are mostly small ranch ponds that are distributed throughout the region. Many of these ponds are in remote locations and have limited fishery potential but they all have special importance since they provide the only opportunity for water based recreation for local residents.

Management

All of the species in this group can reproduce in lakes so the management has been based mostly on self-sustaining wild fish populations. Introductory plants are made to establish selected species in suitable waters or to reestablish populations that have been eliminated. Maintenance plants of the more popular game species have been made in a few waters where spawning facilities are lacking.

Fishing regulations have been liberal on these waters. Year round fishing has been permitted on most of these waters and gear restrictions have been minimal. Daily limits have generally been large for all species except the northern pike.

Most of the waters in this group are reservoirs that were built for a purpose other than fish production. In most cases the design and/or the operation of the reservoir adversely affects the fishery potential in general and may preclude certain species. Very few lakes are operated in a manner that would provide maximum fish production. The northern pike is especially affected by reservoir operation. The fish spawns in early spring in shallow marshy areas or backwaters. Reservoirs are normally low at that time of year to catch the spring and summer runoff so spawning opportunities are usually limited for the northern pike.

Farm ponds are typically short-lived and often provide fishery for only a few years. The productive period is limited by siltation rates, water quality, temperature and other environmental factors. When a pond loses its capacity to support fish it can usually be replaced by another pond in the same general area. Cooperative agreements with individual landowners or land management agencies provide public access to these waters.

Utilization

These waters provided 200,000 man days of recreational fishing in 1975-76 and the use is expected to reach 256,000 days by 1985. Montana residents account for more than 90 percent of the angler use. Region Seven has about 40 percent of the use by nonresidents on these waters. This is largely due to Wyoming residents who fish the Tongue River Reservoir and nearby ponds.

Nearly 80 percent of this fishery is bordered by public land where ingress is ensured and most of the remainder is on private land where public use is allowed with minimal restrictions. A small part of this fishery is on Indian tribal lands where special fees are assessed for public recreation.

The Future

Lake fishing opportunities for this group of fish will continue to be an important element of the state's recreational fishery, especially for the residents of eastern regions. Based on current participation rates and projected population levels, the anticipated use by recreational anglers can be met in all regions through 1985.

The water base that supports this fishery will remain fairly stable during the planning period. The fishery potential of the larger lakes and reservoirs will not change significantly unless major developments cause unexpected environmental changes or unless major operational changes are adopted to benefit fish production.

Objective - 1985

To preserve or enhance the habitat in 240 waters that support non-salmonid species. To manage nonsalmonid populations in lakes to support

an annual use of 257,000 man days of recreational fishing within resource limitations and acceptable quality standards. To manage these species for scientific, aesthetic or other nonconsumptive uses.

NONGAME FISH AND OTHER AQUATIC ORGANISMS

This group includes all fish not included in game or sport fish classifications, amphibians and aquatic invertebrates. Recent legislation concerning nongame animals affects 55 species of fish, 16 species of amphibians, 110 species of mollusks, 200 species of crustaceans and an undetermined number of other invertebrate species. These animals are important elements of aquatic food chains and many are indicators of water quality. They are also the objects of scientific and educational studies and they are used to a limited extent for human consumption.

Some fish species are harvested commercially for food and a commercial harvest of bait fish is allowed in some areas.

Management:

Commercial fishing for some nongame species has been permitted in Montana for many years. Buffalo, carp, goldeyes and suckers have been harvested commercially from selected waters. The fish are sold for human consumption in out-of-state markets. The gear and fishing sites are carefully regulated to minimize the impact on other resources and on the recreational fishery.

A limited commercial harvest of bait fish is also permitted on selected waters in eastern Montana. The abundance of most bait species is unknown so the regulations have been conservative to avoid over-exploitation or a reduction in forage supplies for predator species.

The status of most nongame species and their habitats has not been determined. Funding for a studies of these species has been limited and the data that is available was usually collected in conjunction with studies of game species. The nongame animals have been adversely affected by various land and water uses and they have also benefitted from habitat preservation

activities that were directed primarily toward game or sport species. However, specific data regarding adverse affects or benefits are very limited.

Several species of fish have been given a designation of Species of Special Concern because of limited abundance and/or limited habitat in Montana waters. The nongame species in this group are the shortnose gar, sturgeon, chub, creek chub, blue sucker, trout perch, shorthead sculpin and the spoonhead sculpin.

In some situations, lake populations become dominated by fish species of little or no recreational value. These lakes are sometimes treated with chemicals to reduce or eliminate the less desirable species and replace them with a more popular game fish.

Utilization:

During recent years commercial fishermen have harvested an annual average of 500,000 pounds of rough fish. Most of this harvest comes from three reservoirs in central and eastern Montana. The supply of some species that are taken commercially is larger than the current harvest but an intensive harvest of goldeyes in portions of Fort Peck Reservoir substantially reduced the number of fish large enough for commercial value. Special regulations were applied on that water to maintain a sustained annual harvest of goldeyes.

Several species of nongame fish are used for fish bait by recreational anglers. Sculpins are an effective bait for trout and are used extensively in the western part of the state. Other species, mostly minnows and suckers, are commonly used in eastern Montana. The harvest and use of these fish is regulated to prevent over harvest of the bait species and adverse affects on other species.

There are currently 36 bait dealers who are licensed to seine or trap bait fish in designated waters in the eastern part of the state. Sculpins are also harvested and sold in the western regions but no license is required.

Nongame animals are also utilized for a variety of scientific and educational purposes. Collectors permits are available if it is necessary to kill protected animals as a result of these activities.

The Future:

The commercial harvest of food fish is expected to remain near the current level during the planning period. The resource could support a larger harvest of some species but market conditions will continue to limit the participation. Distant markets, low prices and competition from marine sources of fish products will preclude any significant changes in the commercial fishery.

During recent years there has been an increasing interest in the commercial harvest of bait fish, especially in the eastern regions. The number of licensed bait dealers is expected to increase as population and fishing pressure increases. Continued regulation will be necessary but the needs of the bait industry can be met.

Objective - 1985:

To preserve or enhance nongame species and their habitats and to provide an opportunity for beneficial uses of these animals. To provide for an annual commercial harvest of 700,000 - 1,000,000 pounds of designated species where that harvest is compatible with other uses of fish and wildlife.

THE HISTORICAL PERSPECTIVE

My first memories of the fisheries division began as a small child when my dad worked at the Emigrant Hatchery which at that time was located on the Pete Story ranch a mile south of Emigrant in the Yellowstone Valley. Some memories remain in my mind as if it were yesterday; going with my dad in a Model T truck loaded with cans of fish to plant in Dailey Lake. You didn't have to worry about aeration - between the rough road and a truck with those stiff springs the fish really were bounced around. Long distance fish distribution was done by the use of a renovated baggage car. The fish car was spotted on a siding. In the morning about 130 fish cans were filled with water, fish and ice at the hatchery. They were then loaded on a truck and hauled to the fish car in Emigrant. Later in the day in Livingston the fish car would be hooked onto either a west or east bound train. The fish were aereated by hand enroute to their destination. They were generally picked up by landowners and sportsmen at small towns, but sometimes the train stopped so they could be poured in the stream at stream crossings. Many thousands of brook trout, browns and rainbow were planted in this fashion. This explains why early fish plant records are sketchy.

Fish distribution equipment has improved over the years from fish cans, fish railroad cars and Model T trucks to gasoline and diesel powered vehicles with insulated tanks that allows us to transport fish across Montana with little change in water temperature. The aereation systems have improved greatly. In the 20's or early 30's a length of 3/4-inch galvanized pipe perforated with small holes, then wrapped tightly with a small tightly woven cord was used. An electric powered air compressor operating off the truck battery pumped air through the aereation system. This system had its problems such as if you lost power to the battery the air compressor soon ran out of electricity and the fish would die. Then came the gasoline engine and pump known as the recirculation system. After that the hydrolic aereator and then the present day system of bottled oxygen and fresh-flo aereators. Our present system is a good system for fish transportation and also for the drivers because of the alternate systems if one fails, we have back up systems to keep the fish alive.

Montana was divided into two regions that were known as the east and west sides. Emigrant was headquarters for the east and Anaconda for the west side. In the fall after all the fish were planted, Big Timber, Lewistown and Great Falls stations would be closed and all the employees would transfer to Emigrant to repair egg cases, vehicles and repair spawning equipment. In early spring some of the men would transfer to spawning stations and others would return to open up the hatcheries that were closed the fall before.

During World War II several million dollars of fish and game license funds accumulated. This led to the purchase of two new hatchery sites at Arlee and Bluewater and the renovation of most of the existing hatcheries to increase their capacity to rear larger fish. By the late 40's and through to the 60's the catchable program was in high

gear. The larger fish were released in practically every lake and stream. This was known as the "put and take" era. It soon became evident that these plants were very costly and had some adverse affect on the wild trout population. This program was phased out and most stream plants have been discontinued, however catchables now are being planted in some isolated areas. Since the mid-60's the hatcheries have been geared to the 4 to 6 inch fish for lakes and reservoirs.

I think one of the greatest breakthroughs in fish culture was the development of the dry diet over the red meats. This occurred during the late 50's. I have ground tons of horse meat, suckers, carp, tripe, beef liver, lungs, spleen and heart. Meats that were fed to small fish had to be ground 30 to 40 times through a 1/16-inch plate. It seemed we were always plagued with gill diseases. Conversions on the red meat diet was normally 5 to 10 pounds of food to produce a pound of fish flesh. With good fish culture practices dry food will produce a pound of fish flesh for every 1 to 1½ pounds of fish food.

Fish health work has become very important in fish culture. We can be very pleased with the advancements in the past two decades.

Without the assistance of our fish health biologist and the Fishery Resource Technical Center at Bozeman and the Disease Control Center at Fort Morgan, Colorado hatcheries would be plagued with many fish diseases that we were confronted with in early day fish culture. Furunculosis, kidney disease and bacterial gill disease were dreaded. Present day fish disease treatments are routine and fish are not stressed.

I would like to retrace my steps and mention several of the past disease treatments. I once witnessed a hatchery foremen pour a gallon of iodine in a pond of 50,000 4-inch coho salmon. As the iodine flushed through the pond the bottom of the pond was white with dead fish. That disease problem was cured in a hurry and permanently. Another hatchery disease was called the "two inch break". This seemed to be very common in cutthroat, it was probably nutritional or bacterial gill disease and caused by very fine particles of the ground meat. This too was generally treated with a salt bath. The fish would be crowded in the lower end of the raceway, the water would be shut off and an undetermined amount of salt would be poured over the fish. Most of the time the brine was strong enough to float the fish. The fresh water was then turned on, the dead fish were swept over the screen, the survivors did pretty well until the next treatment. Another very common treatment was "the truck treatment". As soon as there was some indications of sick fish the command was "Lets load up and get them to hell out of here." These treatments were done in good faith and it was assumed that most of the fish recovered when planted in an uncrowded lake. It was acceptable if you had large numbers of fish on hand to supply your planting request; for sure, this was survival of the fittest. With a fish health biologist to diagnose fish diseases we now treat non-infectious diseases and destroy fish that could infect an entire drainage.

We do have a very good fish health program and very good cooperation from the Fish and Wildlife Service.

Until 1955 or 1956 the only source of eggs we had were from wild spawning populations. Spawning sites were located at Georgetown Lake, Harrison Reservoir, Duck Creek, Main stem Madison River, South Fork of the Madison, Ackley Lake, Roger Lake, Lake Mary Ronan and several other locations. This was always some concern to the hatchery personnel as they had no idea how many eggs they were going to harvest. Some years there would be very low flows and the fish would not come into the traps. Many times a late storm would cause freezing temperatures and the ice would freeze up the racks and either tear them up or back up the stream and wash out around the traps. The greatest disadvantage to the spring spawning was that the fish had to be held over till the following spring or planted as small (2 to 4 inch) fish in the late fall when water temperatures were dropping and natural food sources were decreasing. Fall plants of small fish reduced growth and they had less chance to survive as these fish had to compete with the resident population. The undependable sources of wild eggs and late fall plants prompted the culturists to develop a fall spawning rainbow that could be planted as 4 to 6 inch fish in the spring. This fall spawning rainbow was developed in the mid 50's at the Arlee station under the supervision of Vern Campbell. This assured a better survival, also would allow the hatcheries a dependable egg supply.

We have begun to forget the failures we had with wild eggs such as the poor runs from year to year, the possibility of losing the traps from high water or ice, the additional cost of hiring watchmen, endless days of travel and spawning and the climax - planting 2, 3 or 4 inch fish in mid-October to mid-November just before freeze up.

Now today we are again focusing our attention on spring spawning fish and at the same time reviving the spring planting of catchables that we largely discarded some 20 to 25 years ago. Only this time instead of using fish from late November or December eggs which would be 5 inches by June, we are using spring eggs which require over wintering. Gary Shaver advises that in computing the cost difference, the main consideration is the size of fish to be planted. In other words a 5 inch Arlee rainbow costs the same as a 5 inch DeSmet rainbow no matter how long each is held in the hatchery. The kicker is, if you want to plant DeSmet in the spring after hatching, the smallest fish possible is 7 inches and a 7 inch fish costs 1.8 times as much as a 5 inch fish. I remember the words of Ivor Hoglund, an early day hatchery foremen. He said "If we stand still long enough we'll make 360 degree turn and be right back where we started", I am about ready to believe he was right.

Whether good or bad, brookstocks are the most dependable egg source we have. Egg harvest can be manipulated by the use of the photo-period to retard the spawning cycle. Genetic losses can be determined through the use of electrophoresis. Rearing the fish is also enhanced for after they hatch their development can be programmed to produce a certain size of fish at a preprogrammed date. This has been demonstrated at the Big Spring Trout Hatchery with the use of the hatchery constant.

The hatchery budget is getting very close to a million dollars a year. This means fish culture is expensive. We must get the best

use of every hatchery dollar and produce fish that meet the need - whether it be for developing spawning runs or for put-grow-catch fishing.

This brings me back to brood stocks, we know we can't hold fish in a hatchery without losing something. To put it simply, the truly wild fish can't stand domestication - they jump out of the trough or otherwise die. We have two approaches in broodstock management. Our McBride cutthroat program is an example of the first. Here we are trying to maintain the genetic makeup as close as possible to the wild fish. To accomplish this we have a complex process for selecting recruitment to the brood. Emphasis is on being unbiased - no selection of appealing color or large size; the only rejects are absolutely deformed fish. Then to re-instill wildness, with Yellowstone National Park's permission, periodically we return to McBride Lake to get some "new blood". We have plenty of testimonials from fish managers that says this program works. Our McBride plants meet high standards of growth, survival and ability to reproduce in the wild.

The second approach to broodstock management is more fraught with danger. Here we are experimenting with tailor-made fish. Can we design a better fish for the Deadman's Basins - large irrigation reservoirs with no trout spawning areas? This smacks of cattle-breeding and some biologists want no part of it. Our present plans are only for a very low key program, and only for use in strictly artificial habitats. We support the biologists efforts to establish natural reproduction wherever possible.

A still different approach involving broodstocks is the use of triploid fish. The procedure, involving the heat treatment of eggs, is easy but costly in terms of mortality. In our efforts we have lost 50 percent of the eggs. The first planting of triploid Arlee was in Bynum Reservoir in 1983. They were planted again in 1984. Triploids are scheduled for Noxon Reservoir in 1985. These are strictly experimental plants. Obviously this is a way to insure little or no reproduction, but will triploids live long and grow big?

To some extent we have become carried away with broodstocks and we are introducing several strains of rainbow in many of our waters at one time. I feel perhaps we should evaluate some of these strains before planting them in too many of our lakes and not make the same mistakes that were made in the past.

Since 1951 the hatcherymen and wardens have lost their role in being the fish manager. Beginning in the late 40's and early 50's the state of Montana began hiring fisheries biologists to survey fish populations and make recommendations for fish plants. Since then the biologists have had to wear many hats, doing 310 inspections, making fish population estimates and fishing regulation recommendations, fighting for stream flows through the courts and others too numerous to mention. While the biologists have been doing their job, the hatchery people have also done theirs, trying to produce the many strains and species of fish needed to meet management requests.

The decisions we make today will effect our fisheries of tomorrow just as they did in the past. Game Wardens, hatchery personnel and

local politicians dictated the management of state waters. I am confident that all of us have been critical of the practices of our past planting procedures. One instance I can remember very clearly was the Battle of the Little Blackfoot River. In 1946 Rod and Gun Clubs in Butte wanted the Fish and Game Department to plant brown trout in the Little Blackfoot River. The fisheries division took its stand and opposed the plant of brown trout in this stream. Browns had ample reproduction so it was like carrying coal to New Castle. Pressure finally overruled and brown trout were planted. This has happened many times throughout Montana in that our department has had to take second place and make fish plants where it effected a species of fish that was already doing very well in the stream.

I do have all the confidence in our fisheries division. Both hatcherymen and biologists have done an excellent job preserving the fishing of Montana.

I am sure the dedication to Montana's excellent fisheries will carry into the future.

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