

# Section 6

## Holter Reservoir

### Management History

Species of fish present in Holter Reservoir (Table 7) are similar to those found in Hauser Reservoir. Rainbow trout, yellow perch, and walleye historically have been the most abundant game species in the reservoir. Suckers are the most abundant nongame species.

Rainbow trout were first introduced into Holter Reservoir during the early 1940s. From the 1970s through 1995 the reservoir fishery was supplemented by annually stocking approximately 325,000 Arlee rainbow trout. Since 1990, wild rainbow trout have comprised less than 14% of the fish harvested by anglers. Annual stocking is required because natural recruitment cannot meet current angler demand. From 1984 through 1986 an attempt to develop a migratory population that would spawn in the river and then grow to a large size in the reservoir with McConaughy strain rainbow trout was undertaken. This approach was unsuccessful. In 1996, in an effort to increase the proportion of wild rainbow trout in Holter, FWP shifted from Arlee rainbow trout to Eagle Lake rainbow trout. On alternating years, age one and age zero rainbows were planted to evaluate the most cost effective approach. This adaptive approach involved planting approximately 100,000 age one fish (average length 7.8 inches) in 1996 and 1998 and 371,000 age zero fish (average length 4.2 inches) in 1997. Evaluation of this program was difficult because of flushing losses in 1996 and 1997. Throughout the 2000s Holter has been stocked with 125,000 age 1 Eagle Lake rainbow trout in the summer and 125,000 Arlee rainbow trout in the fall. This stocking rate currently yields a summer angler catch rate of 0.29 fish per hour (2006-2008, Figure 10).

Kokanee salmon were first introduced in the early 1950s with the stocking of about 800,000 fish over a six-year period. These initial plants were unsuccessful in producing a viable kokanee fishery. The kokanee population that eventually established in Holter Reservoir apparently originated from fish that were flushed out of Hauser Reservoir. Kokanee spawn unsuccessfully or with limited success in Holter Reservoir. This fishery has undergone significant population fluctuations with anglers first catching substantial numbers of kokanee beginning in the mid 1980s (Figure 10). Kokanee harvest peaked in the early 1990s with harvest averaging over 22,000 fish for the years 1990 through 1992. Harvest fell by nearly half in 1993 to 12,000 kokanee but rebounded to record highs in 1996 as the age zero kokanee that were flushed out of Hauser during high water of 1993 recruited to the creel. The kokanee population continued to decline following severe flushing losses associated with high water in 1995, 1996, and 1997. In 2007, only 296 kokanee were harvested in Holter. The current kokanee fishery is supported by supplemental stocking when extra fish are available from state hatcheries. The last time kokanee were stocked into Holter was in 2007 when approximately 180,000 fish were stocked in the spring and summer.

Prior to 1988, daily and possession limits for trout were 10 pounds and 1 fish, not to exceed 10 fish. For kokanee, the daily and possession limit was 10 fish. Beginning in 1988, more conservative regulations were implemented to protect kokanee populations. The trout and kokanee limits were combined, making the daily and possession limits 10 pounds and 1 fish, not to exceed 10 trout and kokanee in combination. Beginning in 1996, limits were made still more restrictive with a combined trout and salmon limit of 5 and a possession limit of 10. That limit is still in place today.

**Table 7. Fish Species of Holter Reservoir Including Native Status, First Stocking Date Population Trend and Relative Abundance.**

Species	Native	First Stocking Date	Population Trend	Relative Abundance (Based on historic field monitoring.)
<b>Game Fish Species</b>				
Kokanee	No	1950	Decreasing	Common
Rainbow Trout	No	1941	Stable	Abundant
Yellow Perch	No	N/A	Decreasing	Abundant
Walleye	No	N/A	Increasing	Abundant
Mountain Whitefish	Yes	N/A	Decreasing	Common
Brown Trout	No	1931	Stable	Uncommon
Burbot	Yes	N/A	Increasing	Uncommon
Brook Trout	No	N/A	Unknown	Rare
Cutthroat Trout	Yes	N/A	Unknown	Rare
Largemouth Bass	No	N/A	Unknown	Rare
Smallmouth Bass	No	N/A	Unknown	Rare
<b>Nongame Fish Species</b>				
Carp	No	N/A	Stable	Abundant
Longnose Sucker	Yes	N/A	Decreasing	Abundant
Mottled Sculpin	Yes	N/A	Unknown	Abundant
White Sucker	Yes	N/A	Decreasing	Abundant
Fathead Minnow	Yes	N/A	Unknown	Uncommon
Longnose Dace	Yes	N/A	Unknown	Uncommon
Flathead Chub	Yes	N/A	Unknown	Rare
Smallmouth Buffalo	Yes	N/A	Unknown	Rare
Stonecat	Yes	N/A	Unknown	Rare
Utah Chub	No	N/A	Unknown	Rare

The walleye population in Holter Reservoir likely resulted from the single plant made into Lake Helena in 1951. This population of fast growing walleye historically maintained a relatively stable level with natural reproduction. The fishery has become increasingly popular, requiring more restrictive regulations to limit harvest and enhance the trophy component. Walleye in Holter Reservoir eat up to 45% trout and salmon depending on the season. This level of consumption by an expanding walleye population impacts the number of rainbow trout and kokanee that are available for anglers. Prior to 1988, daily and possession limits were 5 fish but beginning in 1988, to protect spawning fish, 5 fish could be harvested with only one exceeding 20 inches. Regulations were made even more restrictive in 1990 when the daily limit was reduced to 3 fish with one fish exceeding 20 inches. Beginning in 1996, a slot limit was imposed to protect walleye between 18 and 28 inches, the limits allowed harvest of 3 walleye under 18 inches and one over 28 inches. In 2000, the slot limit was modified to allow harvest of 6 walleye, 5 under 20-inches and 1 greater than 28-inches and a possession limit twice the daily limit. That regulation is still in 2008.

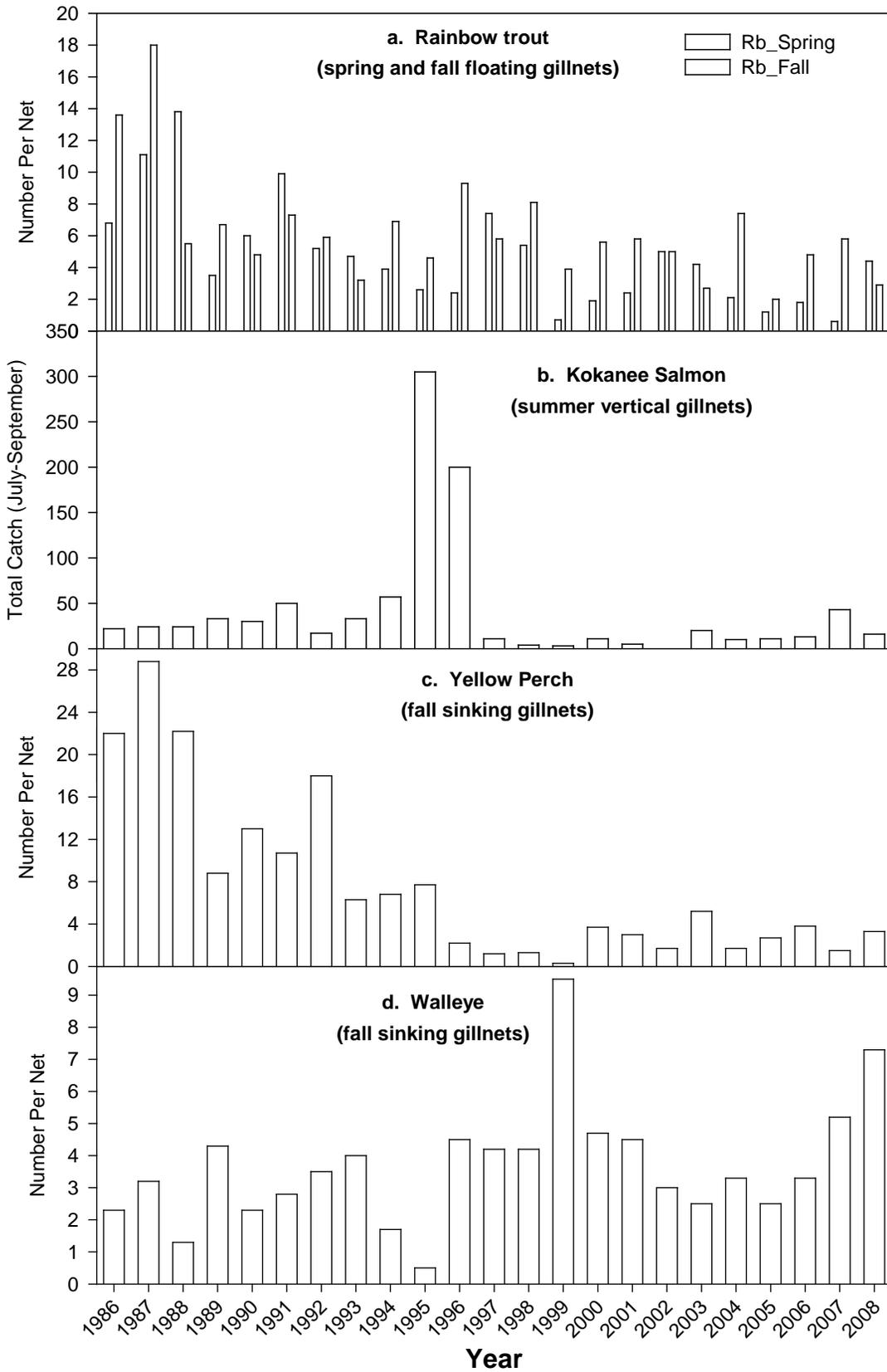


Figure 9. Holter Reservoir Fisheries Trends for the Four Principal Game Species: rainbow trout (a), kokanee salmon (b), walleye (c), and yellow perch (d). Species trends are for the period 1986 through 2008.

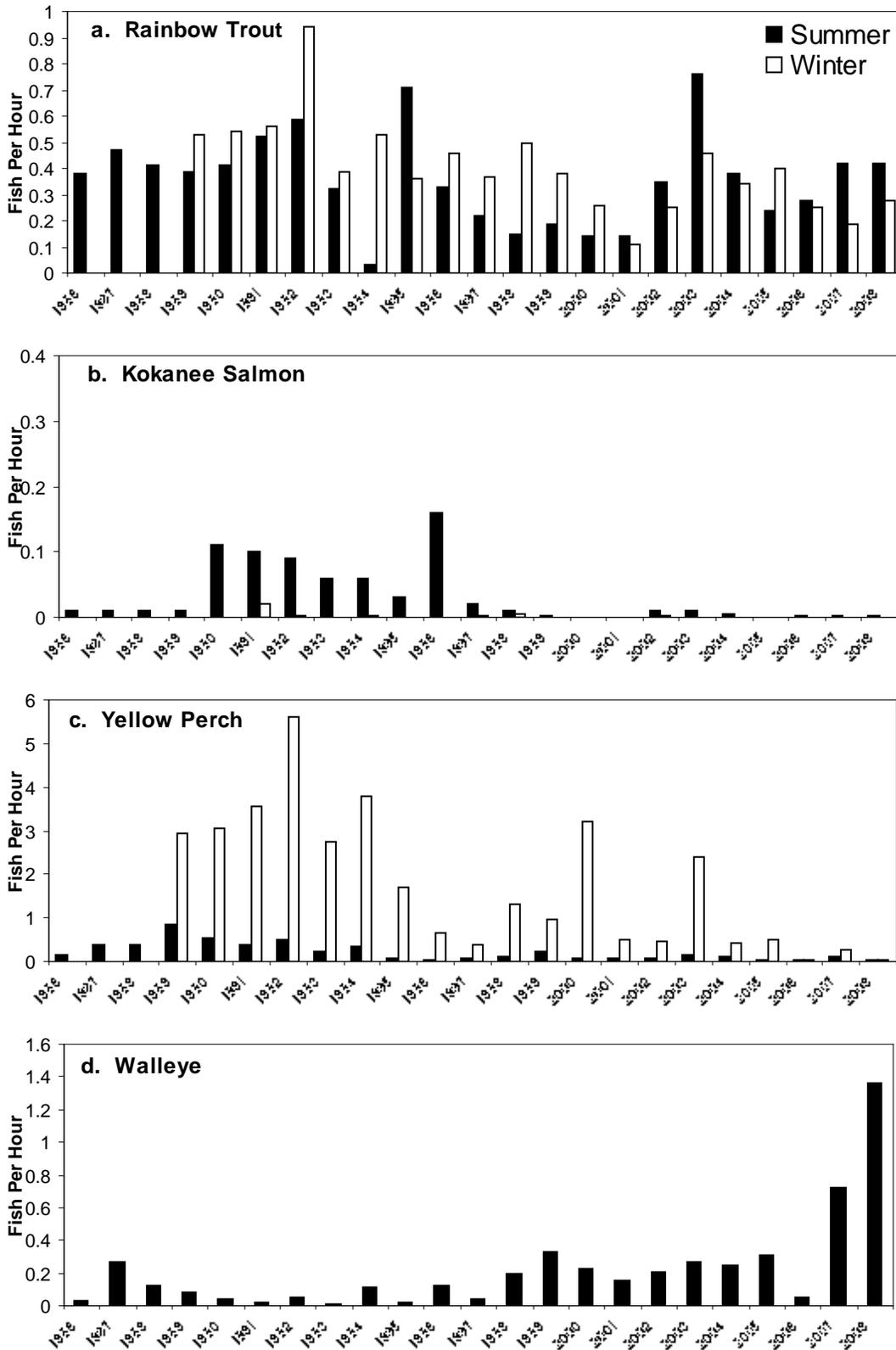


Figure 10. Angler Catch Rates (Fish/Hour) for the Four Principal Game Species in Holter Reservoir for the Period 1986 Through 2008. Summer (dark bars) and winter (light bars) are represented. Catch rates for rainbow and walleye represent anglers targeting only those species, while kokanee and perch represent all anglers.

From the early 1930s to 1950, approximately 1.5 million brown trout were stocked into Holter Reservoir. Brown trout in the reservoir today are likely the progeny of these early plants that have maintained a low-level population through natural reproduction. Few anglers target this species because of consistently low population densities. Average numbers of brown trout caught in spring and fall gill nets since 1986 is 0.23 and 0.07 fish per net respectively. No brown trout were collected from 1997 to 2001 in spring sinking gillnets and from 1997 to 2006 in fall sinking gillnets. As fall spawners, kokanee were thought to have a negative impact on the brown trout population through superimposition of redds after brown trout spawned in the limited spawning habitat in the Hauser tailrace and potential transmission of disease from spawned out kokanee. Disease testing was completed and no conclusive evidence ever validated this theory. Prior to 1988, daily possession limits for brown trout were part of the combined trout limit (10 pounds and 1 fish, not to exceed 10 fish). Beginning in 1992, catch and release regulations were implemented to protect the remaining brown trout population. Brown trout regulations remain catch and release only today.

Yellow perch were established in Holter Reservoir from plants into Hauser Reservoir during the period 1939-1955. They have maintained a significant population entirely through natural reproduction. Historically, perch have comprised an important component of the Holter fishery--principally the winter ice fishery. Catch rates in spring and fall gill nets peaked in the late 1980s after which they demonstrated normal population variation through 1993 (Figure 9). High water years of 1997 and the development of the Canyon Ferry walleye fishery have had detrimental effects to the yellow perch population. Average perch abundance from 1986-1996 averaged 13.3 perch per fall gillnet, compared to 2.45 per net from 1997-2008. Concurrently, angler harvest has fallen from peak angler harvest of 493,000 perch in 1992 to 16,000 perch in 2007. Historically, no limits were in place on the number of perch anglers can harvest. Due to declining perch numbers, a 50 fish limit on perch was implemented in 2000 with the hope that reduced harvest would assist in recovery of the population.

In 1971, anglers were allowed to fish at all hours (both day and night) during the regular fishing season. FWP received numerous complaints about night anglers exceeding limits in Holter Reservoir and concerns that daytime fishing was being adversely affected. Despite the fact that increased surveillance did not reveal unusual numbers of anglers taking over-limits of fish, in the late 1970s the reservoir was closed to fishing between midnight and 5 A.M. to resolve these perceived conflicts. In 1992, the night closure was lifted but was reinstated in 1996 from midnight to 3 A.M. Limited biological data exists to maintain the night fishing closure and night fishing was once again allowed beginning in 2007.

## **Holter Reservoir Management Goals and Limiting Factors**

The management goal for Holter Reservoir is to provide a cost-effective, balanced multi-species fishery with the opportunity to catch rainbow trout, walleye, yellow perch, and kokanee salmon.

The following factors have been identified as limiting the fisheries production in Holter reservoir. Until they are addressed, the fishery will not reach its full potential. The problems are large in scale, involve numerous government agencies and private landowners, and will be difficult or perhaps impossible to solve. Resolution of these problems will require cooperation of highly focused individuals representing the various agencies. As with many large-scale resource management problems, money and manpower will limit the completion of any goals targeted at benefiting the fishery. PPL Montana took over operational control of Hauser and Holter dams in 2000, and received a new federal operating license in 2001. FERC requires PPL Montana to provide funds for monitoring, protection, maintenance, and enhancement of fisheries resources in Hauser and Holter Reservoirs.

- Fish losses out of Holter Reservoir from flushing and entrainment are one of the principal factors affecting fish populations. Feasibility studies to reduce fish losses from Holter need to be conducted.
- Walleye flushed from Canyon Ferry and Hauser Reservoirs have impacted the balance of the multi-species fishery.
- Spawning tributaries to Holter Reservoir provide substantial wild fish production. Beaver Creek is the principal spawning stream that supports substantial runs of rainbow trout. Other streams that provide potential spawning areas include Willow, Elkhorn, and Cottonwood creeks, which are located on the FWP-owned Beartooth Wildlife Management Area.
- Whirling disease may impact the wild trout in the reservoir and tributaries.
- There is an expanding burbot population and it should be studied with possible targets set depending on the numbers identified.

## **Holter Reservoir Management Goals by Species**

### **Rainbow Trout**

#### **Goals and Objectives:**

Rely on rainbow trout to provide one of the principal fish species in Holter Reservoir with continued emphasis on maximizing the proportion of wild rainbow trout.

- Attempt to recruit a three-year running average of 6 rainbow trout per net to spring and fall floating horizontal gill nets.
- Provide a three-year running average summer angler catch rate of at least 0.25 fish per hour.

#### **Rationale:**

Rainbow trout have been stocked in Holter Reservoir since the early 1940s and have provided the principal fishery. Wild rainbow trout have comprised less than 15% of the fish harvested by anglers since 1990. Stocking is required to supplement natural recruitment and meet angling demand. Attempts have been made to enhance wild rainbow trout runs without success. Annual monitoring in the late 1990s showed improved survival of age 1 over age 0 Eagle Lake rainbows. Currently Holter is stocked with 125,000 age 1 8-inch Eagle Lake rainbows in the summer and 125,000 8-inch Arlee rainbows in the fall. Stocking of larger sized fish with average length of 8-inches has improved recruitment of stocked rainbows by reducing predation by walleyes. This stocking rate currently yields a summer angler catch rate of 0.29 fish per hour (2006-2008). This population of Eagle Lake rainbows also serves as an egg source for hatchery propagation of rainbow trout. Rainbow trout eggs are collected in conjunction with walleye spawn sampling in the spring and efforts to maintain genetic diversity are necessary to reduce inbreeding within the population.

#### **Strategies:**

- Continue to stock at least 125,000 age zero 8-inch Arlee rainbow and 125,000 age one Eagle Lake rainbow trout. To minimize flushing losses, stocking of fish will occur after high water.

- Continue to monitor and investigate that this stocking approach provides substantial angler return. Specific parameters used to evaluate the stocking approach will include: growth rates, survival rates, flushing rates (quantified through a flushing study at the dam and/or fish population monitoring in the Missouri River below Holter Dam), reproductive potential, and angler harvest rates.
- If three-year average catch in fall floating gillnets falls below 4 rainbow trout per net, consider changes to the stocking plan (e.g., timing and location of fish plants, strains, size at stocking) and implement if deemed cost effective.
- If three-year average catch in fall floating gillnets falls below 2 rainbow trout per net, consider more liberal management actions, such as reducing harvest limits and/or predator suppression measures.
- Consider stocking additional rainbow trout when additional hatchery fish are available. Do not stock if surplus fish will interfere with rainbow trout strain evaluation or identification for spring rainbow trout egg take.
- Continue work with hatchery personnel to maintain genetic diversity of Holter Eagle Lake rainbow for use as an egg source for hatchery propagation.
- Continue monitoring whirling disease presence and impacts and identify management strategies to minimize impacts to the Holter rainbow trout fishery.
- Encourage the development of wild rainbow trout spawning and recruitment from the Hauser tailrace and principal spawning tributaries (Beaver, Cottonwood, Willow and Elkhorn creeks).
  - Continue closure on Beaver Creek from November 30th to June 15th to protect spawning rainbow trout.
  - Continue development of fish passage management plans with FWP Wildlife Bureau and FS that incorporates beaver management programs on Beaver, Elkhorn, Willow, and Cottonwood creeks.

## **Kokanee Salmon**

### **Goals and Objectives:**

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.

- Determine appropriate kokanee densities to maintain kokanee fishery with minimal impacts to brown trout spawning.

### **Rationale:**

Kokanee spawn unsuccessfully or with limited success in Holter Reservoir. Kokanee populations in Holter historically mirrored kokanee population trends observed in Hauser Reservoir. Flushing losses associated with high water in 1995, 1996, and 1997 reduced the number of kokanee captured in 1998 summer vertical gill nets (July through September) to only four. Of these four fish, three were hatchery kokanee planted into Hauser. Supplemental stocking into Holter with surplus fish since 2002 appears

moderately successful (Figure 9). After catching zero kokanee in summer gillnets in 2002, an average of 19 kokanee were caught in summer vertical gillnets from 2003-2007. Angler harvest remains at relatively low levels, averaging nearly 300 fish harvested annually (2003-2007, Figure 10).

### **Strategies:**

- Supplement the Holter sport fishery by stocking surplus kokanee when available.
- Monitor river and reservoir brown trout population densities to determine if kokanee spawning negatively affects brown trout recruitment.
  - Adjust or eliminate stocking of surplus kokanee if brown trout densities in the Missouri River below Hauser Dam decline below 100 fish per mile.

## **Walleye**

### **Goals and Objectives:**

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.

- Maintain a running three-year running average of at least 4 walleye per fall sinking gill net.
- Maintain a running average summer angler catch rate of 0.10 walleye per hour for anglers specifically targeting walleye.

### **Rationale:**

Holter historically supported a healthy population of walleye that likely originated from fish flushed out of Hauser. This wild reproducing population has remained relatively stable, providing a moderate level of harvest while furnishing the opportunity to catch a trophy walleye greater than 28 inches. With increasing popularity, harvest has become more restrictive to protect spawning fish while enhancing the trophy component. The Holter walleye population appears to be strongly influenced by flushing, both from Canyon Ferry and Hauser but is also influenced by losses out of Holter into the Missouri River. Evidence shows that flushing of walleye from Canyon Ferry has impacted the Holter walleye population. Walleye abundance in Holter has increased significantly since expansion of the Canyon Ferry population, increasing from an average of 2.6 walleye per gillnet (1986-1996) to 4.6 per gillnet (1997-2008). Walleye abundance reached a record high at 7.3 per net in 2008. As walleye abundance has increased, average length and growth rates have decreased which are likely functions of a limited forage supply in the reservoir.

### **Strategies:**

- Use angler harvest as a management tool to maintain walleye population levels that are appropriate for forage availability.
  - Increase harvest by implementing a bag limit of 10 fish daily, with only one fish over 28-inches. No harvest of fish between 20 and 28-inches. Possession limit is twice the daily limit.
- Evaluate reductions in angler daily limits and/or adjusting slot limit if three-year running average falls below 2 walleye per fall sinking gillnet. Reductions will be considered only if rainbow trout and yellow perch abundance are near or above management goals.

- Additional restrictions may include reducing bag limits, adjusting size restrictions, and/or seasonal closures.
- Consider increasing walleye limit if three-year running average increases above 6 walleye per fall sinking gillnet or if on a three-year average rainbow trout abundance declines below 2 rainbow per net and yellow perch abundance declines below 2 per net.
  - Evaluate use of other tools to reduce walleye numbers. Other tools may include unlimited harvest, gillnetting or trap netting during periods when fish are highly concentrated, spearing through the ice or underwater, among others. Any of these management actions will require public input prior to implementation.
  - Determine if adjustments to the slot limit are necessary to maintain population levels appropriate for forage abundance.
  - If these triggers are exceeded within three years following plan implementation, consider deferring management action to better determine effectiveness of strategies outlined in this plan.
- Determine how flushing of walleye from Canyon Ferry influences the Holter Reservoir walleye fishery. Continue tagging walleye in Canyon Ferry and Holter in the spring using live release trap nets. Evaluate year class strength of spawning aged females. Maintain a database of walleye tag returns (angler returns and field survey returns) to determine annual flushing statistics.
- Continue enforcement efforts to reduce the proportion of slot limit walleyes that are illegally harvested.
  - Utilize creel data to determine periods of high walleye catch rates and use this information to focus enforcement activities on the reservoir.
  - Programmatically develop a schedule for routine patrolling with special emphasis on peak fishing periods. As needed, operate periodic check stations to evaluate regulation compliance.
- Recognize the importance for anglers to have multiple size classes of walleyes represented in the population. Maintain a three-year running average of at least 10 - 25% of the population at 20 inches or more in fall sinking gill nets. Recommend regulation changes as needed to maintain more, larger sized fish, depending upon walleye population abundance relative to goals and triggers for other fish and forage availability.

## **Yellow Perch**

### **Goals and Objectives:**

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

- Maintain a three-year running average of at least 6 yellow perch per fall sinking gill net.
- Provide an average angler catch rate of 0.2 to 0.4 yellow perch per hour in the summer creel and 1.0 to 2.0 perch per hour in the winter creel.

**Rationale:**

Yellow perch have maintained significant population levels in the reservoir entirely through natural reproduction. Historically, perch have comprised a substantial portion of the Holter fishery; principally the winter ice fishery. High water years in the late 1990s and expansion of the Canyon Ferry walleye fishery have had detrimental effects to the Holter yellow perch population. Average perch abundance in fall gillnets from 1986-1996 averaged 13.3 perch per net, compared to 2.45 per net from 1997-2008. Since 2000, a 50 fish limit has been in place to achieve two objectives: 1) reduce the total number of perch harvested by anglers thereby increasing the number of spawning age fish in the population, and 2) recognize that increased walleye populations in the three reservoirs have had an impact on perch populations. Recognizing that yellow perch are an important component of the walleye diet, a conservative limit may increase the number of perch available as forage. Given continued declines in perch abundance, more restrictive bag limits may be necessary to further protect the perch population.

**Strategies:**

- Reduce daily limits of perch to 25 fish daily with no possession limit.
  - Recommend implementing higher bag limits if yellow perch abundance increases above 10 perch per fall sinking gillnet on a three-year running average.
- Consider additional management actions if yellow perch abundance falls below a three-year average catch of 2 perch per fall sinking gillnet.
  - Additional actions may include further reductions in angler harvest of perch and/or implementation of active walleye management strategies (see Walleye section).
  - If these triggers are exceeded within three years following plan implementation, consider deferring management action to better determine effectiveness of strategies outlined in this plan.
- Continue monitoring of perch populations to determine seasonal flushing losses.
- Continue to evaluate predation impacts by walleye on Holter Reservoir yellow perch populations.
  - Collect walleye stomachs during normal field surveys.
  - Maintain a database on seasonal walleye perch consumption.
  - Conduct bioenergetic modeling to assess overall impacts of walleye to the perch population and implement changes as needed.
- Explore opportunities to improve perch spawning habitat.

**Burbot (Ling)****Goals and Objectives:**

Rely on burbot to provide a self-sustaining fishery that is supported entirely by wild reproduction.

- Maintain a three-year running average of 0.25 burbot per fall sinking gillnet.

**Rationale:**

Burbot are native to the upper Missouri River system and have always had a very low level of abundance in Holter. Population monitoring has shown increases in burbot numbers in recent years (0.01 burbot per fall gillnet 1986-1999, 0.3 per gillnet 2000-2008) however; abundance of burbot is low relative to other predators in the reservoir. Burbot are piscivorous (fish-eating) species, and it is presently unclear what effect increases in the burbot population will have on other species.

**Strategies:**

- Increase knowledge of burbot population dynamics in Holter Reservoir. Specifically, efforts will be made to collect data (age, growth, diet, general abundance) from burbot during normal field sampling (gillnetting and electrofishing).
- Evaluate increasing angler harvest if three-year running average catch of burbot increases above 2.0 burbot per fall sinking gillnet.
- Consider establishing a sampling regime specifically targeting burbot. This would likely involve deployment of additional sampling gears in the late winter spawning period.
- Increase effort during winter creel to determine burbot harvest.

**Northern Pike****Goals and Objectives:**

Monitor and suppress the northern pike population in the reservoir, and evaluate impacts to other species.

**Rationale:**

Increased abundance of northern pike in upstream waters significantly increases the likelihood of flushing of northern pike into Holter. Northern pike are highly piscivorous fish and the current forage base in Hauser is likely not adequate to support an additional voracious predator.

**Strategies:**

- Eliminate all angler bag limits for northern pike in the upper Missouri River reservoir system.
- Monitor Holter reservoir to determine presence and abundance of northern pike in the reservoir. Take active management action as needed. Explore and implement other opportunities or techniques to suppress northern pike numbers.

**Other Holter Reservoir Fisheries Management Issues****Flushing Losses at Holter Dam****Goals and Objectives:**

Determine annual and seasonal flushing rates of fish out of Holter Reservoir and the feasibility of screening Holter Dam to reduce flushing losses.

**Rationale:**

Flushing losses of fish out of Holter Dam is a principal factor affecting fish populations on an annual basis. All fish species are susceptible to flushing, however, kokanee may flush at higher rates because of

behavioral tendencies. Rainbow trout and walleye flushing have also been documented via tag returns and other fish marks.

**Strategies:**

- Determine feasibility of reducing fish flushing losses out of Holter Reservoir.
  - Evaluate screening devices on Holter Dam that would reduce flushing losses.
  - Investigate other technologies that may be effectively employed on Holter Dam to reduce fish flushing losses.

## **Walleye Flushing from Canyon Ferry Reservoir**

**Goals and Objectives:**

Determine walleye flushing rates and survival from Canyon Ferry Reservoir.

**Rationale:**

Walleye flushing out of Canyon Ferry into Hauser and Holter reservoirs has increased as the population in Canyon Ferry increased. Increased walleye densities in Holter Reservoir affect the balance of the multi-species fishery with increased predation on trout and yellow perch and potential negative effects on walleye growth rates. Walleye abundance remains at record high levels, adding to an already limited forage base in the reservoir. Walleye diet in Holter comprises up to 45% trout and salmon and up to 50% yellow perch depending on the season. This level of consumption by an expanding walleye population will impact the number of yellow perch and hatchery rainbow trout that are available for anglers.

**Strategies:**

- Request funding from the BOR to determine walleye flushing rates from Canyon Ferry Dam.
- Continue walleye tagging on Canyon Ferry and Holter Reservoirs to evaluate rates of walleye flushing into and out of Holter Reservoir.

## **Habitat**

**Goals and Objectives:**

Enhance wild fish spawning opportunities within Holter Reservoir and Holter tributary streams.

**Rationale:**

Spawning and rearing habitat in the principal tributaries to Holter Reservoir has been degraded through a variety of land use activities. Logging, agricultural development, and road related impacts have all contributed to a reduction of productive stream habitat throughout the watershed. Specific limiting factors include increased amounts of fine sediments, channel straightening (loss of stream length), and loss of large woody debris recruitment. Recent fires and beaver colonization are also influencing fisheries production. Successional changes with reservoir aging have also led to degraded spawning habitats within the reservoir.

**Strategies:**

- Identify and complete enhancement projects that will benefit spawning and recruitment of wild fish in Holter Reservoir and in Holter Reservoir tributaries.

## **Disease and Aquatic Nuisance Species**

### **Goals and Objectives:**

Monitor Holter Reservoir and principal tributaries for whirling disease. Prevent new diseases and exotic plant and wildlife species from entering Holter Reservoir and limit the expansion of current disease agents.

### **Rationale:**

Whirling disease is a prominent player in fish management in Montana. Rainbow trout are planted in Holter when they are 8 inches and are not as susceptible to contract whirling disease. However, wild fish produced from Beaver Creek, the river section above Holter Reservoir, or other tributaries have a high chance of exposure to the disease. To date, only a low-level infection rate has been detected in Beaver Creek with no evidence of infection in the tailrace section. Introductions of invasive aquatic species (e.g., Zebra mussels, Eurasian watermilfoil, New Zealand mudsnail, asian carp) have the potential to out-compete desirable flora and fauna in the reservoir system and can negatively impact recreation and water use as well as fish populations.

### **Strategies:**

- Conduct *in situ* exposure testing in Holter Reservoir tributaries the Missouri River. Utilize statewide whirling disease funding and manpower to conduct in situ exposure of fish to determine infection rates and severity.
- Initiate and continue education efforts to reduce spread of disease and invasive species.
- Continue work with the Aquatic Nuisance Species Coordinator to conduct boat-check and boat washing stations during periods of exceptionally high angler use.

## **Derbies/Tournaments**

### **Goals and Objectives:**

Manage derbies/tournaments for consistency with fisheries management goals and objectives for Holter Reservoir, to minimize conflicts with the general angling public, and to address safety issues.

### **Rationale:**

No angling tournaments are currently scheduled on Holter Reservoir. Increased interest in fishing tournaments may result in additional requests to hold tournaments in the future.

### **Strategies:**

- Do not allow ice-fishing tournaments on Holter Reservoir. Ice on Holter rarely develops to a level that would allow for safe ice-fishing tournaments.
- Monitor harvest associated with tournaments. If harvest of sport fish is determined to be excessive and detrimental to the population, angling tournaments of this nature will be evaluated with the possibility of discontinuance.
- No walleye tournaments will be authorized on Holter Reservoir as long as slot limits are in place.

- No more than two derbies/tournaments will be allowed each year. Proposed tournaments will be required to coordinate access use with BLM. Use of private access will be encouraged and mitigation for potential crowding problems will be required.

## **Access**

### **Goals and Objectives:**

Pursue any opportunities to improve angler access to Holter Reservoir with a focus on youth and handicap fishing access.

### **Rationale:**

Shoreline development and limited road access can be a limiting factor for youth and handicapped anglers. Currently, access sites administered by the BLM do offer handicapped fishing access. Most of the reservoir is accessible only by boat.

### **Strategies:**

- Work with BLM, PPL Montana, private landowners, and other interests to improve fishing access to Holter, with an emphasis on areas that provide more opportunity for youth and handicapped anglers.