#### Montana Department of Fish, Wildlife and Parks Fisheries Division

#### **Job Progress Report**

STATE: Montana PROJECT: Statewide Fisheries Management

TITLE: <u>Yellowstone River Drainage Investigations</u>

JOB: Southeast Montana Warmwater Lakes Investigations

FEDERAL GRANT: <u>F-113-R-7</u>

FISCAL YEAR: 2015 (July 1, 2014 through June 30, 2015)

#### REPORT PERIOD: March 1, 2015 through November 1, 2015

#### ABSTRACT

Montana Fish, Wildlife & Parks (FWP) manages 111 ponds in Region 7. Forty-six of these ponds were visited in 2015. Thirty-nine of the managed ponds had fishable populations of target species, two were void of fish or only had non-target species, and five ponds were only checked for depth. Three new ponds were visited in 2015 Harlin Steiger Reservoir, Far West Pond and Buddy Hjorth. Harlin Steiger Reservoir was 13 feet deep at full pool with abundant Green Sunfish present, and the pond was added to the Region 7 ponds program with Largemouth Bass being the desired species. Far West Pond was seven feet deep and had abundant non-target species in it. With the shallow depth and non-target species it was decided to not stock Far West Pond. Buddy Hjorth was seven feet deep at full pool; with the lack of depth it would not likely overwinter fish if stocked. Wild fish were transferred into three ponds by FWP in 2015. Yellow Perch were transferred from Maier Reservoir and Homestead Reservoir into Spotted Eagle. In addition, Spotted Eagle was stocked with Channel Catfish, and Smallmouth Bass from the Yellowstone River. Crappies were transferred from Tongue River Reservoir into Kreider #3 and Chamberlain #2. Pond anglers should have ample opportunity in 2016 based on positive survey results and steady water levels throughout much of FWP region 7 during 2015.

#### PROCEDURES

Ponds are classified as either managed or new. Managed ponds are those that are currently stocked by Fish, Wildlife & Parks (FWP). New ponds are those that have not been sampled or stocked by FWP in the last 20 years. Pond depths were collected using a Lucky Wireless portable depth finder and a rope with depth marks. Pond locations were documented using township, range and section and GPS coordinates in decimal degrees, geographic projection NAD 1983. Fish populations were sampled using one or a combination of the following: modified fyke nets with 4 x 6 foot frames of 0.5-inch mesh (bar measure), experimental sinking gill nets with 25 ft panels of 0.75, 1.0, 1.25, 1.5, and 2.0-inch mesh (bar measure) for an overall length of 125 feet, bag seine 100 foot long by 0.25 inch mesh, mini-fyke nets with a 2 x 4 foot frame of  $1/8^{th}$  inch mesh (bar measure) and/or hook and line. Fish were counted and a sub-sample of up to 20 fish for each species were weighed (grams), and measured in millimeters total length (TL) in the field. Precise metric measurements can be found in table seven at the end of the report. Metric measurements were converted to English equivalents and can be found throughout this

report. English measurements are used to provide consistency in use of measurements between this report, stocking records, and the Region 7 Pond Fishing Guide.

# **RESULTS AND DISCUSSION**

# Wild Fish Transfer and Hatchery Stocking

Wild fish transfers are currently being used as a tool to either 1)augment populations of game fish in urban fisheries to improve angling opportunity or 2)start new populations in an effort to diversify the suite of species available to angling communities throughout the region. Wild fish were transferred into three ponds in 2015 (Table 1). Yellow Perch were transferred from Homestead Reservoir and Maier Reservoir into Spotted Eagle to augment existing populations in this urban fishery. Channel Catfish and Smallmouth Bass were transferred from the Yellowstone River into Spotted Eagle as well. Crappie were transferred into Kreider #3 and Chamberlain #2 from Tongue River Reservoir to diversify angling opportunities in Garfield County.

	Receiveing			Number	Donor	
 Date	Water	County	Species	Transferred	Water	County
4/15/2015	Spotted Eagle	Custer	Yellow Perch	1874	Homestead Reservoir	Prairie
4/23/2015	Spotted Eagle	Custer	Yellow Perch	1899	Maier Reservoir	Fallon
6/5/2015	Kreider #3	Garfield	crappie	126	Tongue River Reservoir	Bighorn
6/5/2015	Chamberlain #2	Garfield	crappie	249	Tongue River Reservoir	Bighorn
9/25/2015	Spotted Eagle	Custer	Smallmouth Bass	8	Yellowstone River	Custer
9/25/2015	Spotted Eagle	Custer	Channel Catfish	19	Yellowstone River	Custer
 9/30/2015	Spotted Eagle	Custer	Yellow Perch	126	Homestead Reservoir	Prairie

Table 1. Wild fish transfers conducted in 2015.

The list of proposed wild fish transfers to be completed in 2016 (Table 2) includes seven ponds but the priorities are Lake Harold, Harlin Steiger Reservoir and Reiger Reservoir. Lake Harold and Harlin Steiger Reservoir will be supplemented with Largemouth Bass from Castle Rock Lake and Reiger Reservoir and Lake Harold will receive crappie from Tongue River Reservoir.

Table 2. Wild fish transfers proposed for 2016.

	Receiveing		Donor				
Date	Water	County	Species	Water	County		
2016	Lake Harold	Treasure	crappie	Tongue River Reservoir	Bighorn		
2016	Lake Harold	Treasure	Largemouth Bass	Castle Rock Reservoir	Rosebud		
2016	Spotted Eagle	Custer	Yellow Perch	Homestead Reservoir	Prairie		
2016	Cody Taylor	Custer	Black Bullhead	South Sandstone Res.	Fallon		
2016	A.G. Lee Pit	Rosebud	Northern Pike	South Sandstone Res.	Fallon		
2016	Harlin Steiger	Rosebud	Largemouth Bass	Castle Rock Reservoir	Rosebud		
2016	Reiger	Fallon	crappie	Tongue River Reservoir	Bighorn		
2016	Baker Lake	Fallon	Yellow Perch & crappie	Homestead/Tongue River Res.	Prairie		

Five trout ponds were stocked with catchable trout (7-10 inches) from Bluewater Springs Hatchery and one pond from Ft. Peck Hatchery (Table 3) in 2015. Miles City Hatchery stocked trout fingerlings (2 inches) into forty-six ponds, Walleye fry (<1 inch) and fingerlings into two ponds and Largemouth Bass fingerlings into six ponds in 2015.

Date	Water Name	County	Number	Strain	Length(in.)	Hatchery	Latitude	Longitude
4/20/2015	Hansen	Carter	1000	Arlee	6.86	Bluewater Springs	45.51704	-104.41127
4/20/2015	Hollecker Lake	Dawson	300	Arlee	6.86	Bluewater Springs	47.12810	-104.72890
4/20/2015	McNabb	Carter	1005	Arlee	6.86	Bluewater Springs	47.81575	-104.42258
4/27/2015	Roerick	Powder River	208	Arlee	7.12	Bluewater Springs	45.37556	-105.30163
5/20/2015	Baker Lake	Fallon	1000	Arlee x Erwin	7.58	Ft. Peck	46.36337	-104.27070
6/12/2015	Dean S	Custer	1151	Arlee	6.88	Bluewater Springs	46.37900	-105.66570

Table 3. Catchable rainbow trout stockings in 2015.

Ponds without pre-existing populations of fish receive a one-time stocking of fish to establish a population that will reproduce on its own until winterkill or dewatering necessitates re-establishment of the population. Six ponds were stocked with bass in 2015. Two of these ponds have pre-existing populations of non-target species that may make establishment of Largemouth Bass with fingerling hatchery stock difficult. Wild fish transfers and/or multiple year stocking will be implemented to establish Largemouth Bass in the presence of other species at Harlin Steiger Reservoir and Lake Harold.

### **Survey of New Ponds**

Three new ponds were inspected in 2015 (Table 4). Harlin Steiger Reservoir in Treasure County was added to the ponds program. It will be managed as Largemouth Bass pond. Buddy Hjorth in Fallon County and Far West Pond in Rosebud County lacked suitable fish habitat and were not added to the ponds program.

1 able 4. Summary of new poinds visited in 201.	Table 4.	Summary	of new	ponds	visited	in	2015.
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Pond Location			dLocation	Donth	Donth		Spacios Procent				
		POIL	Location	Depth	Depin		Species Present				
Pond Name	County	Latitude	Longitude	(feet) *	(feet)**	Actions	in 2015 survey				
Harlin Steiger	Treasure	N46.24091	W107.00812	13	0	Stocked with Largemouth Bass	Green Sunfish				
Buddy Hjorth	Fallon	N46.83047	W105.07027	7	0	pond not to be managed	none				
Far West Pond	Rosebud	N46.27993	W106.47491	7	2	pond not to be managed	Green Sunfish and riverine species				
* Water depth when sampled.											
** Denth between current water level and normal high water mark											

### **Survey of Managed Ponds**

## **Carter County**

Rainbow Trout were found in Hansen (7 inch average), MacNab (7 inch average) and Spring Canyon (11 inch average) in 2015 confirmed through experimental gillnets and hook and line sampling.

Exie had Green Sunfish that averaged 5 inches and Yellow Perch that averaged 7 inches. Hansen had a variety of fish, including Black Bullhead, Green Sunfish, Northern Pike and Rainbow Trout. The bullheads averaged 6 inches, the Green Sunfish averaged 5 inches and one 5 pound Northern Pike was sampled. MacNab had Rainbow Trout and Largemouth Bass that averaged 6 inches. All five pounds in Carter County were at or within one foot of full pool.

## **Custer County**

Dean S chronically winterkills due to a lack of depth. Due to a likely winterkill during the winter of 2014/2015 Dean S was only sampled for depth, with the pond being six feet from full pool. Trout were restocked in June 2015 and were caught by hook and line by anglers in June. Cody Taylor was sampled in 2014 and no fish were found, FWP will attempt to restock in 2016. The dam at Jim Beardsley washed out in 2011. It has been rebuilt by the landowner and a depth check in July 2014 indicated the pond had mostly refilled and is 5 feet from full pool. A stocking of bass was requested to re-establish the fishery and in August 2014 1,500 fingerling Largemouth Bass that averaged 8 inches and the depth had not changed from 2014. Boulware and Henry Haughian #1 had numerous Rainbow Trout with trout averaging 10 inches and 12 inches respectfully. Ft. Keogh Pond had Rainbow Trout that averaged 10 inches, but the depth was 5 feet which will likely result in a winterkill in 2015/2016. Rest Reservoir was sampled with an experimental gillnet and numerous trout were found averaging 10 inches. One trout at Rest Reservoir was 23 inches long and weighing 6.97 pounds. Pat Beardsley was sampled for depth only and it was at full pool at 18 feet deep.

Spotted Eagle in Miles City continues to be popular with local fisherman and other recreationist. Several community groups have contributed to cleaning and mowing the area and adding park benches and picnic shelters. The City of Miles City constructed a walking path, including three bridges, which cross the outlet channel. Walleyes Unlimited of Miles City built a handicap accessible fishing pier near the outlet channel. In 2014, the City of Miles City installed a restroom purchased by Walleyes Unlimited. An outdoor classroom was completed in the summer of 2015. Increased public use of Spotted Eagle demands continued monitoring and improvements to the fishery. Christmas trees were sunk to provide fish habitat in 2015, an effort that has occurred annually since 2005. The Christmas tree project will be continued in 2016. Wet conditions in 2010, 2011, 2013, and 2014 has provided ample opportunity for riverine species (e.g. Common Carp, River Carpsuckers, Goldeye, Shorthead Redhorse Suckers, Smallmouth Buffalo, and Largemouth Buffalo) to migrate into Spotted Eagle through the outlet channel or across the floodplain. The low elevation change from Spotted Eagle to the Tongue River makes fish movement into the pond easier when water levels rise in the Tongue River. Walleyes Unlimited and FWP have developed plans for a fish barrier that would be placed in the outlet channel in 2016. The proposed barrier is intended to reduce, but not eliminate, the frequency of these migrations which will make mechanical removal efforts between migrations more effective. The barrier will have six feet of drop from the outlet of Spotted Eagle to the Tongue River (at base flow). River Carpsuckers

were the only river species found in abundance in Spotted Eagle during 2015 samples. Common Carp, Freshwater Drum, Goldeye, Smallmouth Buffalo and Shorthead Redhorse were found in low abundances. Efforts to mechanically remove non-target fish with gill nets and electrofishing were conducted in 2012 and 2013 but not in 2014 or 2015. Focused efforts to mechanically remove non-target species will resume upon completion of the drop structure fish barrier.

Annual sampling in 2015 found 24 species in Spotted Eagle. Black Crappie was the most abundant species sampled; Bluegill, Channel Catfish and White Crappie were other sport fish that were caught with fairly high occurrence. Shortnose Gar were sampled for the first time since 2012 in Spotted Eagle with this individual fish measuring 26 inches and weighing 2 pounds. Catchable Rainbow Trout were planted by the Miles City State Fish Hatchery in the spring of 2015 adding to the variety of angling opportunity at Spotted Eagle.

Efforts continued in 2015 to augment angling opportunities at Spotted Eagle by transferring adult sport fish. Yellow Perch were transferred from Homestead Reservoir and Maier Reservoir in April 2015; Channel Catfish and Smallmouth Bass from the Yellowstone River in September 2015; Yellow Perch from Homestead Reservoir in September 2015 (Table 5). Anecdotal evidence suggests anglers are reaping benefits from removing non-target fish, and transfers of sport fish.

Species	Count	Average length (in)	weight (lbs)	range (in)	range (lbs)
Yellow Perch	3899	7	.2	4 - 10	.045
Channel Catfish	19	19	2.5	13 - 24	.6 - 4.9
Smallmouth Bass	8	13	1.5	11 - 16	.8 - 2.4

Table 5. Summary of sport fish transferred to Spotted Eagle in 2015.

# **Dawson County**

Nine species were collected in Hollecker Lake when sampled in 2015. Largemouth Bass averaged 10 inches and Bluegill averaged 5 inches. Largemouth Bass, Fathead Minnow and Rainbow Trout are the only species FWP has stocked since the lake was drained in the fall of 2005. All other species present entered Hollecker through the irrigation water supply or from illegal introductions. While the relative abundance of all introduced species is low, with the exception of Bluegill, this does not mean that introduced fish don't pose a problem to the managed fishery.

The abundance of Bluegill provides opportunity for anglers, particularly young anglers. Hollecker Lake Kid's Fishing Pond Proposal contains a detailed description of proposed management for this pond (Appendix 1). The original proposal was to create a bass/perch fishery; however, presence and proliferation of Bluegill has made this species a suitable alternative to Yellow Perch. The Largemouth Bass and Bluegill population dynamics should continue to be monitored to assure that the assemblage is meeting the needs and management goals of Hollecker Lake. The current management plan allows for mechanical draining of the lake if the species composition and abundances are undesirable.

Trangmoe Pond was sampled and 6 species of fish were found. Black Bullhead, Yellow Perch and White Crappie were the most abundant with all three averaging near 6 inches.

# Fallon County

Efforts to provide angling opportunity at Baker Lake continued in 2015. From 2010 to 2015, 3,267 prespawn Yellow Perch, 305,000 Northern Pike fry, 4,626 Northern Pike fingerlings and 513 crappie have been transferred to Baker Lake. 2000 Catchable Rainbow Trout have been planted in Baker Lake since 2014. In 2015, ten Rainbow Trout were found in gill net samples. Only Black Bullheads were found in abundance. In spite of substantial stocking/transfer efforts since 2010 Baker Lake appears to only provide suitable habitat for Black Bullheads a species tolerant of the low oxygen conditions. Fallon County will be implementing a major lake and wetland restoration project in the near future that will take approximately 2 years to complete. The total cost is approximately 4 million dollars. Baker Lake will be deepened substantially to 15-17 feet, with the current average depth being approximately 6 feet. Year round aeration with several waterfalls will be included

Reiger Pond was planted with crappie in 2014. In 2015 Black Crappie and White Crappie were sampled. Crappie averaged 10 inches, with the largest being nearly 15 inches and 2 pounds

Aquatic invasive species (AIS) and disease testing was completed on Maier Reservoir so it could be used as a transfer source for Yellow Perch in 2013. Trap nets at Maier in 2015 yielded 1899 Yellow Perch transferred to Spotted Eagle (Table 1). Maier had four species present in 2015: Yellow Perch, White Sucker, Creek Chub and Green Sunfish, with Yellow Perch accounting for the majority of the catch.

Black Bullhead continues to be the most abundant species sampled in gill nets at South Sandstone Reservoir (Figure 1). Catch rates for Yellow Perch had declined but have been improving over the last two years. Yellow Perch caught in gill nets averaged 6 inches and some were over 9 inches in the 2015 sample. No Walleye were caught in gill nets in 2015. Northern Pike caught in gill nets averaged 26 inches with fish up to 36 inches. Angler opportunity for Yellow Perch and Northern Pike at South Sandstone continue to make this reservoir one of the best in the region.



Figure 1. Catch per gill net for Northern Pike, Walleye, Yellow Perch and Black Bullhead in South Sandstone Reservoir, 1990-2015.

## **Garfield County**

Chamberlain #1 was 10 feet deep, with Largemouth Bass that averaged 10 inches. Chamberlain #2 was a Yellow Perch/Channel Catfish pond that was not performing well. In 2015, 249 crappie from Tongue River Reservoir were planted in Chamberlain #2. Chamberlain #3 had rainbow trout up to 18 inches with the pond being 19 feet deep. Dale Kreider #3 was a new pond in 2014, with a robust population of Fathead Minnows. Dale Kreider #3 was planted in June 2015 with 126 crappie from Tongue River Reservoir. Cottonwood was sampled with experimental gill nets in 2015, Yellow Perch and Common Carp were found. Yellow Perch averaged 7 inches.

### **Powder River County**

Rainbow trout that averaged 9 inches were found in Gaskill #1. In 2013 fish were not found in Gaskill #2, but sampling in 2015 yielded incredible numbers of Largemouth Bass that averaged 6 inches. Samuelson # 1 had Largemouth Bass to 14 inches. Sidney Samuelson had Largemouth Bass averaging 11 inches. Fish were not found in Samuelson # 2 in 2013. In 2015 multiple year classes of Rainbow Trout were sampled with fish up to 16 inches sampled.

Mud Turtle and Losinski #3 were sampled for depth only. Mud Turtle was at full pool, with Rainbow Trout seen rising on the surface. Losinski #3 was 5 feet deep, 9 feet from full pool in July 2015. Losinski #3 is expected to have summer killed or winterkill in 2015/2016.

## **Prairie County**

One new pond was inspected in Prairie County in 2015. Buddy Hjorth was inspected in August, it was 7 feet deep at full pool. Due to the lack of depth this pond was not added to the Region 7 ponds program.

Reukauf (Harms) was only 5 feet deep in 2013 but sampling in 2014 produced two year classes of Rainbow Trout indicating that fish overwintered in spite of the low water level. Sampling in 2015 yielded Rainbow Trout from this year's planting indicating that trout from 2014 did not survive. Again water levels are low at 4 feet deep which will likely result in a winterkill in 2015/2016. Silvertip Reservoir was sampled with hook and line in October of 2014 but no fish were caught. In 2015 experimental gillnets found Rainbow Trout that averaged 18 inches, indicating that we missed fish in 2014. Clarks Reservoir had multiple year classes of Rainbow Trout with fish up to 18 inches. South Fork Reservoir had low water levels but Rainbow Trout were present. Doug Singleton had no fish present it will be stocked in 2016.

Homestead Reservoir was AIS and disease tested in 2014. It tested clean and was used as a Yellow Perch transfer source with 1877 Yellow Perch transferred to Spotted Eagle in 2015. Yellow Perch were numerous in Homestead. There had been some anecdotal evidence of natural reproduction from the adult Northern Pike planted in 2012, sampling had not substantiated these claims and fingerling Northern Pike were stocked in Homestead in 2014 to augment the population of wild adults that were transferred into the reservoir in 2012. Northern Pike sampled in 2015 averaged 18 inches, with fish up to 32 inches. Multiple year classes of Northern Pike were sampled.

Grants Reservoir was a new pond in 2014 that we attempted to stock with only female Yellow Perch in an experimental effort to establish a trophy population. Yellow Perch are sexually dimorphic with females maturing later allowing more time for energy to be put into body growth. This biological principle in the absence of density dependant factors should have resulted in a population of all female Yellow Perch that could be expected to exceed ten inches relatively quickly. The experiment had early indications of success as mean total length of the Yellow Perch planted increased from 5.2 inches to 9.4 inches in 6 months (Figure 2). Sampling in spring 2015 found male Yellow Perch in Grants Reservoir suggesting some of the fish transferred in 2014 were misidentified. Yellow Perch are capable of reaching 14 inches in length and 2 pounds in weight, but high fecundity and annual reproductive success often cause density dependence is being observed as the density of Yellow Perch has drastically increased after apparently successful spawning events in 2014 and 2015 driving down the average total length of Yellow Perch.



Figure 2. Observed growth of Yellow Perch in Grants Reservoir 2014-2015.

## **Richland County**

Natural reproduction for Northern Pike has generally been successful at Gartside Reservoir. Northern Pike stocking was discontinued in 2004 to evaluate natural spawning and recruitment at Gartside Reservoir. Catch rates of Northern Pike were above average in 2015 (Figure 3). The highest recorded catch rates of Northern Pike in 2010 was partially attributed to increased sampling efficiency of gill nets while pool level was reduced for construction of a fishing pier.



Figure 3. Catch rate (fish per gill net) of Walleye, Northern Pike, Largemouth Bass, and Yellow Perch from Gartside Reservoir, 1991-2015.

Gartside Reservoir received an experimental stocking of 400 Tiger Muskellunge approximately 10 inches long in October 2010. The fish were purchased from a certified, disease-free private hatchery in South Dakota. Tiger Muskellunge were stocked to improve pan-fish population size structure and to provide additional angler opportunity at Gartside. Tiger Muskellunge stocking and associated sampling goals are described in a five year stocking proposal, (Backes 2006). Tiger Muskies were supposed to be stocked annually, but the outbreak of viral hemorrhagic septicemia (VHS) virus in the Great Lakes region eliminated the muskellunge egg supply. The stocking proposal has expired for Tiger Muskellunge at Gartside. Survival of the first stocking in 2006 was not successful. Survival of individuals from the 2010 stocking was thought to be low. Three Tiger Muskie were sampled in 2011 gill net and seine haul efforts, but have not been sampled since.

### **Rosebud County**

Far West was a new pond in Rosebud County inspected in 2015 Far West Pond is in close proximity to the Yellowstone River; sampling found numerous riverine species in the pond including Bigmouth Buffalo, Common Carp and River Carpsucker. Green Sunfish were also present at the pond. With a current depth of 7 feet, 2 feet from full pool and the presence of unwanted species it was decided to not add the pond to the Region 7 ponds program at this time. If future high water inundates the pond stocking may be an option.

Blacks Sawmill was checked for depth and found to be 20 feet deep. John Killen #4 had Rainbow Trout that averaged 13 inches. Ed Grebe #2 had Rainbow Trout from this year's stocking that averaged 8 inches. The dam at Ed Grebe #2 is in jeopardy of washing out. It will be monitored stocking will be discontinued if necessary. Big Timber Trout had no fish present, the pond was 16 feet deep.

Castle Rock Lake was renowned for large and abundant Bluegill in the 1980s and early 1990s. In 1996 Bluegill catch rates dropped to a record low of 3.3 per gill net. An expanding Walleye population was thought to be suppressing Bluegill abundance. Management decided to reduce annual walleye stocking rates from 5,000 fingerlings to 1,000 fingerlings in 1997 to improve Bluegill abundance (Stewart 1996). Review of historic Dingell Johnson (DJ) reports and data indicated the abundant Bluegill population was not sustainable. The high Bluegill abundance resulted from a new and expanding population. Castle Rock Lake was constructed from 1974 to 1975 and Bluegills were stocked in 1979 to establish a forage base for Northern Pike. With little competition for forage the Bluegill population expanded, reaching a peak in 1987. The Bluegill population stabilized around 1998 and has produced relatively consistent catch rates since (Figure 4). Aquatic invasive species (AIS) and disease testing was completed on Castle Rock Reservoir in 2015 so adult Largemouth Bass could be transferred to establish populations in waterbodies with existing populations that reduce establishment success of hatchery planted fingerling bass.



Figure 4. Catch per gill net for Bluegill, Walleye, Northern Pike and Largemouth Bass from Castle Rock Lake, 1981-2015.

# **Treasure**

Harlin Steiger Reservoir was a new pond inspected in 2015 in Treasure County. The pond had a depth of 13 feet at full pool and Green Sunfish were found in high abundance. It was decided to add this pond to the Region 7 ponds program. Largemouth Bass were stocked in the fall of 2015. Due to the high density of Green Sunfish and anticipated low survival of fingerling (3 inch) bass, stocking will be repeated for 2-3 years and a wild fish transfer of adult Largemouth Bass from Castle Rock will be completed in 2016 in order to get bass past the gape width of 6 inch sunfish and establish a self-sustaining population of bass.

Lake Harold is small in size but was considered for the pond program because of limited fishing opportunities in Treasure County. Riverine species were presumably introduced through the Yellowstone Irrigation Canal, the ponds water source. Yellow Perch were transferred from South Sandstone Reservoir to Lake Harold in the spring of 2010. The landowner, Bob Fjelstad has excavated parts of the reservoir since stocking occurred to make the reservoir deeper and has made other shoreline improvements to enhance the recreational experience at the site. Sampling in 2015 found Black Crappie averaging 5 inches. Common Carp, Shorthead Redhorse Sucker and White sucker were also found. The landowner would like to get Largemouth Bass established and we plan to do so through methods similar to Harlin Steiger Reservoir.

## <u>Wibaux</u>

Experimental gill nets and a seine haul were done at Wibaux Pond in 2015. Black Bullhead, Brook Stickleback, Fathead Minnow, Golden Shiner and White Suckers were found. Black bullhead was a new species found in the pond in 2012.

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Waters referred to:

Gartside	21-3250
Castle Rock	21-2527
Spotted Eagle	21-8815

### **Keywords**

Small ponds	Yellow perch
Largemouth bass	Smallmouth bass
Northern pike	Bluegill
Rainbow trout	Walleye
Crappie	Black & yellow bullhead

### Literature Cited

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- Stewart, P.A. 1996. Southeastern Montana Warmwater Lakes Investigations. Federal Grant Job Progress Report. F-78-R-3.

		Depth				Mean	Mean	Length	Weight
		10/Full	Type of		Number	Length	Weight	Range	Range
Reservoir Name	Date	(feet) *	<sup>4</sup> Sample	Species	Caught	(mm)	(gr)	(mm)	(gm)
				Carter County					
Chiesman Reservoir	7/23/2015	9/1	hook and line	green sunfish	3	108	37	98-122	30-50
Exie	7/23/2015	8/?	hook and line	green sunfish	31	123	24	101-147	10-40
				yellow perch	9	171	48	144-213	30-80
Hansen	7/23/2015	20/0	gillnet (2)	black bullhead	35	145	33	126-207	20-90
				green sunfish	53	123	25	97-167	10-70
				northern pike	1	671	2340	671	2340
				rainbow trout	19	184	62	165-202	40-80
M acNab	7/23/2015	18/0	hook and line	largemouth bass	30	149	45	129-170	20-60
				rainbow trout	11	182	56	160-192	40-70
Spring Canyon	7/23/2015	9/0	hook and line	rainbow trout	10	291	265	284-296	240-300
				<u>Custer County</u>					
Boulware	6/30/2015	18/6	gillnet (1)	rainbow trout	76	245	240	147-352	50-550
Dean S Reservoir	6/30/2015	?/6	depth check						
Ft. Keogh	8/14/2015	5/7	gillnet (1)	rainbow trout	3	247	125	242-250	100-150
Henry Haughian #1	6/24/2015	17/1	gillnet (2)	rainbow trout	44	295	345	136-354	30-520
Hoffman (Beardsley)	8/14/2015	?/5	hook and line	largemouth bass	42	205	138	169-260	100-400
Pat Beardsley	6/30/2015	18/0	depth check						
Rest Reservoir	6/30/2015	8/15	gillnet (1)	rainbow trout	18	258	555	160-581	70-3160
Spotted Eagle	6/18/2015	10/0	gillnet (6)	bluegill	13	112	58	87-152	40-80
				bullhead	1				
				black bullhead	4	194	88	191-195	70-100
				black crappie	150	175	84	90-291	10-350
				channel catfish	21	510	1703	244-715	260-4300
				common carp	1	324	440	324	440
				green sunfish	1	112	30	112	30
				goldeye	1	294	190	294	190
				rainbow trout	1	362	540	362	540
				river carpsucker	30	322	517	213-408	240-1000
				shorthead redhorse	5	307	296	294-333	260-330
				shortnose gar	1	655	920	655	920
				white sucker	18	312	338	265-357	220-470
				walleye	1	363	400	363	400
				white crappie	66	182	85	95-295	10-360
				yellow bullhead	1	217	140	217	140
				yellow perch	5	191	96	174-205	80-110

		Depth				Mean	Mean	Length	Weight
		10/Full	Type of		Number	Length	Weight	Range	Range
Reservoir Name	Date	(feet) *	<sup>•</sup> Sample	Species	Caught	(mm)	(gr)	(mm)	(gm)
				Custer County					
Spotted Eagle	6/18/2015	10/0	seine haul (5)	bluegill	26	102	51	45-179	20-100
				black crappie	20	174	85	148-200	50-130
				emerald shiner	1	85		85	
				freshwater drum	1	313	400	313	400
				largemouth bass	2	86		78-93	
				pumpkinseed	1	88	20	88	20
				river carp sucker	4	364	733	352-383	660-800
				shorthead redhorse	2	299	320	292-305	300-340
				smallmouth bass	1	115	40	115	40
				smallmouth buffalo	2	264	300	245-282	230-370
				white sucker	1	279	230	279	230
				yellow perch	9	117	31	97-183	10-70
Spotted Eagle	4/15/2015	10/0	Fish Transfer In	yellow perch	123	132	48	124-150	40-60
	4/15/2015	10/0	Fish Transfer In	yellow perch	1751	178	93	117-222	40-190
	4/23/2015	10/0	Fish Transfer In	yellow perch	1899	113	42	83-213	20-130
	9/25/2015	10/0	Fish Transfer In	channel catfish	19	482	1117	320-606	280-2200
				smallmouth bass	8	328	666	274-395	380-1100
	9/30/2015	10/0	Fish Transfer In	yellow perch	126	217	130	160-247	50-190
				Dawson County					
Hollecker	8/4/2015		gillnet (2)	channel catfish	2	543	1445	540-545	1280-1610
				shorthead redhorse	3	457	1067	435-485	900-1260
				white sucker	2	350	535	345-354	500-570
				walleye	1	393	570	393	570
				white crappie	10	188	77	160-250	40-170
				yellow perch	4	171	68	154-195	50-90
			seine haul (1)	bluegill	23	136	45	112-154	10-80
				bluegill y oy	6	45		32-63	
				largemouth bass	2	264	385	155-373	60-710
				largemouth bass yoy	2	58		55-60	
				river carp sucker	1	498	2060	498	2060
Trangmoe	8/4/2015	6/2	gillnet (2)	black bulhead	32	165	55	121-191	20-90
				channel catfish	6	348	527	191-597	40-1780
				common carp	11	359	583	305-432	370-910
				river carp sucker	1	619	4100	619	4100
				white crappie	71	136	23	123-166	10-40
				yellow perch	23	152	29	135-165	20-40

		Depth				Mean	Mean	Length	Weight
		10/Full	Type of		Number	Length	Weight	Range	Range
Reservoir Name	Date	(feet) *	<sup>5</sup> Sample	Species	Caught	(mm)	(gr)	(mm)	(gm)
				Fallon County					
Baker Lake	7/8/2015		seine haul (1)	black bullhead	19				
			gillnet (2)	black bullhead	171	219	206	191-243	150-250
				rainbow trout	10	243	223	215-258	200-250
Maier Reservoir	4/23/2015		Fish Transfer Out	yellow perch	1899	113	42	83-213	20-130
Reiger	4/23/2015	14/4	fyke (2), mini-fyke (1)	) black crappie	16	252	313	230-373	210-870
				brook stickleback	5				
				white crappie	4	258	253	250-266	200-290
South Sandstone	8/6/2015		gillnet (3)	black bullhead	266	187	93	125-267	20-250
				northern pike	21	660	1761	514-910	650-4800
				yellow perch	118	159	44	143-233	20-170
			seine haul (3)	black bullhead	5	209	144	185-250	90-250
				largemouth bass	2	183	80	162-203	60-100
				largemouth bass yoy	1	57		57	
				northern pike	3	463	810	210-637	50-1520
				yellow perch	342	142	34	122-195	10-80
				<u>Garfield County</u>					
Chamberlain #1	7/16/2015	10/1	hook and line	largemouth bass	19	257	226	251-264	210-250
Chamberlain #2	6/5/2015		Fish Transfer In	crappie	249				
Chamberlain #3	7/16/2015	19/3	gillnet (2)	rainbow trout	36	265	289	131-463	40-890
Cottonwood	7/16/2015	15/1	gillnet (2)	common carp	4	336	420	298-388	290-620
				yellow perch	20	172	52	152-227	30-120
Kreider #3	6/5/2015		Fish Transfer In	crappie	126				
				Powder River Coun	nty				
Gaskill #1	9/16/2015	?/4	hook and line	rainbow trout	14	227	125	195-253	80-190
Gaskill #2	9/16/2015	?/6	hook and line	largemouth bass	22	165	63	157-172	50-80
Losinski #3	7/6/2015	5/9	depth check	-					
Mud Turtle	7/6/2015	?/0	depth check						
Samuelson #1	9/16/2015	?/6	hook and line	largemouth bass	6	263	338	165-359	50-760
Samuelson #2	9/16/2015	?/5	gillnet (1)	rainbow trout	18	275	327	210-405	130-780
Sid Samuelson	9/16/2015	?/10	hook and line	largemouth bass	29	285	367	243-323	210-600
				Prairie Countv					
Buddy Hjorth	8/14/2015	7/0	New Pond Ispection	<u> </u>					
Clarks	4/15/2015	?/1	depth check						
	10/14/2015	?/4	hook and line	rainbow trout	19	450	1440	450	1440
Doug Singleton	7/28/2015	9/6	gillnet (2)	no fish	0				

		Depth				Mean	Mean	Length	Weight
		10/Ful	l Type of		Number	Length	Weight	Range	Range
Reservoir Name	Date	(feet) *	* Sample	Species	Caught	(mm)	(gr)	(mm)	( <b>gm</b> )
				Prairie County					
Grants	4/15/2015	?/0	mini-fyke (2)	fathead minnow	1002	78		70-85	
				yellow perch	128	164	99	124-282	40-320
	10/14/2015	?/6	gillnet (1)	yellow perch	23	198	145	128-280	30-350
			mini-fyke (4)	fathead minnow	3000				
				yellow perch	700				
Harms	10/14/2015	4/10	hook and line	rainbow trout	3				
Homestead	4/15/2015	?/2	fyke net (3)	northern pike	39	454	733	307-800	180-3540
				yellow perch	1751	178	93	117-222	40-190
	9/30/2015		fyke net (2)	northern pike	11				
			Fish Transfer Out	yellow perch	126	217	130	160-247	50-190
Silvertip	6/24/2015	14/3	gillnet (2)	rainbow trout	11	435	1296	373-497	940-1700
			mini-fyke (2)	no fish	0				
South Fork	4/15/2015	?/3	depth check						
	10/14/2015	6/8	hook and line	rainbow trout	1	470	1400	470	1400
				<b>Richland County</b>					
Gartside	8/4/2015		gillnet (2)	bluegill	1	161	60	161	60
				largemouth bass	1	163	60	163	60
				northern pike	16	574	1293	370-760	230-2700
				yellow perch	13	147	36	134-160	30-50
			seine haul (2)	bluegill yoy	23	34		29-49	
				bluegill	240	137	39	100-177	10-100
				black crappie	6	220	153	178-261	60-250
				largemouth bass yoy	32	61		51-85	
				largemouth bass	4	249	210	182-282	80-320
				northern pike	3	412	433	293-566	110-930
				yellow perch yoy	8	63		57-70	
				yellow perch	42	144	38	102-204	10-100
				Rosebud County					
Big Timber Trout	7/14/2015	16/3	gillnet (1)	no fish	0				
Blacks Sawmill	7/6/2015	20/?	depth check						
Castle Rock	7/29/2015		mini-fyke (1)	bluegill yoy	248	23		20-25	
				bluegill	40	66	60	42-134	30-100
				largemouth bass yoy	16	53		45-67	
				northern pike	1	425	510	425	510

		Depth				Mean	Mean	Length	Weight
		10/Full	l Type of		Number	Length	Weight	Range	Range
Reservoir Name	Date	(feet) *	* Sample	Species	Caught	(mm)	(gr)	(mm)	(gm)
				Rosebud County					
Castle Rock	7/29/2015		gillnet (2)	bluegill	2	197	160	197	160
				black crappie	3	190	80	190	80
				largemouth bass	1	210	140	210	140
				northern pike	6	533	850	470-601	560-1300
				walleye	10	345	438	187-472	70-870
			seine haul (3)	bluegill	372	97	49	42-186	15-120
				black crappie	6	112	32	106-116	20-50
				largemouth bass yoy	77	53		43-66	
				largemouth bass	34	128	48	105-297	20-370
				northern pike	2	254	75	216-292	30-120
				sunfish yoy	1	23		23	
Ed Grebe #2	7/14/2015	8/2	gillnet (1)	rainbow trout	2	190	120	186-194	120
Far West Pond	9/23/2015	7/2	electrofishing	bigmouth buffalo	1	255	250		
				common carp	2	158	80	150-165	70-90
				green sunfish	1	67			
				river carp sucker	1	390	910		
John Killen #4	9/10/2015	?/9	hook and line	rainbow trout	46	336	388	296-373	290-550
				<u>Treasure County</u>					
Lake Harold	7/29/2015	10/0	gillnet (2)	black crappie	22	127	35	123-145	30-50
				common carp	2	344	540	338-350	520-560
				shorthead redhorse	2	297.5	295	258-337	150-440
				white sucker	1	150			
				<u>Wibaux County</u>					
Wibaux Pond	7/20/2015	15/0	seine haul (1)	brook stickleback	1	77			
				fathead minnow	20				
				golden shiner	3	92		90-95	
			gillnet (2)	black bullhead	4	268	370	244-290	260-470
				golden shiner	1	132	20		
				white sucker	7	312	322	295-319	290-350

## Appendix 1. Hollecker Lake Kid's Fishing Pond Proposal, 2005.

## **PROJECT SUMMARY:**

Hollecker Lake does not support a socially desirable fishery, despite a variety of attempted management alternatives over the past 40 years. From 1964 to 2005 cool and warm-water species (rainbow trout, brook trout, Yellowstone cutthroat trout, bluegill, crappie, largemouth bass, smallmouth bass, yellow perch, northern pike, and channel catfish) were stocked at various densities, sizes, and seasons. However, viable fisheries failed to establish; stocked species were infrequently sampled in the years following stocking and sampling efforts indicated an assemblage dominated by Yellowstone River fishes. Yellowstone River fishes access Hollecker Lake through the Buffalo Rapids Canal, which is the lone inlet. Although an inlet screen was installed to prevent invasion from the canal, design and maintenance logistics reduced its effectiveness; large mesh size and removal when debris accumulation was common allowed invasion. Hollecker Lake was chemically treated in 1994 to eliminate nonstocked species but was again dominated by Yellowstone River fishes the following year. Because of the difficulty of establishing stocked fish, Hollecker Lake is currently managed as a put-and-take trout pond; 1000 to 2000 catchable rainbow trout are stocked each spring and autumn. However, local angling and sporting groups have indicated that this management strategy is undesirable and establishment of a warmwater kid's fishing pond is preferred. Therefore, the goal of this project is to modify the Hollecker Lake stocking strategy, angling regulations, inlet screen, and spawning and rearing habitats to establish a viable warmwater kid's fishery.

A largemouth bass-yellow perch fishery will be established in Hollecker Lake. During December 2005 the lake will be drained and allowed to freeze to remove all fish. Largemouth bass fingerlings will be stocked in spring 2006 and 2007 at a density of 250 fish per hectare (Dauwalter and Jackson 2005). Because of the short growing season in eastern Montana, largemouth bass will likely not reach sexual maturity until the second or third season following stocking (Ball 1952, Salia 1952). Accordingly, adult yellow perch will be stocked in autumn 2007 or spring 2008 so their progeny will provide forage to the first lake-produced year class of juvenile bass (Ball 1952, Dauwalter and Jackson 2005). Delayed perch stocking will also safeguard against stunting while bass become established. Adult perch will be stocked in spring 2006 and 2007. Largemouth bass and rainbow trout will be obtained from the Miles City State Fish Hatchery and yellow perch will be transplanted from Johnson's Reservoir, Baker Lake, or Castle Rock Reservoir.

Hollecker Lake will be managed for high densities of small largemouth bass and low densities of large yellow perch. High densities of largemouth bass will create a high-quality kid's fishing pond (i.e., large numbers of catchable fish) and large yellow perch will provide a year-round angling opportunity for a highly desirable species. This management option requires overpopulation of small largemouth bass, which will reduce perch densities thereby preventing stunting and allowing attainment of large size (Guy and Willis 1991, Flinckinger et al. 1999). Accordingly, a 38-cm minimum length limit for largemouth bass will be imposed to establish high densities (Flinckinger et al. 1999). Management goals are a largemouth bass PSD of 20 and a yellow perch PSD of at least 50 by 2009 (Guy and Willis 1991). Largemouth bass will be annually sampled by night electrofishing and yellow perch by trap netting to assess attainment of management goals. Signs describing this management strategy, and all phases of the project, will be installed.

New screen installation and maintenance practices will reduce invasion and competition by canal fishes and enhance the foraging ability of largemouth bass. The primary factor contributing to the failure of previous stocking efforts has been invasion of fish from the Buffalo Rapids Canal. To reduce the likelihood of invasion, the Glendive Chapter of Walleyes Unlimited has installed a new head gate structure with removable screens of two mesh sizes and a gate that will shut off all flow to the lake. Smaller mesh sizes will prevent access by juvenile or smaller-bodied fishes and the head gate can be closed to reduce access by larval fishes. Additionally, Walleyes Unlimited will assume responsibility for screen cleaning and maintenance to ensure that barriers to canal fish are in place at all times. The canal head gate will also be closed during periods of high turbidities to maintain clear water in the lake. Because largemouth bass are visual predators their growth and survival is positively correlated with water clarity (Stone and Modde 1982). Maintenance of water clarity to depths of at least 46 cm is essential to allow adequate largemouth bass predation to prevent overpopulation and stunting by yellow perch (Flinckinger et al. 1999).

Habitat enhancement will improve bass and perch spawning habitats and concentrate fish to improve angling opportunities. Christmas tree clusters will be placed throughout the lake to provide perch spawning habitat (Kratz 2005) and concentrate perch and bass for anglers (Johnson and Lynch 1992, Rogers and Bergersen 1999). Christmas trees will be placed at depths (4 feet) and orientation to prevailing winds (north and southeast edges) to maximize perch egg deposition (Kratz 2005). Littoral shallow-water bass spawning grounds will be constructed using gravel, logs, and boulders. A floating island will be installed to concentrate fish within casting distance of the handicap fishing access. Use and efficacy of all habitat features will be assessed with annual SCUBA surveys. All materials will be obtained and installed by the Glendive Chapter of Walleyes Unlimited and Montana Fish, Wildlife and Parks during winter 2006 when the lake is drained.

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