

Appendix A

Citizen Workgroup and Management Alternatives

In fall 2008, FWP called for nominations to serve on a Citizen Workgroup to develop fisheries management alternatives to be considered for the 2010-2019 Management Plan. A total of 36 nominations were submitted and examined by a panel consisting of FWP personnel from multiple Bureaus and the Management Plan Facilitator. Nominations were considered to represent the following groups or interests: unaffiliated warmwater angler, unaffiliated coldwater angler, organized warmwater angler group, organized coldwater angler group, ice fishing angler, conservation group, fishing tournament organizer, landowner, outfitter, local government, local business, kids fishing, upstream/downstream interests, and other. Nominees were selected based on their experience and willingness to work in a collaborative process, knowledge and affiliation with the interest or group they were chosen to represent, and their experience and knowledge of the reservoir system. Initially, 18 citizens were chosen to sit on the workgroup plus one member of FWP; however one member declined nomination following scheduling conflicts and another member left the group prior to the final two meetings.

The Citizen Workgroup convened 8 times throughout 2009 to consider data presented by FWP and discuss and develop management alternatives for the new plan. Although consensus was not a desired end result, agreement was reached on many issues. The Citizen Workgroup worked within a collaborative framework developed by the Workgroup and FWP to develop alternatives for consideration. As defined by its Charter, the Workgroup functioned in an advisory capacity only and did not have final decision making authority. Some alternatives chosen by FWP for the final plan were not universally endorsed by the Citizen Workgroup.

The Workgroup received 77 written public comments throughout the planning and collaboration process. A formal public comment period from September 16 – October 23, 2009 allowed public opportunity to comment on specific management alternatives or any other aspects of the draft Management Plan. During the public comment period 203 written comments were received.

Summaries of Citizen Workgroup structure are contained here via the Workgroup Charter, goals and guidelines provided by FWP, and management alternatives submitted for public comment. Information provided here only presents a brief outline of issues considered by the Citizen Workgroup. For more information about the Citizen Workgroup and the collaborative process used to develop alternatives, please contact FWP Fisheries Bureau, PO Box 200701, Helena MT 59620, or by calling (406) 444-2449.

Charter for the Upper Missouri River Reservoir System Fisheries Citizen Workgroup

January 2, 2009

The Upper Missouri River Reservoirs and associated river fisheries are some of the most heavily fished waters in Montana accounting for roughly 15 percent of the total annual statewide angling pressure. Because of the system's proximity to Bozeman, Great Falls, Butte, Missoula and Helena, recreational use of the reservoirs will continue to grow as the fisheries become even more integral to the quality of life for those who live and recreate in Lewis and Clark and Broadwater counties.

The current fisheries management plan (Upper Missouri River Reservoir Fisheries Management Plan 2000-2009) established a common goal that the “three-reservoir system should be managed as a high quality, cost effective, multi species fishery with high levels of angler satisfaction.”

The current plan will expire December 31, 2009.

It is the goal of this management planning process to have the new fisheries management plan in place by December 2009.

Interests to be Represented on the Citizen Workgroup

- Unaffiliated warmwater anglers
- Unaffiliated coldwater anglers
- Organized warmwater-angler groups
- Organized coldwater-angler groups
- Ice-fishing anglers
- Conservation groups
- Kids' fishing
- Fishing-tournament organizer
- Landowner
- Outfitter
- Local government
- Local business
- Other interests

Role of the Workgroup

The Workgroup will:

- develop Upper Missouri River Reservoir system fisheries management alternatives for consideration by FWP. Alternatives must conform to the joint Goals and Guidelines developed by FWP.
- provide information and input needed for FWP to make informed selections among the alternatives.
- forward alternatives to FWP for incorporation into the management plan and attend public open-house meetings to help explain alternatives.

Responsibilities of the Workgroup Members

The Workgroup:

- is a cooperative effort, with all members participating in formulating each alternative.
- is not charged with developing consensus on one preferred alternative.
- members acknowledge the value of each advisors comments and viewpoint— individuals will be allowed to speak without interruption.

- members agree to bring information into the process and likewise, to communicate to constituents about the process as it goes forward.
- functions in an advisory capacity aligned with state law and policies, and does not have decision-making authority.
- members will be required to attend every meeting; substitutes or proxies will not be allowed.

Responsibilities of Resource Specialist Group

- The Resource Specialist Group will provide biological, social and hydrological information on all aspects of the upper Missouri River reservoir system fisheries; biologists will bring in other technical representatives to add information to the process when needed.
- FWP fisheries biologists and managers will provide fisheries management expertise, background on past management and management constraints.
- FWP plan coordinators will ensure that the process is timely and effective. FWP plan coordinators will:
- If three-year average catch for perch in summer sinking gillnets increases above 15 perch per net, recommend increasing angler harvest limits
 - serve as general information source;
 - serve as workgroup members regarding any special needs or requests;
 - organize meetings and provide written meeting summaries in cooperation with facilitator;
 - organize guest speakers or topic specific experts to present information to the workgroup;
 - write drafts of plan chapters and alternatives;
 - conduct optional working and subcommittee meetings;
 - manage review of plan chapters;
 - compile the final draft plan;
 - coordinate the public involvement process after the draft is released to the general public.

Meetings

- Timing of Meetings
- Meetings will be held monthly from January through June or July. If more or fewer meetings are required, adjustments will be made via general agreement among members. Meetings will be all-day, held on weekdays and/or weekends. Optional working subcommittee meetings may be required to complete the plan. FWP will schedule the first meeting; the workgroup will set subsequent meetings. FWP will provide mileage and per diem at state rates for workgroup members.
- Location of Meetings
- Meetings will typically be held in Helena at the Montana Association of Counties Building (MACO).
- Role of the Facilitator
- The facilitator will:
 - conduct the monthly meetings in a positive and inclusive manner.
 - help develop agreement among workgroup members on ground rules for member conduct and meeting operation.
 - help the workgroup address items on each meeting agenda in a timely fashion.
 - ensure participation by advisors is equitable and courteous.
 - assist in producing a written summary of the major points for each meeting.
 - help the workgroup identify issues and develop effective fisheries management alternatives.

Timeline

The process will result in recommendations/alternatives presented to FWP in June 2009. FWP will prepare a draft plan that will be released for 30-60 days of public review. After another revision, the

FWP Director will consider the plan and select an alternative. FWP will adopt and release the final plan upon the December 2009 decision.

Upper Missouri River Reservoir System Fisheries Management Plan Citizen Workgroup Goals and Guidelines

January 7, 2009

The goals and guidelines for the upper Missouri River reservoir system management plan are established by FWP to provide direction for the Citizen Workgroup (CWG) to consider while developing fisheries management alternatives. Alternatives must conform to these Goals and Guidelines and fit within the Guiding Principles of the CWG.

FWP's Guiding Principles

- The upper Missouri River angling and recreation community includes warm- and coldwater anglers, ice-fishing anglers, fisheries managers, outfitters, public-land managers, private landowners, local business, local governments, and other interests.
- Montana's fisheries are held in trust by the State of Montana for the enjoyment of all.
- The upper Missouri River's three-reservoir system is to be managed as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction.

Goals

- Develop alternatives for FWP to consider when writing the new upper Missouri River reservoir system fisheries management plan.
 - FWP will provide necessary information to CWG to make informed recommendations.
 - CWG and FWP will work in collaborative process to consider management alternatives.

Department Assumptions

FWP assumes that:

- alternatives will be realistic in that they seek attainable outcomes based upon scientific data.
- alternatives that could adversely affect aquatic resources in the upper Missouri River system and beyond will not be considered.
- alternatives that are not economically feasible will not be considered.
- the Resource Specialist Group will be available to the CWG for additional information when needed.
- according to its Charter, the CWG functions in an advisory capacity only and does not have decision-making authority.

Draft Management Plan Alternatives

The following management alternatives were developed collaboratively with the Citizen Workgroup and FWP. Although FWP and the Citizen Workgroup specifically identified these issues and alternatives as important, substantive public comments were accepted regarding any aspect of the draft Management Plan. FWP responses to specific comments can be found in Appendix B of the 2010-2019 Fisheries Management Plan.

Canyon Ferry Walleye

Management Goal: Rely on walleye to maintain a self-sustaining sport fishery to enhance the summer fishery and provide an additional component to the winter fishery.

Alternatives

- **Alternative 1:** (FWP Preferred) Reduce bag limit to 10 fish daily, 20 in possession with only one fish greater than 28-inches. Maintain 10 fish limit for three years in order to evaluate any changes to the walleye population structure.
 - **Notes:** This Alternative was initially chosen by FWP for the final Management Plan. Following public discussion and input to the FWP Commission, the Commission adopted the final plan with a variation of Alternative 2 while maintaining the desired effects of Alternative 1.
- **Alternative 2:** Reduce bag limit to 10 fish daily, 20 in possession with only 4 fish greater than 16-inches and one fish greater than 28-inches.
 - **Notes:** This Alternative was preferred by some members of the Citizen Workgroup as well as many of the public comments. FWP chose Alternative 1 because biological data suggests that allowing harvest of only 4 fish greater than 16-inches would have little effect on walleye population size structure and reducing the daily limit from 20 to 10 will have the same desired effects.
- **Alternative 3:** Maintain current bag limit of 20 fish daily, 40 in possession.

Hauser Walleye

Management Goal: Maintain walleye as a species that provides a balanced, cost-effective fishing opportunity in Hauser.

Alternatives

- **Alternative 1:** (FWP Preferred) Increase daily bag limit to 20 fish only one over 28-inches, 40 in possession.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.
- **Alternative 2:** Increase daily bag limit to 20 fish, 19 fish under 20-inches and only one over 28-inches, 40 in possession. No harvest of fish between 20 and 28-inches.
- **Alternative 3:** Keep current daily limit of 10 fish, only one over 28-inches, 20 in possession.
- **Alternative 4:** No daily limit for walleye.

Holter Walleye

Management Goal: Rely on walleye to provide a cost-effective fishery that allows a moderate level of harvest while providing the opportunity to catch a trophy fish. This fishery will be reliant entirely on wild reproduction and flushing from upstream dams.

Alternatives

- **Alternative 1:** Maintain current regulation of six fish daily, with 5 less than 20-inches and only one over 28-inches. No harvest of fish between 20 and 28-inches.

- **Alternative 2:** (FWP Preferred) Increase harvest by increasing bag limit to 8 fish daily, with 7 less than 20-inches and only 1 over 28-inches. No harvest of fish between 20 and 28-inches.
- **Alternative 3:** Increase harvest by increasing bag limit to 10 fish daily, with 9 less than 20-inches and only 1 over 28-inches. No harvest of fish between 20 and 28-inches.
 - **Notes:** FWP adopted a modified version of this Alternative, which increases the daily bag limit to 10 fish daily, with only one fish over 28-inches. No harvest of fish between 20 and 28-inches.

Hauser Yellow Perch

Management Goal: Rely on yellow perch to provide a self-sustaining fishery that is based entirely on wild reproduction.

Alternatives

- **Alternative 1:** Lower daily angler bag and possession limit to 15 yellow perch.
- **Alternative 2:** Maintain current angler bag limit of 50 perch daily with no possession limit.
- **Alternative 3:** (FWP Preferred) Lower daily angler bag limit to 25 perch daily with no possession limit.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.

Holter Yellow Perch

Management Goal: Rely on yellow perch to provide a cost-effective, self-sustaining fishery that is supported entirely with wild reproduction.

Alternatives

- **Alternative 1:** (FWP Preferred) Reduce daily limits of perch to 25 fish daily with no possession limit.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.
- **Alternative 2:** Maintain current bag limit of 50 fish daily with no possession limit.
 - **Notes:** This Alternative was preferred by some members of the Citizen Workgroup and by some public comments on the basis that angler harvest might not be a significant limiting factor to Holter perch abundance. FWP chose Alternative 1 to maintain a conservative approach to perch management and to evaluate whether angler harvest limits perch abundance.

Hauser Kokanee

Management Goal: Recognize kokanee salmon as a supplemental species to rainbow trout with poor opportunity as a viable sport species in Hauser Reservoir.

Alternatives

- **Alternative 1:** Continue work with hatcheries to find a cost-effective solution for stocking kokanee in Hauser.
- **Alternative 2:** Explore opportunities to construct artificial spawning facilities for kokanee.
- **Alternative 3:** (FWP Preferred) Eliminate stocking of kokanee in Hauser Reservoir.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.

Holter Kokanee

Management Goal: Rely on kokanee salmon flushed from Hauser Reservoir, stocking of surplus hatchery fish, and any natural reproduction that may occur in Holter Reservoir to provide limited kokanee harvest. Recognize kokanee as a supplemental fish to the sport fishery in Holter Lake.

Alternatives

- **Alternative 1:** (FWP Preferred) Continue stocking surplus hatchery kokanee when available.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.

- **Alternative 2:** Modify stocking requests to stock kokanee in Holter annually.
- **Alternative 3:** Discontinue kokanee stocking in Holter Reservoir.
 - **Notes:** This Alternative was preferred by a few public comments based on concerns with kokanee interfering with brown trout reproduction in the Missouri River below Hauser Dam.

Missouri River (Toston to CFR) Brown Trout

Management Goal: Rely on brown trout to provide a resident fishery throughout the year and a migratory population of large fish that enter the river during the fall.

Alternatives

- **Alternative 1:** Maintain current combined trout regulation, with catch and release only for brown trout between 18 and 24 inches.
- **Alternative 2:** Consider catch and release only for brown trout. Children age 14 and under can possess one brown trout.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.

Canyon Ferry Brown Trout

Management Goal: Increase the number of brown trout in the reservoir as an additional component to the sport fishery.

Alternatives

- **Alternative 1:** (FWP Preferred) Consider catch and release only regulations for Canyon Ferry. Children age 14 and under can possess one brown trout.
 - **Notes:** This Alternative was chosen by FPW for the final Management Plan.
- **Alternative 2:** Maintain current bag limit of 5 combined trout daily.

Canyon Ferry Forage Fish

Management Goal: Manage and enhance the forage base to support a productive multi-species fishery that includes walleye, trout, and yellow perch.

Alternatives

- **Alternative 1:** (FWP Preferred) Give priority to increase current forage species to support a multi-species fishery. Informally identify potential new species that may be appropriate for the system.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan. An informal review was completed and can be found in Appendix C of the 2010-2019 Management Plan.
- **Alternative 2:** Begin a formal process to evaluate introduction of alternative species that would be part of the forage base identified in initial forage evaluations.
 - **Notes:** This Alternative was preferred by some members of the Citizen Workgroup as well as several public comments. Other Workgroup members and public comments were adamantly opposed to any forage introductions. Informal review of potential forage species show that the risks associated with introducing new forage species outweigh the benefits. A thorough Environmental Analysis will not be completed at this time.

Hauser Tailrace Motorized Access

Management Goal: Manage social conflict and maximize safety on this stretch of the Missouri River.

Alternatives

- **Alternative 1:** Maintain the no wake zone from Beaver Creek to Hauser Dam.
 - **Notes:** This Alternative was chosen by FWP for the final Management Plan.
- **Alternative 2:** (FWP Preferred) Restrict boat use from Hauser Dam to Beaver Creek to non-motorized boats only.

- **Notes:** This Alternative was supported by shore and wade anglers and generally opposed by boaters. FWP did not have enough data available to fully support this Alternative; therefore the choice was made to maintain the existing condition.
- **Alternative 3:** Restrict boat use from Hauser Dam to Cochrane Gulch to non-motorized boats only.

Appendix B

Response to Public Comments

Over 200 written comments on the draft Management Plan were accepted during the open comment period. Most comments were in response to specific alternatives proposed in the draft plan. Many other comments pertained to other aspects of the Management Plan and did not address specific alternatives. This Appendix addresses comments to specific alternatives proposed in the draft Management Plan as well as comments on other aspects of the Plan. Please see Appendix A for more information on proposed alternatives and the Citizen Workgroup that helped develop the alternatives.

Missouri River (Toston – Canyon Ferry Reservoir) Brown Trout

Alternatives

Alternative 1: Maintain current combined trout regulation, with catch-and-release only for brown trout between 18 and 24 inches.

Alternative 2: Consider catch-and-release only for brown trout. Children age 14 and under can possess one brown trout.

Comments

- a) **Comment:** Enact catch and release only for brown trout in all of the reservoirs and river sections.

Response: Brown trout are catch and release only from Canyon Ferry Dam downstream through the rest of the reservoir system. Strategies in the management plan propose catch and release only to be adopted for Canyon Ferry Reservoir and the river from Toston to Canyon Ferry. There is a desire among some anglers to maintain the opportunity to keep a trophy fish in these waters if caught and some degree of harvest will be recommended should brown trout reach management goals.

Canyon Ferry Walleye

Alternatives

Alternative 1: (FWP Preferred) Reduce bag limit to 10 fish daily, 20 in possession with only one fish greater than 28-inches. Maintain 10 fish limit for three years in order to evaluate any changes to walleye population structure.

Alternative 2: Reduce bag limit to 10 fish daily, 20 in possession with only 4 fish greater than 16-inches and one fish greater than 28-inches.

Alternative 3: Maintain current bag limit of 20 fish daily, 40 in possession.

Comments

- a) **Comment:** A 10-fish limit is still too high for Canyon Ferry walleye. The limit should be lowered to 6 fish daily with a protective slot, like regulations currently in place on Holter.

Response: Reducing daily limits to 6 fish daily with a protective slot could jeopardize the goal of maintaining a multi-species fishery. FWP data suggests that lowering the walleye limit to 6 fish with a protective slot could increase consumption by the walleye population by over 40%. Canyon Ferry is forage limited and such increases in consumption by walleye could collapse the forage base, which in turn would have negative effects to all sport fish in the reservoir. Data also suggests that a protective slot would not be an effective tool for improving size distribution of walleye in the reservoir.

- b) **Comment:** High limits are not necessary at Canyon Ferry. No one catches that many fish, anyway.

Response: For much of the year few people are able to catch a limit of walleye. High limits are in place on Canyon Ferry to maximize harvest when the walleye “bite” is on. Higher limits are designed to maintain a balance between the predator population and the forage base.

- c) **Comment:** There is a lack of enforcement at Canyon Ferry in regard to over-harvesting walleye.

Response: Two Helena area FWP Game Wardens and one Townsend area Game Warden provide year-round patrols at Canyon Ferry. Game Wardens often patrol “under cover” and often attempt to blend in among anglers without their knowledge. A review of FWP’s 1-800-TIP-MONT database, which allows the public to report game violations, revealed few, if any, reports of angler over-harvests at all of Southwestern Montana’s lakes or reservoirs. This suggests reports of over harvest may not be substantive problems.

- d) **Comment:** Why are there different walleye management strategies for Canyon Ferry and Holter? I think limits should be the same on all the reservoirs.

Response: Angling pressure trends and potential walleye carrying capacity are quite different between Canyon Ferry and Holter Reservoirs. Canyon Ferry essentially has unlimited spawning potential for walleye, while Holter is habitat limited for walleye spawning. Angler pressure on Canyon Ferry averages 2.6 angler days per acre while Holter averages 12.6 angler days per acre. In the past, due to poor spawning habitat and relatively high concentrations of angler pressure, more conservative limits maintained the viability of the Holter walleye population. This Plan proposes lower daily limits on Canyon Ferry in an effort to improve the size structure of the walleye population. Higher daily limits are proposed on Holter to increase harvest of walleye to prevent deterioration of desirable size structure of the Holter Lake walleye population.

- e) **Comment:** Take off all limits on walleyes and try to catch as many as possible. Walleye numbers should be greatly suppressed and reservoir management should return to a trout and perch fishery.

Response: Walleye are a primary sport fish species and an important component of the multi-species fishery, as are yellow perch and trout. Strategies in the management plan strive to maintain walleye population levels appropriate for the available forage base and maintain a viable perch and trout fishery. Although managed as multi-species fisheries, historic levels of abundance for perch and rainbow are likely unattainable in a system with walleye. Depending on reproductive success of walleye in Canyon Ferry and flushing rates into Hauser and Holter, liberal limits may be implemented as part of the adaptive nature of this management plan.

Canyon Ferry Yellow Perch

No new management alternatives for perch were presented by the Citizen Workgroup or FWP.

Comments

- a) **Comment:** Emergency regulations should be implemented—either reduce harvest on perch or create incentives to harvest more walleye—should perch populations plummet below 8 per gill net in any given year.

Response: Due to large annual fluctuations of fish populations, especially perch, management triggers set over a three-year average are more sensitive to detecting long-term population trends than evaluating annual trends only. New management triggers for perch are considerably lower than in the old plan, however data suggests that these trigger points are the minimum abundance possible to maintain perch as a forage fish and not necessarily to maintain the perch sport fishery.

- b) **Comment:** Perch fishing should not be allowed south of the Silos boat ramp from March 31 to June 1 to allow perch to spawn.

Response: There is no evidence to suggest that angler harvest during this period is a limiting factor for perch spawning success. Yellow perch spawn throughout the reservoir and a fishing closure in this nature would do little to increase spawning success of perch. Spawning habitat and environmental variables (weather) during spring spawning are likely the biggest limiting factors for spawning success.

Canyon Ferry Brown Trout

Alternatives

Alternative 1: (FWP Adopted) Consider catch-and-release only regulations for Canyon Ferry. Children age 14 and under can possess one brown trout.

Alternative 2: Maintain current bag limit of 5 combined trout daily

Comments

- a) **Comment:** Enact catch and release only for brown trout in all of the reservoirs and river sections.

Response: Brown trout are catch and release only from Canyon Ferry Dam downstream through the rest of the reservoir system. Strategies in the management plan propose catch and release only to be adopted for Canyon Ferry Reservoir and the river from Toston to Canyon Ferry. There is a desire among some anglers to maintain the opportunity to keep a trophy fish in these waters if caught and some degree of harvest will be recommended should brown trout reach management goals.

Canyon Ferry Forage Fish

Alternatives

Alternative 1: (FWP Adopted) Give priority to increase current forage species to support a multi-species fishery. Informally identify potential new species that may be appropriate for the system.

Alternative 2: Begin a formal process to evaluate introduction of alternative species that would be part of the forage base identified in initial forage evaluations.

Comments

- a) **Comment:** Additional forage needs to be stocked to feed the walleye. Shad, smelt, shiners, or cisco have been used successfully in other places.

Response: Often times the unintended consequences of forage introductions outweigh the benefits. Introducing new fish species could have negative effects on the trophic dynamics not only in the reservoirs, but also within the entire Missouri River system. Initial review of potential species that may be appropriate for introduction show that many species would be of little to no benefit to walleye. Depending upon the species, there is great potential that forage fish would have negative effects to the species it was stocked to benefit. Changes to the food web and trophic dynamics within the system could jeopardize natural reproductive success of walleye and perch and make the put-take rainbow fishery unsustainable.

- b) **Comment:** Do not stock an additional forage species into Canyon Ferry.

Response: The management plan does not propose a forage introduction at this time. Any introduction of a new species will require a thorough Environmental Assessment and a public review independent of this management planning process. The management plan proposes strategies to increase abundance of forage species already present in the system (see pages 33).

- c) **Comment:** The management plan seems to oppose introduction of new forage species, but it also seems to be open to the idea.

Response: FWP opposes any forage introduction that may cause any negative effects to the trophic (food and energy) dynamics of the system. A portion of the angling users of the system feel a forage introduction may benefit the fisheries of the system. Alternatives presented in the draft plan were to gauge public input regarding forage introduction prior to committing to an in-depth Environmental Assessment of a forage introduction. Furthermore, the Illegal and Unauthorized Introduction of Aquatic Wildlife Policy adopted by the Fisheries Division on May 22, 2002 states that if the department determines that successful removal of unauthorized species is not likely or if removal fails, the department will take into consideration the illegal nature of the introduction in future management decisions. One of the management options identified is: do not stock any forage fish species to benefit the unauthorized or illegally introduced species, or if the department was previously stocking fish that are used as forage by the illegally introduced species, stop stocking that species or alter stocking strategy to reduce predation. Honoring this policy precludes FWP from considering the introduction of new forage species in Canyon Ferry Reservoir (see Appendix D for the Illegal and Unauthorized Introduction of Aquatic Wildlife Policy).

- d) **Comment:** FWP should use the waterfowl ponds on the South end of Canyon Ferry for rearing a supplemental forage fish base.

Response: The management plan contains strategies to look into using the waterfowl ponds as a rearing area for yellow perch. The cost-effectiveness, impacts to wildlife, and the physical capability of retrofitting such a use will need to be evaluated prior to implementing any such project. Given the shallow, turbid waters of the waterfowl ponds, it may not be possible to maintain habitats suitable for perch rearing.

- e) **Comment:** Stocking another forage fish will take pressure off of other species in the lake, such as perch.

Response: CANYON FERRY: It is unknown if stocking another species will actually alleviate predation on existing species, such as yellow perch. Yellow perch are a preferred food item for walleye across their native range, and walleye often select yellow perch when other food is more abundant and readily available. An additional forage fish may negatively affect the reproductive success or growth of yellow perch as well as other species used as forage.

Hauser Walleye

Alternatives

Alternative 1: (FWP Adopted) Increase daily bag limit to 20 fish only one over 28-inches, 40 in possession.

Alternative 2: Increase daily bag limit to 20 fish, 19 fish under 20-inches and only one over 28-inches, 40 in possession. No harvest of fish between 20 and 28-inches.

Alternative 3: Keep current daily limit of 10 fish, only one over 28-inches, 20 in possession.

Alternative 4: No daily bag limit for walleye.

Comments

- a) **Comment:** Walleye limits should be eliminated in Hauser and Holter to create lower densities of fish and create a bottleneck, which would reduce the number of walleye flushed into the Missouri River.

Response: FWP has no evidence to suggest that unlimited walleye harvest in Hauser and Holter would reduce walleye densities to levels resulting in fewer walleye flushed into the river. Data suggests walleye fry and juvenile walleye flush through the entire system, including the Missouri River below Holter, when Canyon Ferry Dam spills water in the spring. During years that Canyon Ferry spills water, any amount of walleye harvest in Hauser and Holter would likely have little or no effect on numbers of walleye flushed into the river.

One proposed alternative in the new plan was to allow unlimited harvest of walleye in Hauser Reservoir. The adopted alternative would implement a limit of 20 fish daily, 40 in possession in order to evaluate the impacts of high harvest to the population. Higher limits are proposed in an effort to reduce walleye densities to levels appropriate for the available forage and may or may not influence the number of walleye flushed downstream. Identification of mechanisms that can eliminate high survival of walleye flushed from Canyon Ferry may provide the greatest potential for management of downstream waters.

Hauser Yellow Perch

Alternatives

Alternative 1: Lower daily angler bag and possession limit to 15 yellow perch

Alternative 2: Maintain current angler bag limit of 50 perch daily with no possession limit.

Alternative 3: (FWP Adopted) Lower daily angler bag limit to 25 perch daily with no possession limit.

Comments

- a) **Comment:** You should reduce the limit to 15 (daily) and 30 (in possession) like Canyon Ferry.

Response: Perch limits on Canyon Ferry are 15 daily and in possession. Reducing angler bag limits (25 daily and no possession) for perch on Hauser and Holter were proposed as an alternative in the draft plan and adopted as the final strategy in the final management plan. Establishing even greater restrictions may be warranted if declines in perch abundance continue and future population goals are not met. Predation by walleye is likely more of a controlling factor to perch abundance than angler harvest.

Hauser Kokanee

Alternatives

Alternative 1: Continue work with hatcheries to find a cost-effective solution for stocking kokanee in Hauser.

Alternative 2: Explore opportunities to construct artificial spawning facilities for kokanee.

Alternative 3: (FWP Adopted) Eliminate stocking of kokanee in Hauser Reservoir.

Comments

- a) **Comment:** Kokanee salmon should not be stocked in any of the reservoirs because even a modest spawning run will damage the brown trout fishery.

Response: There is a desire by anglers to maintain some degree of a kokanee fishery in the system. Stocking of surplus fish in Holter appears to maintain a low level kokanee population at much lower densities than in the 1990s. Declines in brown trout numbers in the tailrace below Hauser Dam through the 1980s and 1990s may be attributable to competition for spawning areas, superimposition of spawning kokanee over brown trout redds and opportunistic infections of fungus. In recent years (2003-2007), brown trout numbers have remained near 130 fish per mile in the Hauser tailrace reach and the current low densities of kokanee are not expected to impact brown trout numbers. Stocking kokanee in Holter would be suspended if kokanee impact spawning of brown trout in the tailrace.

Hauser Tailrace Motorized Access

Alternatives

Alternative 1: (FWP Adopted) Maintain the no wake zone from Beaver Creek to Hauser Dam.

Alternative 2: (FWP Preferred) Restrict boat use from Hauser Dam to Beaver Creek to non-motorized boats only.

Alternative 3: Restrict boat use from Hauser Dam to Cochrane Gulch to non-motorized boats only.

Comments

- a) **Comment:** Due to poor signage, many boaters are not aware of the no-wake zone upstream from Beaver Creek.

Response: The burden of law falls upon the user; therefore boaters are responsible for knowing laws and regulations prior to entering a lake or river. However, FWP may explore the potential to erect signs to better inform the boating public.

- b) **Comment:** FWP needs to better enforce the no-wake zone upstream from Beaver Creek.

Response: FWP Enforcement personnel regularly patrol the Hauser tailrace area, especially during high-use periods. Enforcement staff also regularly follows up on reported violators to the no-wake rule. Violators are typically turned in by other boaters or anglers who record the boat number of the violator and report them to 1-800-TIP-MONT.

- c) **Comment:** There should be seasonal closures to boating to protect spawning rainbow and brown trout.

Response: Population surveys conducted bi-annually show that trout population abundance and recruitment are relatively stable, indicating that fishing from boats or from shore have little effect to the spawning success of trout in the Hauser tailrace. If fishing pressure continues to increase and trout abundance declines, seasonal closures may need to be considered. Seasonal closures to protect brown trout redds would need to extend from October to April and for rainbow trout, until early June, resulting closing the tailrace a significant portion of the year. The posting of spawning area closures for rainbow and brown trout in this reach, which are relatively discrete areas, would also draw attention to those areas and could be counterproductive.

- d) **Comment:** Fishing in and near Beaver Creek should be closed during fish spawning periods.

Response: Current regulations for Beaver Creek open the stream on June 15th to provide protection for spawning rainbow trout and close it on November 30. No closures are in effect for the Missouri River near the mouth of Beaver Creek and to date, FWP has not identified any biological issues that currently justify a spawning closure. Social issues may be examined in the future.

- e) **Comment:** I would like to see the guides and outfitters removed from Hauser Dam to American Bar.

Response: Regular patrols by Enforcement personnel indicate that guides and outfitters constitute a small percentage of users on this stretch of river. FWP plans on conducting a comprehensive creel survey of this section of river, which will include collecting data that will quantify use by guides and outfitters in this reach.

- f) **Comment:** All riverine sections within the system should be designated non-motorized boating only. Let the motorboat users have Canyon Ferry, Hauser, and Holter to enjoy their motors.

Response: Limiting motorized access on all river sections would severely limit angling opportunity on the river. The management plan proposes limits to motorized access to the Missouri River from Hauser Dam to Beaver Creek only. A further review of boating regulations jurisdiction within FWP revealed any strategy adopted in the management plan would only be a recommendation to agency personnel responsible for boating safety, regulations, and restrictions. In the other river sections within the system there are few boater-shore angler conflicts.

- g) **Comment:** Install surveillance cameras or web cams at strategic locations above the river monitoring all boat traffic 24-hours a day.

Response: Due to the isolated location of the Hauser tailrace, setup and maintenance of surveillance cameras would likely be cost-prohibitive. Time used for operation and maintenance of surveillance cameras would be better used for Enforcement and on the ground data collection.

Holter Walleye

Alternatives

Alternative 1: Maintain current regulation of six fish daily, with 5 less than 20-inches and only one over 28-inches. No harvest of fish between 20 and 28-inches.

Alternative 2: (FWP Preferred) Increase harvest by increasing bag limit to eight fish daily, with 7 less than 20-inches and only one over 28-inches. No harvest of fish between 20 and 28-inches.

Alternative 3: (Modified and adopted by FWP) Increase harvest by increasing bag limit to ten fish daily, with 9 less than 20-inches and only one over 28-inches. No harvest of fish between 20 and 28-inches.

Comments

- a) **Comment:** Why are there different walleye management strategies for Canyon Ferry and Holter? I think limits should be the same on all the reservoirs.

Response: Angling pressure trends and potential walleye carrying capacity are quite different between Canyon Ferry and Holter Reservoirs. Canyon Ferry essentially has unlimited spawning potential for walleye, while Holter is habitat limited for walleye spawning. Angler pressure on Canyon Ferry averages 2.6 angler days per acre while Holter averages 12.6 angler days per acre. In the past, due to poor spawning habitat and relatively high concentrations of angler pressure, more conservative limits maintained the viability of the Holter walleye population. This Plan proposed lower daily limits on Canyon Ferry in an effort to improve the size structure of the walleye population. Higher daily limits are proposed on Holter to increase harvest of walleye to prevent deterioration of desirable size structure of the Holter Lake walleye population.

- b) **Comment:** I would like the present walleye limit on Holter to remain at 20 fish daily, 40 in possession.

Response: The current (2009) walleye limit on Holter is 6 fish daily with 5 less than 20 inches and 1 greater than 28 inches. Possession limit is twice the daily limit. The original preferred alternative identified in the draft management plan was modified to raise the walleye limit to 10 fish with 1 greater than 28-inches with no harvest of fish between 20 and 28-inches. This is intended to increase harvest on smaller-sized fish and preserve the trophy component of the fishery (see pages 72-73 in the management plan).

- c) **Comment:** Walleye limits should be eliminated in Hauser and Holter to create lower densities of fish and create a bottleneck, which would reduce the number of walleye flushed into the Missouri River.

Response: FWP has no evidence to suggest that unlimited walleye harvest in Hauser and Holter would reduce walleye densities to levels resulting in fewer walleye flushed into the river. Data suggests walleye fry and juvenile walleye flush through the entire system, including the Missouri River below Holter, when Canyon Ferry Dam spills water in the spring. During years that Canyon Ferry spills water, any amount of walleye harvest in Hauser and Holter would likely have little or no effect on numbers of walleye flushed into the river.

Holter historically held a low-level walleye population with many trophy-sized fish. Given higher angler concentrations (12.6 angler days per acre) and higher concentrations of fish, unlimited walleye harvest could negatively affect the Holter walleye population, which is an important component of the multi-species fishery. Higher walleye limits are proposed to reduce walleye densities to levels appropriate for the available forage.

Holter Yellow Perch

Alternatives

Alternative 1: (FWP Adopted) Reduce daily limits of perch to 25 fish daily with no possession limit.

Alternative 2: Maintain current bag limit of 50 fish daily with no possession limit.

Comments

a) **Comment:** You should reduce the limit to 15 (daily) and 30 (in possession) like Canyon Ferry.

Response: Perch limits on Canyon Ferry are 15 daily and in possession. Reducing angler bag limits (25 daily and no possession) for perch on Hauser and Holter were proposed as an alternative in the draft plan and adopted as the final strategy in the final management plan. Establishing even greater restrictions on Holter may be warranted if declines in perch abundance continue and future population goals are not met. Predation by walleye is likely more of a controlling factor to perch abundance than angler harvest.

Holter Kokanee

Alternatives

Alternative 1: (FWP Adopted) Continue stocking surplus hatchery kokanee when available.

Alternative 2: Modify stocking requests to stock kokanee in Holter annually.

Alternative 3: Discontinue kokanee stocking in Holter Reservoir.

Comments

a) **Comment:** Kokanee salmon should not be stocked in any of the reservoirs because even a modest spawning run will damage the brown trout fishery.

Response: There is a desire by anglers to maintain some degree of a kokanee fishery in the system. Stocking of surplus fish in Holter appears to maintain a low level kokanee population at much lower densities than in the 1990s. Declines in brown trout numbers in the tailrace below Hauser Dam through the 1980s and 1990s may be attributable to competition for spawning areas, superimposition of spawning kokanee over brown trout redds and opportunistic infections of fungus. In recent years (2003-2007), brown trout numbers have remained near 130 fish per mile in the Hauser tailrace reach and the current low densities of kokanee are not expected to impact brown trout numbers. Stocking kokanee in Holter would be suspended if kokanee impact spawning of brown trout in the tailrace.

Rainbow Trout

No new formal management alternatives for rainbow trout were presented by the Citizen Workgroup or FWP.

Comments

- a) **Comment:** Consider catch and release for all rainbow trout in the riverine sections to promote population growth and spawning success.

Response: Standard river and stream daily and possession limits for rainbow trout apply in the river sections within the system. These standard limits allow an angler only 1 rainbow trout greater than 18 inches, which provides protection for a substantial portion of the spawning population. Additionally, rainbow trout populations in the river sections are heavily influenced by migratory rainbow from the reservoirs. Most of these migratory fish are of hatchery origin. Catch and release regulations in these sections would likely have little effect on overall population abundance given the strong influence of hatchery fish, which are stocked annually.

- b) **Comment:** We question whether current levels of angler catch are possible given lower rainbow management targets than in the previous plan.

Response: FWP data from recent years suggests that if relative abundance goals set in the new plan are met, angler catch rates for rainbow should meet or exceed 0.25 fish per hour, which is widely considered as good fishing.

- c) **Comment:** Any changes that are implemented to help the walleye fishery should not jeopardize the existing trout fishing opportunities.

Response: Triggers in the management plan are in place to try to achieve a balance in the multi-species fisheries. If walleye numbers increase and are found to be detrimental to the trout population, then management strategies will be implemented to increase trout numbers.

- d) **Comment:** The Eagle Lake trout plant at the Gates of the Mountains (Holter Lake) could be halved with the other portion stocked below Hauser Dam.

Response: Current FWP policy limits stocking of trout into rivers and streams. FWP surveys show that migratory reservoir fish, mostly of hatchery origin, comprise 35% of rainbows captured during fall surveys. Stocking additional fish in this river section would further decrease the number of wild fish in the river.

- e) **Comment:** More Eagle Lake rainbows should be planted in Hauser. Rainbow strain evaluation needs to be done in Hauser in conjunction with a true creel census.

Response: Eagle Lake strain rainbow trout were first stocked in Hauser when approximately 100,000 Eagle Lakes were stocked in 2003. Angler return was very high, with Eagle Lakes from the initial plant comprising 36.8% of the angler creel by 2006. After that year angler harvest declined due to natural mortality and harvest of the initial plant. Starting in 2008, approximately 50,000 Eagle Lake and 100,000 Arlee strain rainbows were planted in Hauser. Stocking plans over at least the next six years include continued annual stocking of 50,000 Eagle Lake and 100,000 Arlee strain rainbows. Hatchery space is not available to increase the plants of Eagle Lake in Hauser Reservoir without decreasing the number stocked in other reservoirs. Monitoring and strain evaluation will continue through standardized sampling and creel surveys.

General Comments

Walleye

- a) **Comment:** Your numbers showing fisherman targeting walleye are way off. There are way more fisherman that target walleye.

Response: CANYON FERRY: Canyon Ferry partial creel census has been conducted annually during the winter and summer ice fishing seasons since 1986. The creel census uses a scientifically based approach to sample the angler creel. For the 2007 license year (including the summer and winter fishing seasons), 26,469 anglers targeted only rainbow and 24,630 targeted only walleye. Angler pressure estimates for 2008 are not available at this time, but 2008 creel surveys for the winter and summer seasons show 41.5% anglers targeted only trout while 14.5% targeted only walleye.

- b) **Comment:** We need to bring the walleye fisheries in these lakes back to what they were in the 1990s and early 2000s.

Response: CANYON FERRY: Following expansion of the Canyon Ferry walleye population in 1997, walleye grew at an extraordinary rate, as there was essentially an unlimited forage base. As the population grew the forage base was depleted and walleye growth slowed to a rate similar to that of other walleye populations in the region. This “boom” cycle is common in new or developing fisheries and was observed in Canyon Ferry. Now that walleye are firmly established in the reservoir and given the available food base, population growth and fish growth similar to that observed in the late 1990s is not possible.

HAUSER AND HOLTER: Hauser and Holter historically maintained low-level walleye populations. Flushing of walleye from Canyon Ferry Dam has upset the balance between these walleye populations and available forage. Walleye populations in Hauser and Holter cannot achieve the appropriate balance between walleye and forage unless something can be done to eliminate the effects of walleye flushed from Canyon Ferry.

- c) **Comment:** Why are we not saving the spawning class walleye in Canyon Ferry? Walleye fishing should be closed from March 31 to June 1 south of the Silos.

Response: Angler harvest during the walleye spawn does not appear to be a limiting factor to spawning success. Angler harvest of spawning fish is relatively low during the spring spawning period due to the nearly unlimited amount of spawning habitat available in the reservoir. Although walleye congregate on the south end of the reservoir during the spawn, concentrations of fish are low compared to reservoirs where there is a limited amount of spawning habitat and large numbers of fish are forced into a small area. Environmental factors (weather, temperatures) are believed to be the primary limiting factors for walleye spawning success.

- d) **Comment:** Stock walleye every three years to see if the walleye increase in size.

Response: Walleye populations in the entire system are currently maintained through natural reproduction. Walleye growth is already limited due to low forage abundance. Stocking more walleye would add more pressure to the already limited forage base and provide negative impacts to all sport fisheries in the system.

- e) **Comment:** Triggers for aggressive walleye management should be based on a three-year running average, when any two of the following criteria are met: walleye density exceeds 4 per

gill net, yellow perch density decreases below 8 per gill net, or rainbow trout density decreases below 9 per gill net.

Response: CANYON FERRY: Data collection over the past 10 years, under guidance of the 2000-2009 management plan, shows that maintaining a relative abundance at 8 perch per gill net and rainbow trout at 9 per gill net is unlikely with the presence of walleye in the reservoir. However, angler catch rates for rainbow trout are deemed satisfactory at current population levels and may be a better indicator of successful rainbow trout management than gill netting data. Walleye sampling show that densities would exceed 4 per gill net over most three-year periods. In the final plan the upper walleye density trigger was reduced to a three-year average of 7 fish per net in an attempt to ensure that walleye densities remain at levels appropriate for available forage. In order to maintain levels above the proposed trigger points for yellow perch and rainbow, walleye numbers would need to be drastically reduced through means other than angler harvest, which would be highly controversial and possibly require legislative action. The goals and triggers for Canyon Ferry attempts to honor one of the underlying goals of the Citizen Workgroup, which is a plan that results in “strategies that emphasize trout and walleye while recognizing perch as an important game and forage species.”

Yellow Perch

- a) **Comment:** Perch fishing and size of fish has declined over the years. Something should be done to improve perch fishing.

Response: The management plan outlines several strategies to improve perch fishing. Strategies include habitat improvements, identification of critical perch habitat, adjustment of bag limits, and active predator management. Predator management is the factor that has the largest potential to influence perch fishing. See the yellow perch sections for each reservoir for all perch management strategies.

Northern Pike

- a) **Comment:** Has FWP made any plans to account for possible expansion of the northern pike population?

Response: The management plan takes an aggressive stance regarding northern pike management. The plan proposes elimination of bag limits in the entire reservoir system. Further management actions to suppress northern pike may be implemented if deemed appropriate. For more information on northern pike strategies see pages 17, 34, 51 and 75 in the management plan.

- b) **Comment:** Has the perch habitat enhancement project using Christmas trees had the unintended consequences of providing pike spawning habitat?

Response: Although it is possible that northern pike are using Christmas tree structures for spawning, FWP has seen no evidence that this is actually occurring. Most northern pike captured during FWP population surveys are observed near the river mouth or in areas of the reservoir where weed beds are present. Reports of angler catch reflect the same. Evidence shows that pike are either flushing in from the river or any spawning is occurring near established weed beds.

Carp

- a) **Comment:** We have not seen any provisions to promote the commercial fishing for carp.

Response: FWP has granted an experimental commercial fishing license for carp annually since 2004. The license holder has not commercially fished Canyon Ferry since the original year the permit was issued. A commercial fishing license has also been issued for Lake Helena but it has not been commercially fished since the late-1980s.

Reservoir Operations

- a) **Comment:** Reservoir management meant to benefit reservoir fishes should occur only when it does not pose a risk to the river's fisheries.

Response: Flood control, irrigation, and power generation are the primary water uses for Canyon Ferry. As a result, water management to benefit the reservoir fisheries is limited and most fisheries benefits from water manipulations are realized in the river downstream of Canyon Ferry. When operational flexibility is possible, FWP will evaluate and provide advice to the Bureau of Reclamation regarding the risks and benefits of reservoir manipulations to enhance river and reservoir fisheries on a case-by-case basis. FWP would advocate for reservoir management that benefits reservoir fisheries when risks to the river fisheries are minimal.

Fishing Tournaments

- a) **Comment:** Each tournament or derby should be required to have an invasive species prevention plan that includes boat inspections by FWP personnel and mandatory boat washing stations. The tournament participants should shoulder the cost for this.

Response: FWP rules for fishing contests stipulate, "contest sponsors are responsible for notifying participants that boats and trailers must be cleaned before and after the contest to prevent transport and introduction of aquatic nuisance species" (ARM 12.7.802(6)). In addition, FWP currently maintains boat check stations at most popular Montana reservoirs and river sections during high use periods (such as tournaments). Check stations require that all boats are checked for invasive species and often include boat-cleaning stations for boats suspected of carrying invasive species.

- b) **Comment:** All tournaments and derbies should be eliminated or limited to only one event per year.

Response: CANYON FERRY: The management plan includes strategies to minimize conflicts between tournament anglers and other recreational anglers and users. There is no biological evidence that tournaments currently held on Canyon Ferry adversely impact fish populations. One existing fishing contest provides a substantial harvest of carp and could be considered to have some minimal beneficial effects. Also, fishing contest ARM rules allow an application to be denied if in the opinion of the FWP the proposed contest would be held during a period of heavy recreational use on the host body of water, increasing the likelihood of conflicts with other users or if there is significant public opposition to the proposed contest based on biological or recreational conflict concerns. This provides adaptive management if social conflicts involving fishing contests increased in the future. See pages 35-36 for rationale and strategies for tournaments and derbies.

HAUSER AND HOLTER: Only one fishing tournament is currently held between Hauser and Holter Reservoirs. Ice fishing derbies are discouraged due to unsafe ice conditions common in the winter.

Use of live Fish as Bait

- a) **Comment:** What does it mean in the draft plan, which states live bait may be allowed if investigations demonstrate the potential for native fish to be used safely?

Response: Interest has been shown in the past to provide live fish from a local source with a species composition consisting of fish already present and common in the system. Investigations would include whether such a source is available, if fish are disease free, and certifiably free of any species not already present in the system. Such a bait source has not been proposed or observed by FWP.

Habitat

- a) **Comment:** Focus effort and money on habitat and water quality improvement on all tributaries in the study area to promote a viable wild fishery.

Response: The management plan outlines strategies to continue habitat improvement projects on the tributaries in the system and continue to explore opportunities to enhance wild fisheries.

- b) **Comment:** Mitigation money from Toston Dam needs to be properly used. Several years ago \$60,000 of mitigation money was returned to the general fund because it was not utilized.

Response: Approximately \$300,000 was made available for Toston Mitigation in the early 1990's. Three projects intended to improve brown trout abundance were implemented during this time (Confederate Creek Spawning Enhancement, Deep Creek Siphon, and four years of brown trout egg collection and imprinting). In addition, DNRC provided approximately \$16,000 per year to fund fisheries technician time to monitor results from 1998 to 2008 (10-year monitoring contract). Results of this monitoring clearly show that brown trout have not responded to past mitigation projects.

It is correct that \$54,000 remained in the mitigation fund in 2007 and FWP initiated a feasibility study to conduct an additional mitigation project at Big Springs (just downstream of Toston Dam). The study was completed, but project implementation is on hold due to funding constraints and ongoing negotiations with water users. DNRC returned the \$54,000 to the general fund, but made a commitment to ask the legislature for spending authority to recover this funding during the next legislative session.

Missouri River

- a) **Comment:** FWP needs to do more about pollution in our rivers. Economic gains from increased use by boaters also increase pollution.

Response: The Department of Environmental Quality enforces water quality regulations in Montana, however FWP will continue to monitor water quality and fish health within the reservoir system as well as the Missouri River and cooperate in identifying point and non-point sources of pollution and work towards finding solutions to the problems.

- b) **Comment:** I would like to see the Missouri River below Holter Dam managed as a trout fishery only, and not as a multi-species fishery.

Response: Since this management plan covers the Missouri River reservoir system from Toston Dam downstream only to Holter Dam, management strategies for this stretch of river were not

included in this plan. The Missouri River below Holter Dam is currently managed as a cold-water fishery and no substantive changes to the fisheries management are currently proposed or planned for this stretch of river.

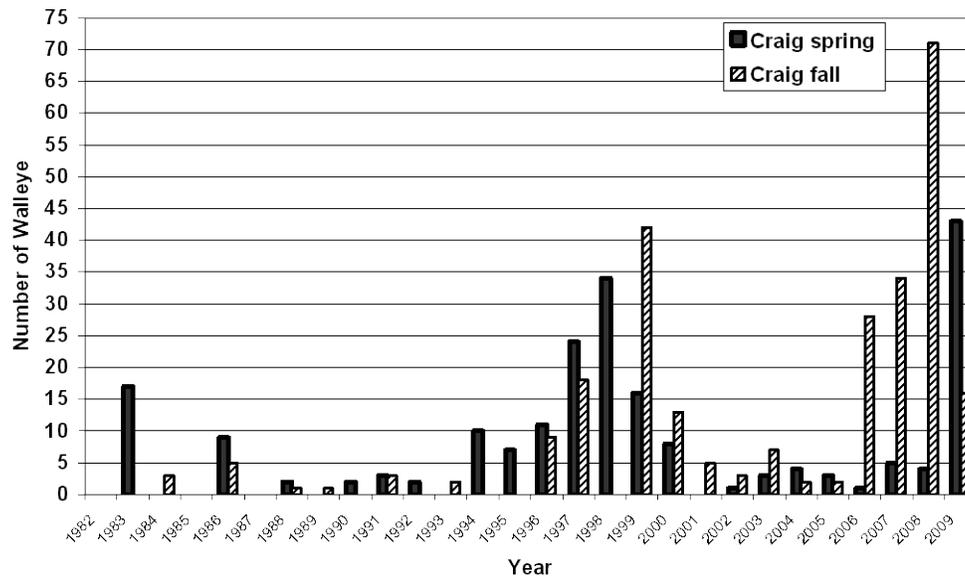
- c) **Comment:** Anglers should be allowed to take as many walleye as possible from the Missouri River below Holter Dam.

Response: As stated above, this management plan area does not cover the Missouri River below Holter Dam; however, FWP feels it is imperative to address anglers concerns regarding walleye limits and densities in this reach. Currently, FWP feels it is not warranted to remove angling limits for walleye in this stretch of river. The current limit for walleye is 5 daily and 10 in possession. FWP personnel have observed high harvest levels below Holter Dam that suggest increased walleye densities will be temporary in nature. Any proposals of this nature should be submitted to FWP and would be considered during the statewide public scoping process for regulation changes slated to begin in 2011.

- d) **Comment:** FWP should actively remove all walleye captured downstream of Holter Dam.

Response: While this management plan does not include the Missouri River below Holter Dam, fisheries management biologists believe that current densities of walleye do not pose a threat to the trout fishery below Holter Dam and have not proposed any plans to actively remove walleye from the Missouri River. FWP data shows that increases in walleye abundance below Holter Dam is strongly correlated to high flows and flushing from Canyon Ferry Reservoir. The frequency of small walleye and low abundance of young of the year fish indicate a low level resident population of walleye. While data collected in the 5.6 mile long Craig section since 1982 shows substantial walleye increases in the late 1990's and from 2007-2009 (see graph below), these increases never represented more than a maximum of 3.4% and 2.7% of the brown and rainbow trout, respectively, handled during estimate work. While the average number of brown trout handled in the spring has been 1,587 fish, the maximum walleye ever handled was 43; for fall work, an average of 3,841 rainbow trout have been handled and the maximum number of walleye sampled is 71, which occurred in 2008. The highest percentage of walleye handled compared to brown trout was obtained in 1983. Additionally, seasonal movements of larger walleye show use of the entire 90-mile reach of river from Holter Dam to Great Falls and movements likely follow a forage base that is not trout. Should monitoring show changes that pose a risk to trout populations, active management strategies for walleye would be considered.

Walleye Captured - Craig Section - 5.6 Miles



- e) **Comment:** FWP needs to work with the power company and other government entities to reduce downstream escapement of walleye.

Response: FWP maintains excellent working relationships with PPL Montana representatives, as well as Bureau of Reclamation water managers and land management agencies. Strategies in the management plan include working with PPL Montana and the Bureau of Reclamation to identify potential approaches to reduce flushing of fish through Canyon Ferry, Hauser, and Holter Dams and will continue work already completed to assess and determine what steps may be taken to reduce flushing of walleye.

- f) **Comment:** FWP needs to develop a monitoring plan in river sections adjacent to the reservoirs.

Response: FWP has conducted electrofishing surveys below Hauser Dam on odd-numbered years since 2003 and below Holter Dam on even-numbered years since 2006. Similar surveys were conducted in the early-80s in the spring and fall below Hauser Dam. FWP also has a long term monitoring section 5.6 miles long from the Wolf Creek Bridge to Craig (downstream of the management plan area), which has been sampled from 1982 to present. FWP, with assistance from PPL Montana, plans the continuation of these surveys to monitor fish populations directly below the dams and collect catch per unit effort for cold and warm water species and calculate population estimates when possible.

Piscivorous (fish eating) Birds

- a) **Comment:** Killing of white pelicans and double-crested cormorants is not necessary. Science does not support killing of birds to protect the sport fishery.

Response: FWP's intent with the management plan was not implementation of a program that would result in the killing of piscivorous (fish-eating) birds without evidence demonstrating negative effects to the sport fishery. The management plan recommends additional research to quantify the year-round effects of pelicans and cormorants to the sport fishery. Any management

action to control bird numbers would require a separate public process, environmental assessment, and consultation with Federal regulators. Any actions would minimize significant, long-term impacts to the bird populations.

- b) **Comment:** If the birds are having an impact to the fish, then stock more fish.

Response: Montana State fish hatcheries are currently running at full capacity, so stocking more fish is not a viable option. Rainbow trout and kokanee salmon are currently the only species stocked in the system. Walleye and yellow perch populations are naturally reproducing, self-sustaining populations, and stocking of those species would not be cost-effective alternatives.

- c) **Comment:** Number of pelicans and cormorants need to be reduced.

Response: FWP pelican and cormorant diet studies have only been conducted during the early summer. During that time, the pelican diet is comprised of primarily carp and crayfish, while data suggests that cormorants may impact stocked rainbow trout, which comprise nearly 25% of the samples some years. Past diet collection efforts have provided only a snapshot of bird diet composition while fledglings are still on the nest. Further research is necessary to determine the composition of bird diet throughout the entire summer and to calculate the fish biomass consumed by pelicans and cormorants on a seasonal basis to determine the significance of predation by birds to fish populations.

Management Plan and Goals

- a) **Comment:** FWP should do a 5-year plan instead of a 10-year plan. Ten years is too long of a planning period.

Response: This is an adaptive management plan that includes annual reviews of trend information and allows public input on an annual basis. FWP feels there is adequate opportunity to adjust management strategies based on “triggers” outlined in the management plan. The 10-year duration is necessary to allow adequate time to implement management strategies and judge their effectiveness. Additionally, the substantial amount of resources involved in such a planning effort limits the fiscal ability to shorten the duration of the planning period.

- b) **Comment:** We are concerned that provisions of the management plan will be circumvented if lands currently managed by the BOR are turned over to the Forest Service or other agency.

Response: By law (MCA, 87-1-201) the State of Montana is responsible for enforcing the restrictions and regulations for fish and wildlife management in the state. Any changes to administration to public lands surrounding the reservoirs will not affect fisheries management strategies outlined in the management plan.

- c) **Comment:** We are concerned that analysis must include promotion of mining opportunities in the Missouri headwaters. There is continued growth in the interest of recreational mining and we need to provide for that opportunity in the planning process.

Response: The management plan addresses strategies that guide fisheries management in the reservoir system for the next ten years. Promoting mining or any other activity that does not directly enhance the fisheries of the upper Missouri River reservoir system would not be appropriate in this planning process.

- d) **Comment:** We are concerned that all diversions on the waterway may not have received the proper amount of discretion to insure water rights are protected.

Response: Although the management plan does not include any specific strategies to acquire water rights, habitat work on tributary streams will continue as will cooperation with private landowners and water users to preserve water rights while improving fish habitat and instream flow in streams. As part of day-to-day management activities, water use issues will be monitored, opportunities to benefit instream flows will be explored, and complaints may be filed with DNRC if inappropriate diversions are identified.

- e) **Comment:** If you propose regulation changes during the management plan, will the public be allowed to comment?

Response: All regulation changes, including emergency changes, will be considered by the FWP Commission and the process will allow opportunity for public comment.

- f) **Comment:** It's sad that there were no open houses on the west side of the divide.

Response: Open houses were held in five locations east of the divide (Helena, Townsend, Great Falls, Bozeman, and Billings) and one location west of the divide (Butte). Many of the primary users of the reservoir system come from these 6 cities. While it would be desirable to hold open houses in all major Montana cities, fiscal considerations limited outreach to other areas through local media outlets and FWP's website. These methods were judged to provide ample opportunity for public participation in review and comment of the draft management plan.

- g) **Comment:** Could FWP keep the work group together to work on adaptive changes to the plan, maybe they only meet once a year to assess how well it's working?

Response: The Citizen Workgroup was appointed only to help identify management alternatives for the new management plan. Workgroup members will be welcome to participate in all public processes under the new 10-year plan, which provides for public outreach and allows public input on an annual basis.

- h) **Comment:** Who and when will FWP make the decisions on which options will be adopted into the final approved plan?

Response: Following the public comment period, FWP field staff from Regions 3 and 4 as well as Helena staff contributed to the decision making process to identify alternatives adopted for the final plan. The Citizen Workgroup reconvened in December 2009 to review public comments and discuss the final alternatives selected for the plan. The final plan was submitted to the FWP Director and considered by the FWP Commission for approval in spring, 2010.

- i) **Comment:** I am concerned that the trout fishing community didn't have the same representation on the Citizen Workgroup as the walleye fisherman.

Response: FWP attempted to balance the representation on the workgroup based on the wide variety of angler constituencies and related interests that are using the reservoir system, rather than a base representation on which species of fish they prefer. The 18 member workgroup was chosen to represent the following constituencies: Organized warm water, unaffiliated warm water, organized cold water, unaffiliated cold water, general anglers, guides and outfitters, ice fishing anglers, fishing-tournament organizer, local business, conservation group, local

government, kid's fishing, upstream/downstream interests, landowner, and other. One representative from FWP was also on the workgroup. Two members, one representing organized cold water and one representing conservation group withdrew from the Citizen Workgroup following scheduling conflicts. Regardless of the balance of representation, the process of developing alternatives by the Citizen Workgroup was based on members acknowledging the value of each member's comments and viewpoints. On many issues, consensus was reached.

Appendix C

A Review of Forage Fish

Montana Department of Fish, Wildlife & Parks

August 2009

1.0 Introduction

It has long been known that as the walleye population in Canyon Ferry Reservoir developed, the potential for depletion of the forage base throughout the reservoir system would be high. McMahon (1992) predicted that the rapidly expanding walleye population would quickly outstrip the forage available in the system. He also predicted that as walleye growth and relative weights (condition) declined, there would be a push by the public to supplement the forage base with another species. Currently, forage abundance in Canyon Ferry remains at low levels; however forage abundance appears adequate for current walleye population levels based upon walleye growth and relative weight data.

This review was completed in response to discussions which occurred during meetings of the *Upper Missouri River Reservoir System Fisheries Management Plan Citizen Workgroup*, where desires were expressed to identify potential species that may be appropriate to introduce to the system should it be deemed necessary. This Appendix provides only a cursory review of fish species used for walleye forage in similar systems and is intended for informational purposes only.

1.1 Reservoir Description

The U.S. Bureau of Reclamation (BOR) constructed Canyon Ferry Dam between 1949-1954 as part of the Pick-Sloan Missouri Basin Program. At full pool, Canyon Ferry Reservoir (CFR) is a 35,200 surface acre reservoir on the Missouri River with the inlet located 2-miles downstream of Townsend, Montana and the dam located 27-miles downstream from Townsend. The total capacity is 2,051,000 acre-feet at a pool elevation 3,800.00 msl. CFR is 25-miles long with a maximum width of 4.5-miles, 75-miles of shoreline, and a maximum depth of 165 feet. Reservoir characteristics are significantly different between the north and south ends. The north end is narrow and deep with numerous bays, steep slopes and rocky shorelines, while the south end is shallow (averaging 49 feet) with gently sloping shorelines. An average annual drawdown of 12-feet occurs in most years and reservoir fluctuations have considerable effects on CFR fisheries (Yerk 2000). Water temperatures fluctuate between 55°F in May, rise to the upper 60's in early August and drop to below 50°F by late October. A weak summer thermocline develops at a depth of approximately 60-feet between June and August on the north end, while the south end never stratifies (McMahon 1992).

1.2 Fisheries Management History

Montana Fish, Wildlife and Parks (FWP) has actively managed the CFR fishery since the dam was completed. Today rainbow trout, yellow perch, walleye, brown trout, northern pike and burbot comprise the sport fishery in the reservoir. Walleye are currently the primary top-level predators in the CFR system, while a developing northern pike population could have additional detrimental impacts to forage species in the system. CFR is currently managed as a multi-species fishery, with rainbow trout, yellow perch and walleye persisting as the primary target species for anglers. Walleye were first captured in 1989 while conducting historical fall gill net sampling and have since established a self-sustaining population. As the new walleye population showed an extremely rapid population growth rate, forage fish numbers declined. This has

resulted in requests for forage fish introductions to supplement existing species. To date, no new forage fish have been authorized for introduction into Canyon Ferry Reservoir.

2.0 Issue Analysis

A number of issues need to be addressed when considering what the benefits and negative impacts would be from the introduction of additional forage specie(s). They include:

- Determine the need for forage enhancement;
- Determine if the introduced forage will be utilized by the predator as a food resource;
- Determine if the introduced forage will be available to the predator based on habitat utilization or if forage fish growth rates are so rapid that they quickly become unavailable due to size;
- Determine the potential impacts of the introduced species to the zooplankton food base for existing species including walleye, yellow perch, and rainbow trout;
- Determine the cost-effectiveness of introducing and maintaining an introduced species;
- Review impacts of forage species introductions in other reservoirs;
- Determine potential negative effects of the introduced species to the fish communities in Hauser, Holter and the Missouri River upstream and downstream from CFR.

3.0 Forage Species Considered

Several non-native species to the upper Missouri River, upstream of Moroney Dam, are described below as potential forage for walleye. Species chosen for this analysis were based upon species range, use of forage in other western reservoirs, use as walleye forage, likelihood of becoming established in CFR, as well as other factors. The following species have been included in this analysis: Alewife, bluegill, cisco, gizzard shad, goldeye, green sunfish, kokanee salmon, rainbow smelt, emerald shiner, golden shiner, redbside shiner and spottail shiner. The golden shiner, redbside shiner, goldeye, cisco, rainbow smelt, and gizzard shad are all species that have been successfully used as forage in the Western United States or southern Canada (Hadley 1982, Bennett and Bennett 1993). Bonneville Cisco have also been suggested as an option for introduction, although stocking success for this species in western reservoirs is as yet unproven (Hadley 1982, Page and Barr 1991) and the species was not included in this review.

Alewife (*Alosa pseudoharengus*)

Native to the Atlantic Coast, Alewives were historically an anadromous marine species, but can complete their life cycle in freshwater environments (AIS Indiana 2009). In a freshwater system, alewives are pelagic, obligate planktivores that are a schooling fish and can be prolific spawners when environmental factors are optimal. In addition, they can become adfluvial (move into rivers), which could have negative effects on the salmonid population in the Missouri River upstream of CFR and below Holter Dam if introduced. Adding a prolific spawning, obligate planktivore would be detrimental to rainbow trout, a principle sportfish in CFR. In reservoir environments alewives are shallow, shoreline spawners, that have shown drastic population swings in fluctuating reservoirs much like that of CFR. Also, alewives prefer deep (150-300 ft.) water from August through March (Scott and Crossman 1973), which is on the maximum depth threshold in CFR and may not be available to predators. Since alewives are prone to great population

swings with large reservoir water level fluctuations, it could be concluded that annual stocking events would be necessary. Repeated stocking could increase the potential for parasite or disease introductions, as well as the risk of introducing additional unwanted exotics due to the use of fish sources outside of Montana. Repeated stocking would also limit the cost-effectiveness of alewife as a forage fish. Alewives are also prone to massive die-offs, which can become health hazards to the fish community and for recreational uses to the lake (Scott and Crossman 1973). Literature suggests that trout that feed extensively on alewives can acquire a thiamine deficiency, which is responsible for suppressing feeding habits and may reduce rainbow trout growth potential (AIS Indiana 2009). Introductions of alewives in Montana would represent a major extension of their current range.

Bluegill (*Lepomis macrochirus*)

Common to waters in eastern and central North America, bluegills are a non-native pan fish that are found in various ponds and lakes throughout Montana. Bluegill are opportunistic feeders and are a highly sought after game fish in the Midwest, where typically, they are stocked in conjunction with largemouth or smallmouth bass and northern pike as a forage fish and to supplement sport fisheries. However, contemporary fisheries managers have moved away from this practice in the West as water temperatures and lack of predation have proved ineffective in growing fish large enough to interest anglers. Bluegill spawning is triggered at $>68^{\circ}\text{F}$ and they need quality shoreline vegetation and cover (i.e. woody debris) for successful reproduction (Scott and Crossman 1973), which limits bluegill production in most western reservoirs. Based on the literature review for bluegill, it appears that CFR is not suitable habitat, considering the lack of shoreline vegetation and cover and a thermal regime that may never meet bluegill spawning triggers.

Cisco (*Coregonus artedii*)

Cisco (Lake Herring) have been introduced into Tiber and Fort Peck reservoirs to augment forage for walleye populations. According to Bennett and Bennett's (1993) environmental assessment for the introduction of cisco into Tiber, cisco populations can be unstable when exploited or subject to competition, and prefer cool waters. In addition, cisco may spatially segregate themselves from walleye by remaining in the deepest portions of the reservoir. However, cisco are heavily utilized and preferred by walleye in Fort Peck, a deep reservoir (Mullins 1991).

Cisco spawn in fall, when water levels in CFR have dropped, but are not at their lowest levels, which may affect the incubating eggs. Cisco can grow very rapidly since they are very efficient planktivores, and could grow too large to provide forage for all but the largest walleye given CFR's plankton densities (Colby et al. 1987). Based on the experience of cisco in Fort Peck Reservoir, it would be safe to assume that the initial plant of cisco would grow too fast to provide much forage the first year. Although initially unavailable for food, this cohort would become the nucleus of the brood stock for 2 to 3 years.

It is likely that cisco would provide forage only to the larger predators in the reservoir and that some of reservoir productivity will be tied up in cisco biomass without a significant return. It is likely that cisco would have profound effects on rainbow trout and yellow perch population densities due to changes to zooplankton community size and composition. Recruitment of juvenile walleye may also be limited due to lower zooplankton densities following fry emergence.

Cisco are native to Lake Superior: a deep, clear, cold lake system. Bennett and Bennett (1993) summarized their temperature tolerances as a preference for waters of 20°C (68°F) or less, but capable of tolerating temperatures up to 23°C (74°F). Colby and Brooke (1969) reported an upper lethal limit of 24 to 26°C (75°F).

to 79 °F) for both young and adult cisco. Cisco's adaptation and preference for cooler waters might benefit them in an introduction into CFR.

Cisco have the ability to migrate, as observed after introduction into Fort Peck Reservoir. Just a few years after initial stocking, they were captured near the mouth of the Judith River, approximately 70 miles upstream. The riverine habitat did not provide suitable habitat or temperatures to establish a resident population, but cisco were successful in colonizing the dredge cut area, a series of pools immediately downstream of Fort Peck Dam. Cisco moving upstream into the Missouri River from CFR are not likely to establish a resident population. Downstream flushing would provide mixed results, with Hauser and Holter reservoirs seemingly suitable for resident populations to become established, while in the Missouri River, they would likely reside seasonally or temporarily.

In summary, if Cisco were to be considered for introduction, their success in CFR could result in growth rates high enough that they would not initially, or potentially over the long term, be available for walleye forage and have significant negative impacts to the food supply for other species, including rainbow trout, yellow perch, and juvenile walleye. Additionally, flushing into downstream waters could result in significant impacts to Hauser and Holter Reservoirs and the Missouri River. The biological impacts to the resident fishery in the Missouri River by introducing an aggressive planktivore upstream are presently unknown, but could result in reduced growth and recruitment rates of rainbow and brown trout, poor recruitment of other sport and forage fish, and changes to the plankton community due to changing community composition in the reservoirs.

Emerald Shiner (*Notropus antherinoides*)

Native to the Missouri River basin, Emerald shiners are thought to be native in the eastern drainages of Montana (Brown, 1971; Holton and Johnson, 2003). Emerald shiners are a small, schooling fish that do not live past 3 years of age and individuals may grow up to four inches in length. Spatial overlap may be limited during some seasons, as emerald shiners remain offshore in the summer and move to shoreline habitat as water temperatures cool in the late summer; they move to deep water throughout the winter months. Emerald shiners are planktivores that can sustain high populations when water conditions are optimal. Similar to other planktivores discussed in this analysis, dense populations could lead to competition with rainbow trout, yellow perch, and juvenile walleye. Emerald shiners are highly susceptible to bird populations (Scott and Crossman 1973), and although they are the most abundant minnow species in the Missouri and Mississippi rivers, piscivores (e.g., walleye, northern pike) have not allowed them to become firmly established in many reservoirs (Pflieger 1997). If heavy predation persists, annual stocking would be required. Repeated stocking increases the potential for parasite or disease introductions as well as the risk of introducing additional unwanted exotics due to the use of out of state sources for fish. Repeated stocking also reduces the cost-effectiveness of emerald shiners as a forage fish.

Gizzard Shad (*Dorosoma cepedianum*)

Gizzard shad are not a native species in the upper Missouri River system and their introduction into CFR would represent a major range extension (Bennett and Bennett 1993). Gizzard shad avoid rivers and streams that lack large permanent pools or stagnant backwaters (Pflieger 1975). Migration upstream into the Missouri River below Toston Dam may be likely during drought years, when optimal summer temperatures could allow a seasonal population in this reach of the river. Although the establishment of a resident population downstream in the Missouri River may be unlikely, gizzard shad would be transported downstream to Hauser and Holter reservoirs and the Missouri River below Holter Dam. Overall conditions for summer survival and growth in the reservoir system seem excellent. Previous introductions in various

bodies of water in North America indicate that this species has significant pioneering capabilities. If temperature limitations do not suppress or extirpate initial stocks of gizzard shad, impacts to the entire system may be irrevocable with unknown biological consequences.

Gizzard shad have been successfully introduced into Wyoming lakes and have proven beneficial to the walleye fishery (Baughman 1983). Introductions into walleye reservoirs in Utah (Schaugaard and Sorenson 2000) and South Dakota (Meester 2000) have demonstrated similar success. Gizzard shad are tolerant of turbid waters; it is unknown if this would be a benefit or detriment for CFR.

Although the Wyoming introductions of gizzard shad have provided excellent forage for trout and walleye, their poor over-winter survival suggests that repeated stocking would be necessary in Montana (Baughman 1983). Fuller (1997) states that cold weather limits this species' northern range. The partial or total loss of adult gizzard shad each year due to temperature limitations would probably necessitate annual stocking of adult gizzard shad from out-of-state sources. Transporting pre-spawn adult shad over long distances from South Dakota or Nebraska would likely cause high or total mortality to the transplanted fish as they do not handle or transport well and such a project would incur substantial costs. The potential for introducing aquatic nuisance species, exotics, and diseases from outside the state would be a serious concern each year fish were transported. In fact, it is highly likely that no adult fish would be granted import status into the state.

In the unlikely event that gizzard shad successfully establish a population in CFR, the end result may not be entirely positive, as they are known to be extremely effective plankton feeders and may negatively impact growth and recruitment of other fish species (Jenkins and Burkhead 1994).

Goldeye (*Hiodon alosoides*)

Native to Montana in the Missouri River below Morony Dam, goldeye are a large-river fish, but also inhabit large lakes. Lake dwelling populations are primarily adfluvial (lake resident which spawn in rivers) species, which make a considerable spring spawning migration each year. Goldeye are considered opportunistic feeders (Brown 1971) and there is some concern about competition with the CFR principle sportfishes. It is unknown as to the possible detrimental effects on the salmonid fishery upstream of CFR if an adfluvial species were introduced. Goldeye have been removed from other reservoirs in the past because of their low angler appeal and potential for competition with preferred game species (Bennett and Bennett 1993). Although Goldeye are not a desirable target species by anglers, they have been commercially harvested in Fort Peck Reservoir. Goldeye can achieve lengths of up to 16 inches, which may be unavailable as forage to many walleye. Goldeye were analyzed as a possible forage fish for Fort Peck Reservoir and apparently afford little forage benefit to walleye based on diet analyses by Fort Peck Reservoir fisheries managers (Wiedenheft 1987, 1988, and 1991; Mullins 1991).

Golden Shiner (*Notemigonus crysoleucas*)

An exotic species in Montana, primarily found in Eastern Montana prairie ponds, golden shiners are a minnow species that thrive in well-vegetated, shallow shoreline habitat. Golden shiners are planktivores as juveniles and become opportunistic feeders as adults. They are extremely efficient at reproduction and become sexually mature at 7 to 8 months post-hatch and Golden shiners can typically reach lengths of up to 5.5 inches. Literature suggests that the thermal requirements for reproduction are between 60°F and 80°F. Golden shiners are dependent upon vegetation for reproduction, much like yellow perch, and have relatively high thermal requirements (Scott and Crossman 1973); thus they may be limited by fluctuations in CFR's water level (pool elevation) and cool seasonal water temperatures. Stocking success of golden shiners

would depend largely on maintaining water levels conducive to their reproduction. If golden shiners were to be introduced, a multi-year stocking commitment would be necessary to supplement potential losses from a poor water year. Repeated stocking increases the potential for parasite or disease introductions as well as the risk of introducing additional unwanted exotics due to the use of out of state sources for fish. Repeated stocking also reduces the cost-effectiveness of golden shiners as a forage fish.

Green Sunfish (*Lepomis cyanellus*)

Common to waters in eastern, central and southwest North America, green sunfish are non-native pan fish that are found in some prairie ponds and lakes throughout Montana. Green sunfish are opportunistic feeders and are a highly sought after game fish in the Midwest. Typically, green sunfish are stocked in conjunction with largemouth and smallmouth bass and northern pike as a forage fish. However, contemporary fisheries managers have moved away from this practice as water temperatures in the west are not conducive to growing fish large enough to interest anglers. Green sunfish spawning is triggered at >68°F and they need quality shoreline vegetation and cover (i.e. woody debris and large substrate) for successful reproduction (Scott and Crossman 1973). Based on the literature review for green sunfish, it appears that CFR is habitat limited, considering the lack of shoreline vegetation, woody debris and a thermal regime that may never meet green sunfish spawning temperatures.

Kokanee (*Oncorhynchus nerka*)

Not native to Montana, kokanee salmon are a landlocked form of sockeye salmon that have been successfully stocked throughout western reservoirs, including Montana, as a game fish. Kokanee are planktivores that live to 4 years of age, then spawn and die. Kokanee are adfluvial and will make substantial spawning migrations into primary reservoir tributaries to spawn (Wadoski and Bennett 1981). Kokanee are fall spawners and have been known to compete with brown trout (*Salmo trutta*) for spawning habitat, sometimes superimposing their redds on brown trout redds. This factor is of concern to the principle sportfish in the Missouri River upstream of CFR to Toston Dam. Kokanee were successfully stocked as forage for rainbow trout in both British Columbia and Idaho lakes and were deemed responsible for producing the world record rainbow and bull trout in Lake Pend Oreille, Idaho. According to Wadoski and Bennett (1981), wherever kokanee are planted, piscivore growth has improved and successful fisheries have resulted.

In CFR from 1966 to 1970, over 400 million kokanee fry were planted and a self-sustaining population never established. Hauser Lake, immediately downstream of CFR, developed a world-class Kokanee fishery in 1997, before flushing flows and expansion of the Canyon Ferry walleye population suppressed kokanee production in the reservoir. With a well-established, top-level predator such as walleye, kokanee are preyed upon shortly after stocking. Following high flows that flushed fish in 1997, all attempts at reestablishing a self-sustaining kokanee population in Hauser have failed, largely due to high rate of predation by walleye. It is no longer cost-effective to maintain a kokanee fishery in Hauser Reservoir. The likelihood of stocking enough kokanee in Canyon Ferry Reservoir to establish and maintain a viable, self-sustaining population that would not require annual stocking is very low.

Rainbow smelt (*Osmerus mordax*)

Rainbow smelt are a pervasive species in lakes and coastal areas of the eastern United States and have moved into a variety of cool water systems (Hadley 1982). Rainbow smelt exist in freshwater and anadromous forms, and although they prefer streams for spawning, have been known to use lakeshore habitat as well (Hadley 1982). Their distribution is concentrated in the Great Lakes region and eastward, but rainbow smelt have been introduced to the Missouri River drainage and are now found in North Dakota, South Dakota, Montana (downstream of Fort Peck), and have extended their range as far south as Louisiana

via the Mississippi drainage (Lee et al. 1981, Hadley 1982). Their rapid expansion demonstrates their natural mobility and may be of concern since they have not extended their range in Montana above intake diversion on the Yellowstone, and above Fort Peck Dam on the Missouri (Hadley 1982). There is also a history with viral diseases (viral erythrocytic necrosis) and parasites (*Glugea hertwigi*) associated with smelt introductions that are of concern (Hadley 1982).

Rainbow smelt prefer cool, clear waters near 60 °F, and tend to school in pelagic areas when temperatures are cool, but may seek refuge in deeper waters when temperatures climb (Hadley 1982). Young-of-the-year smelt are planktivorous and as they mature, they feed on macroinvertebrates and fish (potentially young walleye). Juvenile and adult smelt are opportunistic piscivores and exceptional competitors for food, including zooplankton. They have consistently out-competed other planktivores, except for alewives, in many lake environments (Hadley 1982). Case histories show that rainbow smelt, could pose a threat to juvenile walleye, yellow perch, and trout by reducing the total food available, rather than provide a supplemental forage resource for adult walleye (Johnson and Goettl 1999).

Redside shiner (*Richardsonius balteatus*)

Native to Montana west of the Continental Divide, redside shiners are planktivores as juveniles and become opportunistic feeders as adults, feeding on invertebrates, fish eggs and fish. Redside shiners are dependent upon vegetation for reproduction, much like yellow perch (Scott and Crossman 1973), and may be limited by CFR's water level fluctuations. Redside shiners have demonstrated intolerance for large water level fluctuations, and were extirpated from an Idaho reservoir after repeated drawdown's (Bennett and Bennett 1993). Redside shiners have been collected in the Missouri River above Toston Dam, however they have never been documented in CFR. Expansion of redside shiner into the reservoir may be limited by habitat availability and reservoir water level fluctuations. The largest redside shiners are about 7 inches long.

Spottail shiner (*Notropis hudsonius*)

Spottail shiners are not native to Montana but were introduced into Fort Peck Reservoir in 1981 and 1982. Outside of Montana, they are found in the Missouri River system only in the James River drainage, the Big Sioux drainage of South Dakota and Minnesota, and in lakes and streams of northwestern Iowa. They also occur in the Minnesota River drainage (Bailey and Allum 1962). Eddy (1957) lists spottail in North Dakota and adjacent Manitoba, to the Hudson River and south to Virginia, Illinois and Iowa. Carlander (1969) further defines the ranges to include Alberta, Hudson Bay, Quebec south along the coast to northern Georgia and in the Mississippi Valley to Missouri and Kansas.

Spottail shiners are most abundant in lakes and prefer this type of habitat, however, they are found in large rivers with low turbidities, avoiding strong currents (Liebelt 1981). Dense schools are common in shallow water. Maximum growth is about five inches. Spottail are mature at age 1 or 2, generally at a length of about 2.5 inches. Spottail shiners are not dependent on vegetation for spawning. They spawn over gravel, sand or aquatic vegetation from May to July throughout their range at temperatures in the upper 60's (°F). Females carry 100—2600 eggs (average 1800). This shiner spawns in closely packed groups with no evidence of nesting. Food selection varies, generally consisting of whatever is most abundant. Small fish feed on algae and rotifers, while medium sized fish feed mainly on zooplankton. Larger fish feed on insects, zooplankton, water mites, algae, fingernail clams, and eggs and larvae of their own species (IDFG 1985). While spottail shiners are considered a preferred food item in many walleye waters throughout their range, other waters in Montana show limited utilization of them by walleye. Diet analysis in 1996 in Fresno Reservoir showed that 14% of the non-empty walleye stomachs contained yellow perch while 4% contained spottail shiner (MFWP 2001). In Tiber Reservoir, spottail shiners compose nearly 80% of the available forage, however they make up less than 25% of the walleye diet (Dave Yerk pers. comm.).

Predation by spottail shiners on eggs or small game fish would need to be assessed. Literature reviews indicate spottail will prey on their own eggs; only one reference implied that spottail fed on walleyes eggs (Wolfert, et al. 1975). Environmental concerns associated with the introduction of spottail shiners include: the possibility of introducing diseased fish, predation on eggs of game fish, competition with existing species, changes to the zooplankton community and overall food web due to increased predation by spottails, and invasion of drainages and tributary streams above and below CFR.

Upstream movement in the Missouri River above CFR may not occur due to avoidance of strong currents. Stocking spottail shiners would be a major range extension in the upper Missouri River system. Flushing of spottail shiners downstream in the reservoir system and the Missouri River below Holter Dam would be unavoidable.

4.0 Zooplankton Population

The primary concern for introducing additional forage fish is ensuring that the existing food base is adequate for all life stages and species and that existing species will not be harmed. All species of fish present in CFR utilize the zooplankton population to varying degrees, some just during their early life stages and some throughout their entire life. If the current fish community is unable to thrive on the existing food base, introducing an additional species may stress populations and undermine production. Walleye fry are also planktivores and would be in direct competition for food with most potential forage species. Bennett and Bennett (1993) surveyed current literature on zooplankton densities that could support walleye fry and found that densities of 40 zooplankton/ liter (L) were more than adequate, and that several lakes that supported walleye and other forage fish that might compete with walleye fry had much lower zooplankton densities.

Adding another planktivore to CFR might have negative effects on overall plankton densities, which could cascade trophically to affect walleye. Walleye fry depend on plankton for their food, especially in their first 3-5 days when their yolk sac is depleted (Bennett 1991). However, since walleye shift to piscivory fairly early in their life, they do not have the finely spaced gill rakers characteristic of pure planktivores. An efficient planktivore, like cisco or gizzard shad, can out-compete walleye fry for food, and deplete the larger, more calorie rich plankton. Smaller plankton provide less energy and require more energy to collect, but are still accessible to fish with fine gill rakers. When the plankton food base is stripped to the smallest species, planktivores with wider spaced gill rakers like walleye fry cannot compete (Bennett 1991). Newly emerged walleye cannot get the nutrition they need, and increased walleye numbers may not occur due to this increased pressure on the zooplankton base, resulting in a decrease in overall walleye recruitment (Bennett 1991). Competition between young walleye and any new forage species needs to be considered. Forage introductions usually imply that the intent is for the new species to be used as food by the target species, and not undermine their reproductive or maturation processes (MFWP 2001). The goal is to create better conditions for the target species, walleye. If the forage fish competes significantly with any life stage of the target prey species, then the forage species may in fact hinder or cripple their (walleye's) success. Reductions in growth and/or recruitment may occur. Artificial maintenance of the walleye population through stocking is not a preferred alternative. The *Mysis* introduction in Flathead Lake provides an all too clear illustration of how the best of fisheries management intentions can go awry (Spencer et al 1991).

CFR could support another forage species, but the question remains, would such an addition make a positive difference in the walleye population and not have a negative impact on other species such as yellow perch or rainbow trout (Montana Fish, Wildlife and Parks 2001)? It is important to remember that walleye are a top-level predator and require a much larger food base to maintain their populations than do planktivorous or omnivorous fish. At each trophic level from producers to grazers, to first level predators and on up, there is

only about a 10% energy transfer. In other words, it takes 10 oz. of algae to make 1 oz of snail, and 10 oz. of snail to make 1 oz of pumpkinseed, and 10 oz of pumpkinseed to make 1 oz. of walleye. Fish like trout that consume at a lower trophic level, can get much bigger and more numerous in a similar system than walleye (Shepard 1991). Creating a stable and quality walleye fishery requires a very productive system with lots of biomass at all forage levels, not just at the level where walleye directly consume.

5.0 Potential Negative Effects on Local Fish Communities

Introducing a new species into an existing ecosystem always has the potential for unforeseen negative effects. Sometimes these effects are short-lived, and reflect adjustments in the community as the new species are incorporated. Some introductions have resulted in minimal negative impacts, but also provided none of the intended benefits. However, other effects could be dramatic and irreversible. Montana has seen its share of catastrophic effects from well intentioned, well-researched species introductions such as the *Mysis* introduction to the Flathead River system (Spencer et al. 1991).

Problems associated with introducing nonnative species into the reservoir include an unwanted species inadvertently included and contaminating the fish being planted. As an example, a portion of the minnows transported to Fort Peck Reservoir in 1983 was the common shiner (*Notropis cornutos*) instead of the intended species, spottail shiner. This problem can only be eliminated for a live fish transfer by physically sorting every fish at time of planting and destroying all species other than that proposed for introduction.

New species added to CFR could migrate upstream as far as Toston Dam and downstream throughout the length of the Missouri River system. Impacts to these systems must be considered as well. If possible, any species selected for additional study should be either native to Montana rivers or already established in the Missouri River Drainage. In order to reduce the risk of disease or parasite introductions, all out-of-state stock would need to be certified disease free, meet strict health inspections and extreme caution would be required to prevent contamination from transport containers and water. It cannot be stated strongly enough that annual stocking efforts for a species likely would not be possible unless eggs or the fish were from a hatchery source with a strong health record, since the potential risk of disease or parasite introductions is compounded with each stocking effort.

The migration of exotic species introduced into CFR and colonizing in other waters is of great concern. An exotic fish species prescribed to help increase diversity of CFR's forage may not necessarily provide a similar benefit for adjacent waters. Since there is the potential for irrevocable change to the biological system by introducing an exotic species, careful and prudent consideration must be given to what is at risk.

The potential for disease introduction cannot be overlooked. There is a concern for introducing bacterial diseases including furunculosis (*Aeromonas salmonicida*), redmouth (*Yersinia ruckeri*) and in particular, VHS. Many spottail shiners stocked in Fort Peck Reservoir in 1983 were infected with a metacercarial trematode (*Centrovarjum lobates*), which develops into an adult in predator fish species such as walleye, perch, and, northern pike. Adequate information to assess the potential for introducing new parasites and diseases from in-state spottail sources needs to be obtained prior to any forage supplementation. Assessment of diseases issues associated with new introductions is difficult since incomplete information exists regarding disease and parasite occurrence in Montana fishes and waters.

6.0 Summary Comments

No strong candidate has emerged as a preferred option. Based on the information gathered for this review, it is also apparent that there is no new forage fish perfectly suited to meet all the needs in CFR. The potential for negative consequences outweigh any potential positive results that might be gained from an exotic fish introduction. Any decision to introduce a new species must also take into consideration the potential to harm the fishery and interconnected aquatic resources. Displacing other prey fish species with an aggressive planktivore could result in reduced species diversity and less public fishing opportunity. Any species introduction would require a rigorous formal evaluation of its impact to the CFR aquatic community and the upper Missouri River reservoir system to prevent a mistake that could have devastating consequences to all existing fisheries both upstream and downstream. Due to these concerns, no new species will be evaluated or considered for introduction into the management plan area. Enhancing the current forage species should be given priority.

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Appendix D
Illegal and Unauthorized Introduction of
Aquatic Wildlife Policy

POLICY
MONTANA FISH, WILDLIFE & PARKS
FISHERIES DIVISION

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|---|----------------|
| ISSUED 5/22/02 | REVISED |
| APPROVED BY: M. Jeff Hagener, Director | |
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**TITLE: ILLEGAL AND UNAUTHORIZED
INTRODUCTION OF AQUATIC WILDLIFE
POLICY**

SUBJECT: FISH MANAGEMENT

PURPOSE:

The purpose of this policy is to clearly state the approach for dealing with illegal and unauthorized introductions of aquatic species. For purposes of this policy aquatic species include any fish, insects, crustaceans, mollusks or other species requiring aquatic habitat to complete its life cycle.

RELATED STATE STATUTES/ADMINISTRATIVE RULES:

MCA 87-5-701-721, ARM 12.7.601 (4)

GENERAL:

Illegal and unauthorized introduction of aquatic wildlife can adversely affect native, wild and stocked fish population, spread disease, impact water quality and aquatic habitat, increase fishery management costs and cause a loss in fishing quality and opportunity for anglers. Montana Fish, Wildlife and Parks is the sole legal entity that may stock or permit stocking of fish or aquatic wildlife in the waters of the State of Montana.

POLICY:

It is the policy of the Montana Fish, Wildlife and Parks that:

1. When the Department becomes aware of an illegal or unauthorized introduction it will:
 - A. Immediately begin an investigation of the introduction utilizing all available resources.
 - B. Prosecute to the fullest extent of the law any individual believed responsible for the introduction.
 - C. Violations will be pursued through civil court and will seek restitution for removal of the introduced species and re-establishment of the original fishery.
2. The department will determine if there is a realistic likelihood that removal of the introduced species will be successful.
 - A. At the earliest possible opportunity sample the body of water to determine age structure, size and distribution of the illegally introduced population;
 - B. Review and evaluate possible removal options;
 - C. Make a determination about feasibility of removal.
3. If the department determines that removal may be feasible it shall attempt removal at the earliest

possible date and will:

- A. Complete all necessary environmental compliance and permitting;
 - B. Seek reimbursement for cost of removal via the courts from the individual(s) responsible for the introduction.
4. If the department determines that successful removal is not likely or if removal fails, the department will take into consideration the illegal nature of the introduction in future management decisions. Each body of water will be treated on a case-by-case basis. Management options include, but are not limited to:
- A. Cease stocking the water body if the presence of illegally introduced species are reducing the effectiveness of the stocking effort.
 - B. Deny applications for fishing contests that target the unauthorized or illegally introduced species, or require (as a condition) that the tournament have a catch-and-kill format.
 - C. Do not stock any forage fish species to benefit the unauthorized or illegally introduced species, or if the department was previously stocking fish that are used as forage by the illegally introduced species, stop stocking that species or alter stocking strategy to reduce predation.
 - D. Implement control measures to reduce the population of illegally introduced or unauthorized species. Measures may include increasing or removing harvest limits, authorizing additional means of take, installation of fish barriers, removal using chemical or mechanical methods, netting spawning fish, habitat manipulation (e.g. reservoir drawdowns) or disturbing spawning areas to reduce survival.
 - E. Authorize commercial harvest of illegally introduced or unauthorized species if a statutory authority is provided.
 - F. Close a water body to all fishing.