Montana Department of Fish, Wildlife and Parks
Fisheries Division

Job Progress Report

STATE: Montana **PROJECT: Statewide Fisheries Management**

TITLE: Eastern Region 6 Pond, Stream and River Sampling

JOB: Northeast Montana Warmwater Ponds and River Investigations

FEDERAL GRANT:

FISCAL YEAR: 2011 (July 1, 2010 through June 30, 2011)

REPORT PERIOD: April 1, 2011 through November 30, 2011

ABSTRACT

The routine management of northeast Montana prairie ponds (Daniels, McCone, Richland, Roosevelt, Sheridan and Valley Counties) (Figure 1) continued in the spring/summer of 2011. With the sampling that occurred in 2010 and 2011 we have greatly increased our understanding of what the current status of the fisheries in the region is. The ponds that were sampled in 2011 were either a priority due to their popularity with the public or were requested to be sampled by local landowners. It was assumed that these ponds would not be sampled on a yearly basis, but due to the high potential for winter kills in the winter of 2010/ 2011, many of these ponds were sampled during both 2010 and 2011.

In addition to sampling prairie ponds, several rivers and streams were sampled in northeast Montana during 2011. While the mainstem Missouri River has had frequent sampling of its fishes over the past 20 plus years, sampling in tributaries like the Milk and Redwater Rivers have been somewhat infrequent. This report includes sampling that occurred in a variety of tributaries to the Missouri River during 2011.

INTRODUCTION

The winter of 2010/2011 along with the spring and summer of 2011 were in many ways historic for northeast Montana. Record snow fall accumulated on the prairie landscape, which was accompanied by frigid arctic type temperatures. With just over 108 inches of snowfall and 47 days with a low temperature of 0^0 F or colder, the fisheries in the area's prairie ponds took a significant hit. Going into the winter many of the ponds in the region were not full and therefore had a reduced capacity to overwinter fish. Several prairie ponds in the region had documented winter fish kills, some of which were complete kills. On a brighter side, the spring of 2011 was the wettest on record. The combination of prairie snow melt and spring rains filled most of the regional ponds to their maximum capacity. The combination the harsh winter and the wet spring likely left a multitude of ponds with exceptional water condition and no fish.

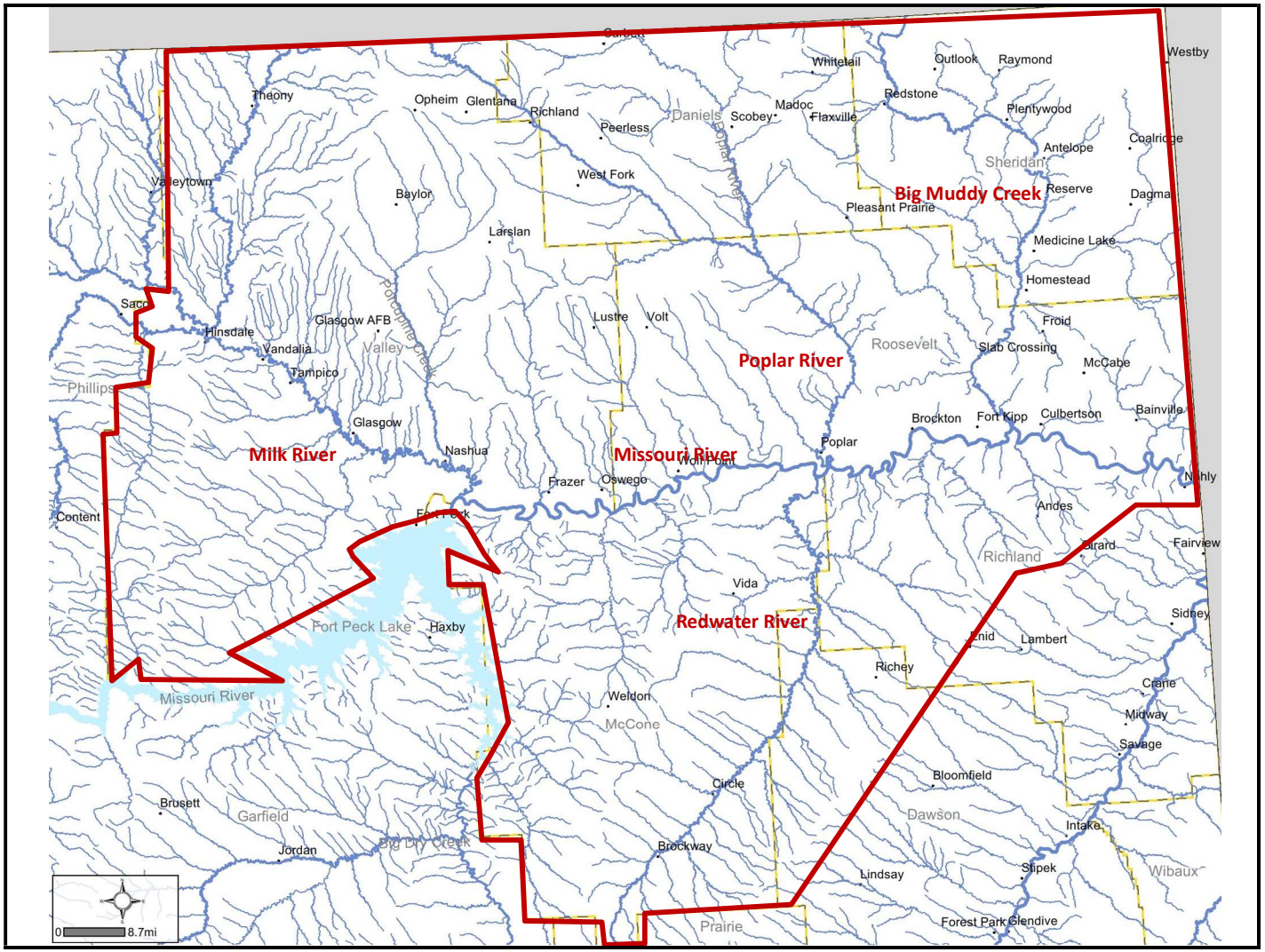

Figure 1. Map of the northeast Montana fisheries management district, including Valley, McCone, Daniels, Roosevelt, Daniels and Richland Counties. Red line is approximate border of the management district.

Manpower was the limiting factor for determining how many ponds needed fish transplants and for those that were identified the State's wild fish transfer policy limited the number of transplants that could be made. Nevertheless, the more popular fishing ponds were sampled and those that needed supplementing were stocked with an array of hatchery produced fish, which included rainbow trout, largemouth bass, channel catfish and northern pike. In addition, several ponds were stocked with adult wild perch from wild donor sources.

The record winter snow fall and spring rains also produced historic flows in the areas streams and rivers. Discharge in the Missouri River peaked at just over 90,000 cfs at Wolf Point, which was the most water in the river since Fort Peck Dam has been in place. Moreover, the Milk River had a two flood events, with its peak at just over 24,000 cfs. Similar to the Missouri, this was the most water in the Milk River in decades. The wet winter and spring also created extremely high flows in most, if not all of the other tributaries of the Missouri River.

PROCEDURES

Northeast Montana Rivers and Streams

Several northeast Montana streams and rivers were sampled during 2011 using a variety of gears for several different objectives. Objectives ranged from monitoring the timing and relative abundance of the sauger spawning run in the lower Milk River to presence/absence sampling of other smaller Missouri River tributaries. This was the first year that sauger and channel catfish trend data was collected in the Milk River and although the objective was to begin building data sets that will allow for detecting changes in relative abundance and size structure, in many ways 2011 was an exploratory year. We will likely duplicate the sampling effort of 2011 in 2012, although small adjustments in sampling design may be incorporated.

Electrofishing was conducted with booms on a jet boat using a Smith Root rectifying unit. Electrofishing runs were made in a downstream manner where current was significant and at times in an upstream direction in the mouths of tributaries where flow was minimal. For the Milk River sauger sampling, only sauger and walleye were dip netted, since the abundance of other river fishes would have overwhelmed dip netters. However, visual estimates of other species were recorded and those observations were input into the State of Montana's Fisheries Information System (Godzilla). Water conductivity was measured during all electrofishing efforts. All captured sauger and walleye were measured to total length, weighed and their reproductive state was visually assessed and recorded.

Trotlines were set to evaluate the relative abundance and age structure of channel catfish in the Milk River. Trotlines consisted of 110 ft of nylon rope tied between two anchors with an upstream buoy to locate and retrieve the line. Twenty 2/0 circle hooks were attached at equal intervals and either baited with earthworms or cut bait. All fish captured were measured and weighed.

Bag seining was conducted in the Redwater River both upstream and downstream of the Nickwall Crossing. Seining consisted of using a 30 ft in length and 0.25 inch mesh bag seine in a downstream direction unless water velocities were minimal. The distance of the seining haul was recorded as was the location of the seine using a GPS. Larger fish were measured to total length and weighed and only length was recorded for smaller bodied fishes.

Northeast Montana Ponds

During 2011, 20 lentic water bodies were sampled in northeast Montana by FWP. The two main types of waters that were sampled consisted of ponds that are either stocked on a routine basis (annual) or those that have been stocked at some point in the past with species that were meant to create self-sustaining populations.

Basic physical data such as maximum and average depth, water temperature, dissolved oxygen concentrations, and surface area were collected on most sampled ponds. Maximum depth was found by using a weight attached to a rope with visible length increments (ft) dropped to the bottom throughout the pond. Average depth was simply derived by the average of all the depths taken. Water temperature and dissolved oxygen concentrations were taken using a Yellow Springs Instrument© Model 85 Temperature, Oxygen and Salinity probe. Water surface area was estimated using aerial photographs with FWP's Mapper Program.

Fish populations were usually sampled using the combination of a 125 foot long experimental gill net and a 3 x 4 ft trap net with 1/4 inch mesh. On occasion a fine meshed dip net was used to collect small bodied fishes in the littoral zone for presence/absence data. Fish collected were identified to species, counted, measured to total length (in) and larger bodied fishes were weighed (g). Pond locations were documented using latitude and longitude coordinates.

Northeast Montana Wild Fish Transfers

Wild fish transfers are performed in northeast Montana to start, restart, or supplement fisheries in local water bodies. Fish health and aquatic nuisance species testing is done prior to fish being moved on all donor waters. Fish health testing is performed by FWP staff and samples are sent to the USFWS at the Fish Technology Center in Bozeman, MT. Aquatic nuisance species testing is also performed by FWP staff. These measures are in place to reduce the risk of infecting "clean" water bodies with aquatic pathogens and nuisance species from already contaminated waters.

RESULTS AND DISCUSSION

Survey of Northeast Montana Rivers and Streams

Big Muddy Creek

The lower portion of Big Muddy Creek in Roosevelt County (Figure 1) was sampled using boat electrofishing on June 6, 2011. The main objective was to determine species presence/absence in this tributary to the lower Missouri River.

Eleven different species were sampled in Big Muddy Creek during 2011, including three species of game fish (Table 1). Two sauger averaging 12.9 inches in length, one walleye measuring 11.4 inches and one channel catfish of 25.2 inches were captured. Goldeye were the most abundant fish sampled with a total of 26.

Table 1. Summary of Big Muddy Creek electrofishing data collected on June 6, 2011 (Latitude 48.083304, Longitude -104.364733).

Species	# Sampled	Mean Length (in)	Mean Weight (lbs)	Fish/Hour
Bigmouth Buffalo	4	31.1	17.8	0.4
Common Carp	8	22.2	4.5	0.7
Channel Catfish	1	25.2	6.8	0.1
Emerald Shiner	2			0.2
Fathead Minnow	2			0.2
Goldeye	26	12.4	0.7	2.3
River Carpsucker	4	16.0	1.8	0.4
Sauger	2	12.9	0.6	0.2
Smallmouth Buffalo	2	22.6	6.2	0.2
Walleye	1	11.4	0.4	0.1
White Sucker	2	8.4	0.4	0.2

Little Porcupine Creek

The lower portion of Little Porcupine Creek in Valley County was sampled using boat electrofishing on June 29, 2011. The main objective of this sampling was to determine species presence/absence in this tributary to the upper Missouri River.

A total of 53 fish consisting of 9 different species were sampled in Little Porcupine Creek during 2011 (Table 2). Sauger and walleye were the only two game species sampled. The three walleye averaged 19.1 inches in length, while the only sauger measured 13.9 inches.

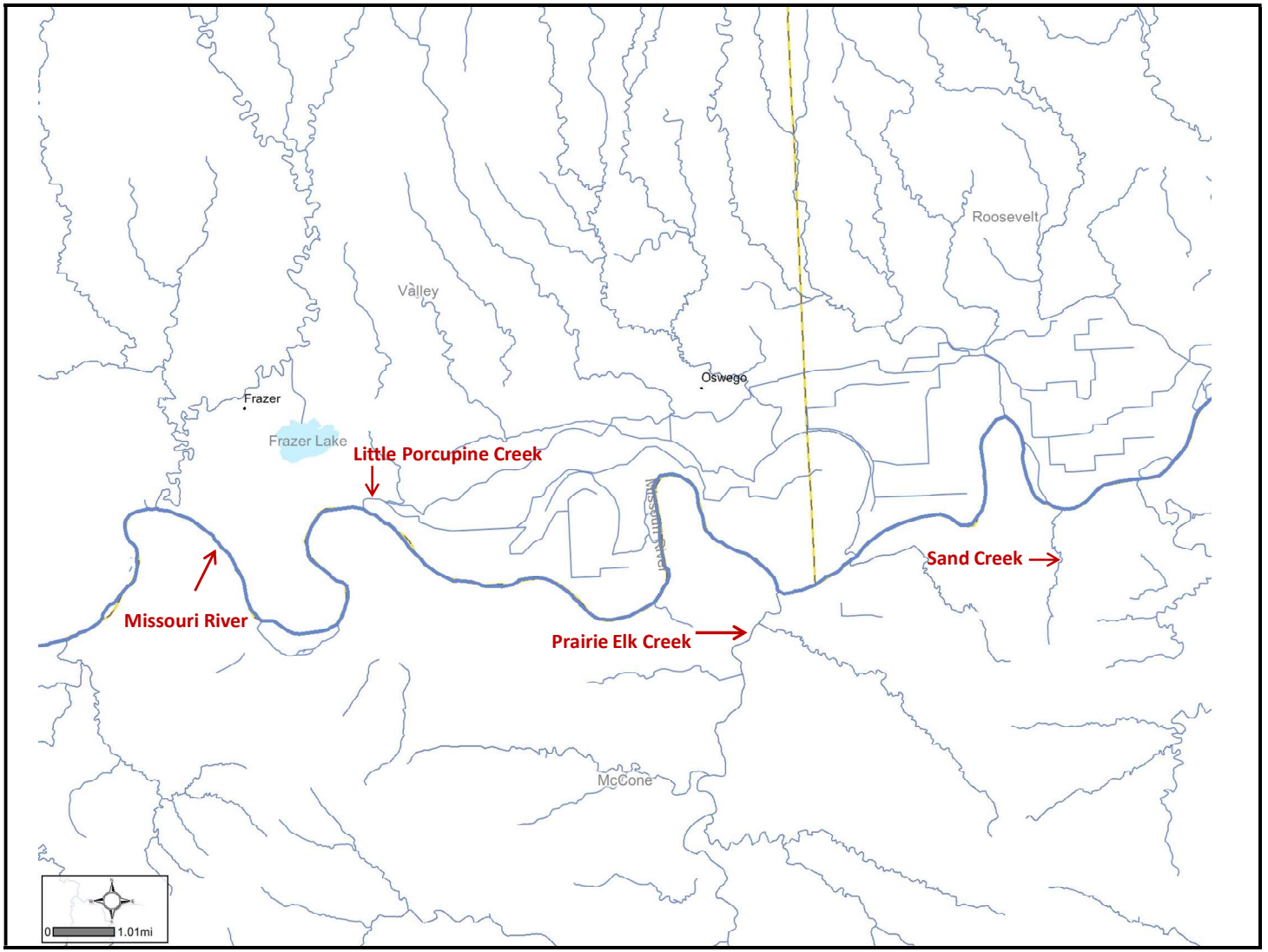

Figure 2. Map of the Missouri River downstream of Fort Peck Dam, including the following tributaries, Little Porcupine Creek, Prairie Elk Creek and Sand Creek. The vertical dashed/yellow line indicates the border between Valley and Roosevelt Counties. Scale is given.

Table 2. Summary of Little Porcupine Creek electrofishing data collected on June 29, 2011 (Latitude 48.021458, -106.043826).

Species	# Sampled	Mean Length (in)	Mean Weight (lbs)	Fish/Hour
Common Carp	9.0	20.3	4.2	1.7
Fathead Minnow	1.0			0.2
Goldeye	10.0	11.3	0.5	1.9
River Carpsucker	13.0	17.2	2.5	2.4
Sauger	1.0	13.9	0.7	0.2
Shorthead Redhorse	5.0	14.1	0.8	0.9
Smallmouth Buffalo	9.0	19.7	4.3	1.7
Walleye	3.0	19.1	2.5	0.6
White Sucker	2.0	15.9	1.7	0.4

Milk River

With the record setting snowfall and spring rains the Milk River had one of the largest water years on record (Figure 3). Several sampling events occurred in the lower Milk River (Figure 4) during 2011, with two main objectives. Sauger trend sampling using boat electrofishing was conducted on five occasions from April 13th to May 26th to better understand the timing of spawning and the relative abundance of sauger in the lower Milk River. All game fishes were collected for length and weight data, while other more abundant non-game fishes were recorded in the data for presence absence. The extremely high discharge and the longevity of the flows made 2011 a difficult year to distinguish the peak of the spawning run. However, this sampling will be conducted on an annual basis and data obtained will be used to evaluate trends in the sauger population as well as how the timing and magnitude of discharge in the Milk River influences sauger spawning.

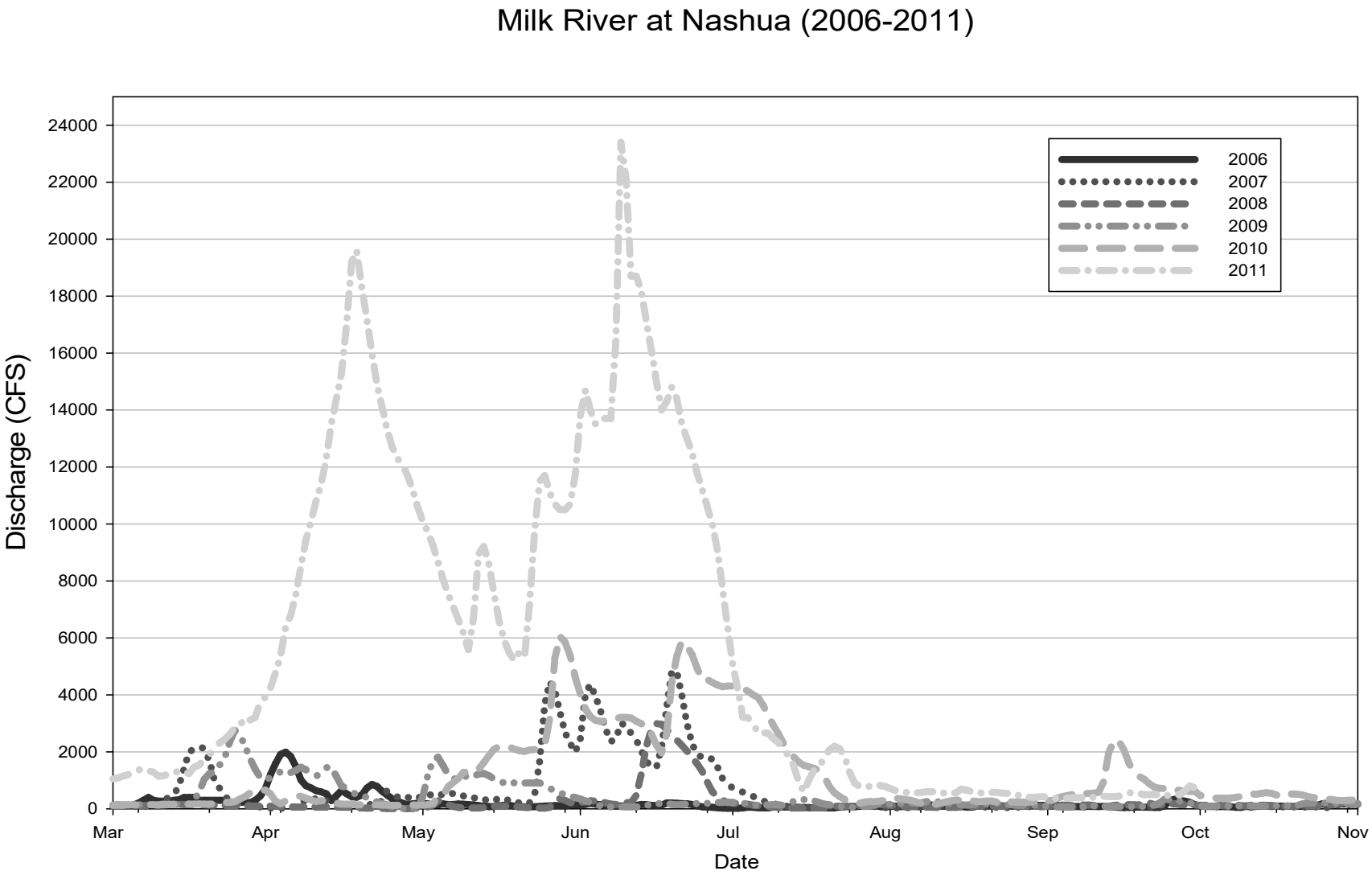

Figure 3. Hydrograph of the Milk River at Nashua, MT. March through November 2006-2011. Source USGS.

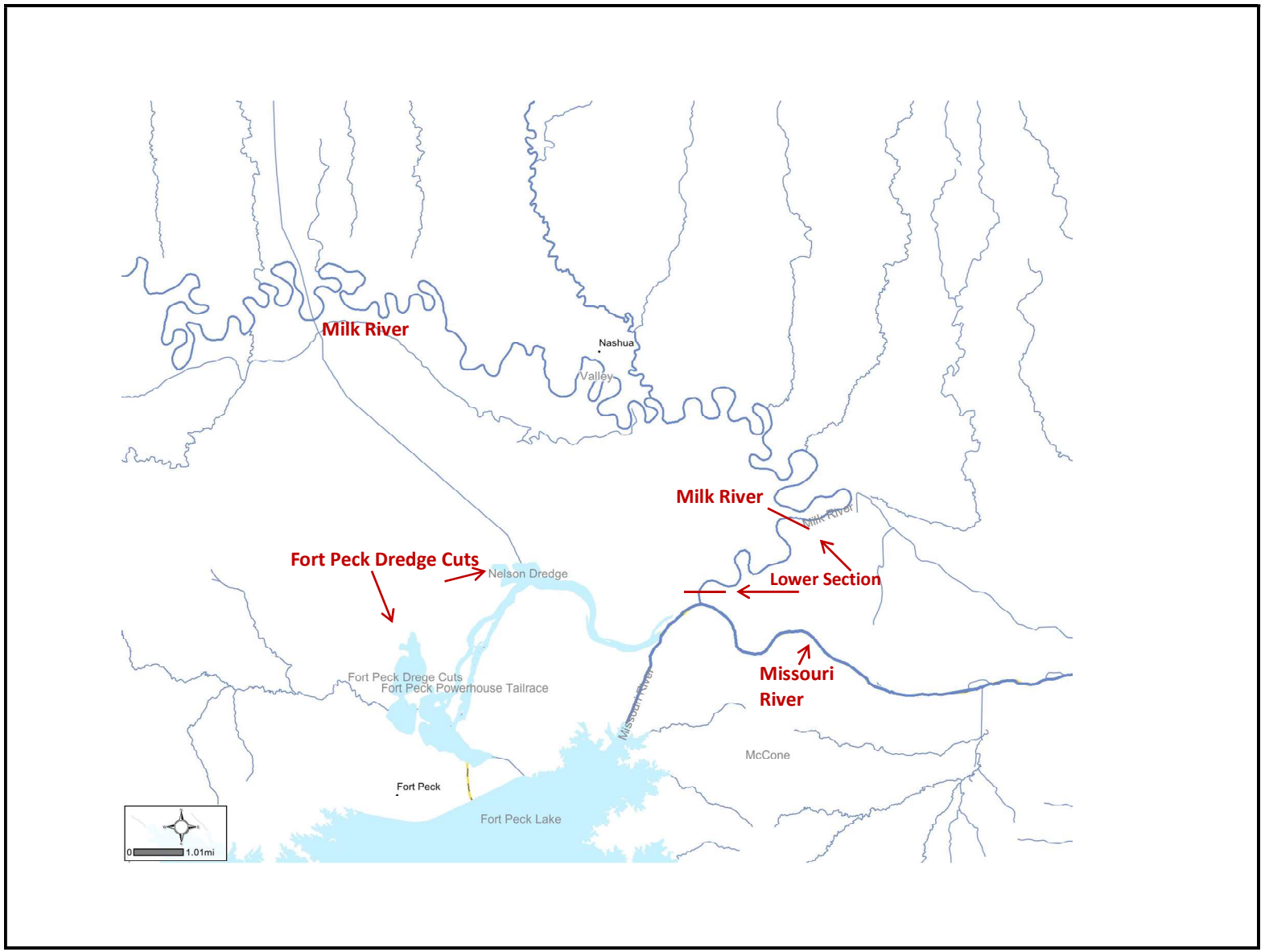

Figure 4. Map of the lower Milk River study section and the Fort Peck Dredge Cuts.

Electrofishing in the lower Milk River produced an array of species with sauger being the most abundant game fish. A total of 99 sauger and 11 walleye were sampled on the five sampling occasions (Table 3). Sauger and walleye averaged 15.2 and 16.7 inches in length, respectively. Shovelnose sturgeon were the second most abundant game fish sampled with 27 captured. One hatchery reared juvenile pallid sturgeon was sampled on May 26. Species that were abundant throughout the sampling that were not collected in dip nets included smallmouth buffalo, bigmouth buffalo, river carpsuckers, common carp and goldeye. On April 28 paddlefish were abundant in the sampling location. When paddlefish were rising electrofishing was stopped to limit the potential damage that electrofishing can cause to this species.

Table 3. Electrofishing summary for the lower Milk River 2011. Tables represents the total catch during five separate sampling occasions from April 13 to May 26.

Species	# Sampled	Length Avg (in)	Min Length (in)	Max Length (in)	Weight Avg (lbs)	Relative Wt Avg
Blue Sucker	7	28.79	24.6	31	7.22	0.0
Burbot	2	17.25	15	19.5	1.15	83.4
Channel Catfish	10	16.22	14	19.2	1.56	100.4
Freshwater Drum	1	20.4	20.4	20.4	3.5	83.8
Northern Pike	1	20.6	20.6	20.6	2.2	104.6
Pallid Sturgeon	1	13.6	13.6	13.6	0.3	
Sauger	99	15.2	10.6	20.5	1.06	76.9
Shovelnose Sturgeon	27	24	18.7	30	1.97	85.9
Walleye	11	16.65	7	25.5	2.28	107.3

Determining the relative abundance of sauger in the survey areas was difficult in 2011 due to the extremely rare high water year. Sauger CPUE was at its highest on May 27, with 23.6/hour. This was similar to the CPUE on the first sampling date of April 13, which had a CPUE of 22.9/hour. Sauger CPUE was higher on all occasions than walleye CPUE (Figure 5). No pattern between sauger CPUE and discharge was observed for the sampling period (Figure 2).

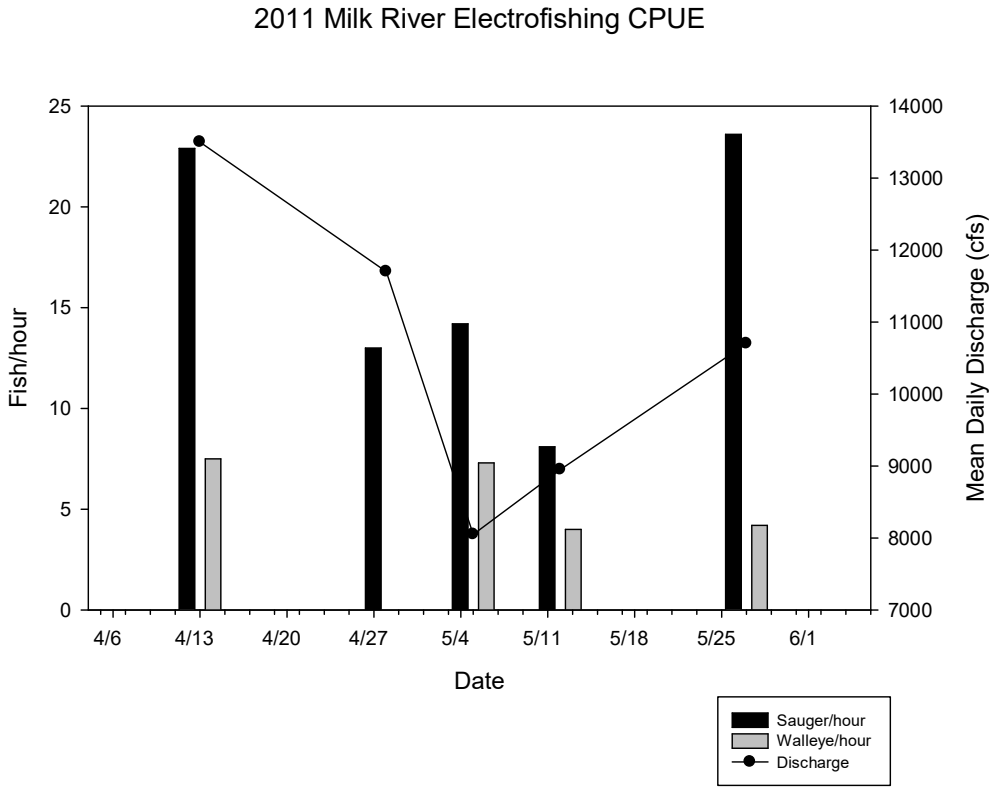

Figure 5. Sauger and walleye electrofishing CPUE and river discharge in the lower Milk River, 2011.

The second objective was to begin understanding the relative abundance, age class structure and growth of channel catfish in the lower Milk River. Trotlines were set in the Milk River near its confluence with the Missouri River on July 12th, 20th and 21st, and near Hinsdale, MT on September 26th and 27th. Pectoral fin spines were taken to age fish from all catfish captured in the Milk River during 2011. The aging structures will be used to better understand the current age class structure and growth of this species. In addition, aging structures were taken from channel catfish from the Missouri and Yellowstone Rivers in 2011 to compare growth rates between the three rivers. The aging of these structures is currently taking place and will not be included in the 2011 report.

A total of 16 species were captured using trotlines, 10 in the lower section and 9 in the Hinsdale section (Table 4). Channel catfish were by far the most abundant fish captured with a total of 164 captured. Catfish CPUE was higher in the lower Milk River section (0.2 fish/hook night) when compared to the Hinsdale section (0.07 fish/hook night). Additionally, the average relative weight of catfish was higher in the lower Milk River section than in the Hinsdale section. However, the size structure of the two sections was very similar (Figure 6). The average length of channel catfish was not substantially different between the two sections, with the lower Milk River averaging 18.0 inches and the Hinsdale section averaging 18.6 inches. The lower section did capture a two smaller fish at 6 and 8 inches, while the smallest channel catfish captured in the Hinsdale section was 14 inches.

Table 4. Summary of Milk River trotline data. Trotlining occurred on July 12, 20 and 21 for the lower Milk Section and on September 26 and 27 for the Hinsdale Section.

	Lower Milk River					Hinsdale to Beaver Creek				
Species	# Sampled	Length Avg (in)	Weight Avg (lbs)	Relative Wt Avg	Fish/hook night	# Sampled	Length Avg (in)	Weight Avg (lbs)	Relative Wt Avg	Fish/hook night
Black Bullhead	0					1	9.3	0.39	79.44	0.002
Channel Catfish	127	17.97	2.18	101.79	0.198	37	18.6	2.22	88.42	0.069
Common Carp	2	20.6	3.4	76.5	0.003	8	17.36	2.38	87.4	0.015
Freshwater Drum	10	16.88	2.08	90.95	0.016	0				
Goldeye	1	12.4	0.58		0.002	2	15.75	1.39		0.004
Northern Pike	0					6	25.57	3.46	80.78	0.011
Pallid Sturgeon	1	15.1	0.34		0.002	0				
River Carpsucker	1	17.5	2.14		0.002	0				
Shorthead Redhorse	0					4	13.58	0.96		0.007
Smallmouth Bass	0					1	18.5	3.63	98.89	0.002
Stonecat	4	6.45	0.16		0.006	0				
Shovelnose Sturgeon	8	23.6	1.61	81.22	0.013	0				
Sauger	1	18.1	2.13	98.09	0.002	0				
Shorthead Redhorse	5	15.78	1.47		0.008	0				
White Sucker	0					1	13.2	0.83	80.55	0.002
Walleye	0					7	14.19	1	75.68	0.013

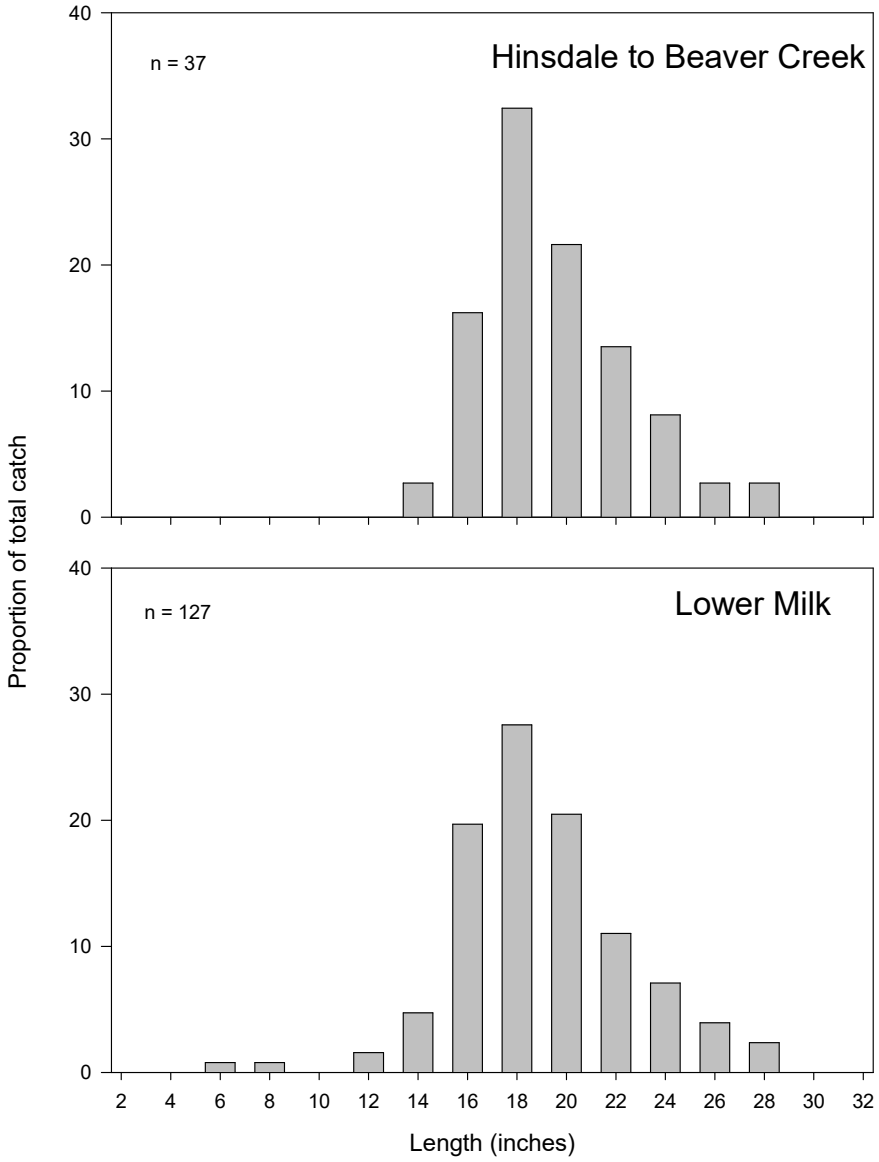

Figure 6. The total proportion of channel catfish captured by size for two sections of the Milk River during 2011.

Missouri River

Due to the substantial amounts of water the Army Corps of Engineers released over the Fort Peck Dam spillway, a variety of lake origin fishes were entrained through the spillway and ended up in the Missouri River downstream of the Dam. As the spillway flows started to decrease in late July to August, anglers began to fish the spillway channel. Anglers were catching large walleye, sauger, northern pike, smallmouth bass and channel catfish at very high rates. Electrofishing runs were made in the spillway channel on June 29 and July 11, when spillway flows were still greater than 30,000 cfs. In all, nine species of fish were sampled, with bigmouth and smallmouth buffalo being the most abundant species (Table 5). Seven walleye were sampled averaging 24.9 inches in length and 5.9 lbs in weight.

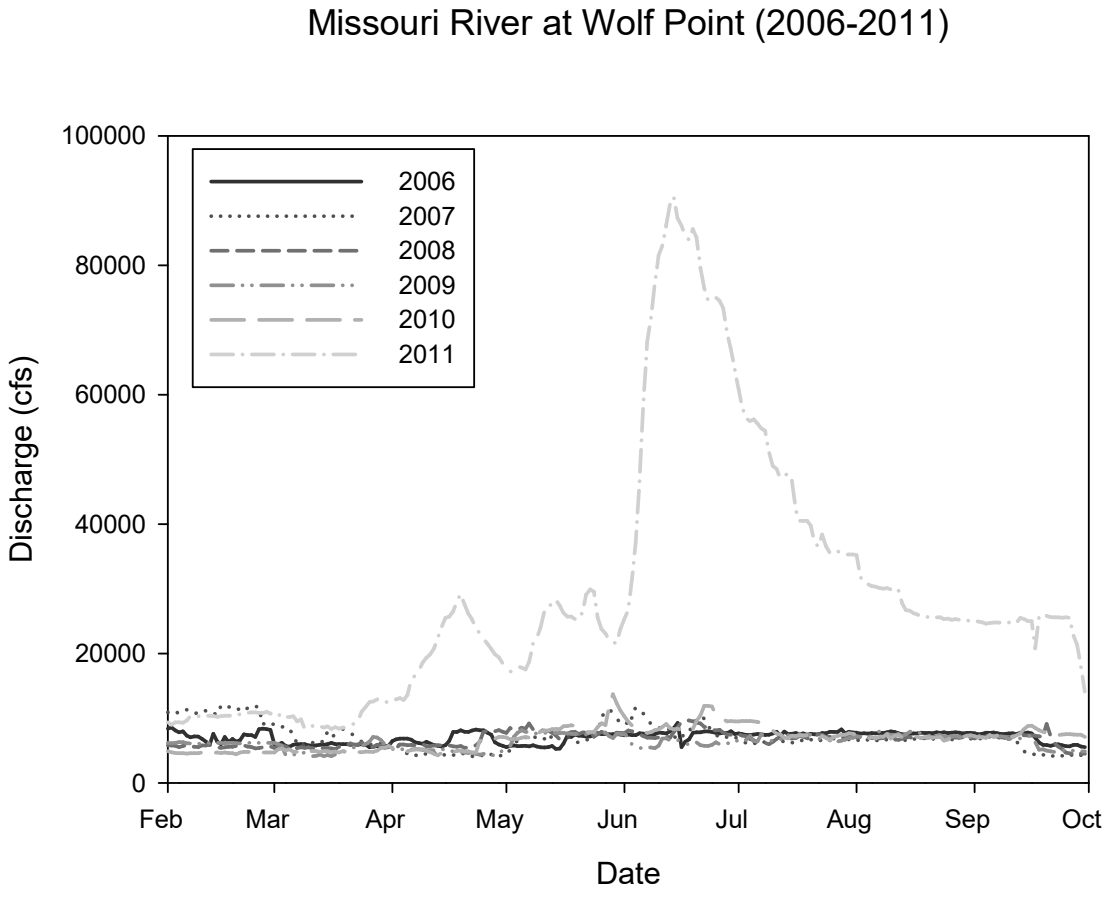

Figure 7. Missouri River hydrograph at Wolf Point, February through September, 2006-2011. Source USGS.

Table 5. Missouri River spillway channel electrofishing data (Latitude 48.023482, -106.202431).

Species	# Sampled	Mean Length (in)	Mean Weight (lbs)	Fish/Hour
Bigmouth Buffalo	12	30	13.3	3.1
Common Carp	2	24.1	7.9	0.5
Cisco	1			0.3
Emerald Shiner	1	3.5	0	0.3
Goldeye	4	5.2	0	1
River Carpsucker	5	17.7	2.6	1.3
Smallmouth Buffalo	11	25.6	8.6	2.8
Walleye	7	24.9	5.9	1.8
Western Silvery Minnow	1	4.3	0	0.3

Redwater River

The elevated elevation of the Missouri River made the lower Redwater River accessible by boat for a majority of the spring and summer. Boat electrofishing was conducted in the lower portions of the Redwater River in McCone County on June 28th. This sampling was done to identify the species present and to better understand what Missouri River fishes were using this tributary. Goldeye were the most abundant species captured, followed by river carpsuckers (Table 6). Interestingly, one sturgeon chub was captured in Redwater during this sampling effort. Since electrofishing is likely very inefficient at capturing small bodied cyprinids such as the sturgeon chub, the relative density of this species using the lower Redwater River during the sampling period is unknown.

Table 6. Summary of Redwater River electrofishing data collected on June 28, 2011 (Latitude 48.033534, Longitude -105.124717).

Species	# Sampled	Mean Length (in)	Mean Weight (lbs)	Fish/Hour
Bigmouth Buffalo	1	30.5	15.2	0.2
Common Carp	3	16.9	2.7	0.6
Cisco	1	9.8	0.2	0.2
Goldeye	5	9.5	0.4	0.9
River Carpsucker	3	18.5	3.5	0.6
Sturgeon Chub	1	3.4		0.2
Sauger	1	16.1	1	0.2
Shorthead Redhorse	1	13.7	1	0.2
Western Silvery Minnow	1	4.3		0.2

The Redwater River was again sampled using a bag seine on July 20th. Seining was conducted in the downstream and upstream reaches adjacent to the Nickwall Road Crossing. Sampling was done to identify the presence of species and to better understand how the road crossing may be affecting upstream migration. A total of 15 species were sampled, 11 downstream of the crossing and 9 upstream (Table 7). Common carp were the most abundant fish species sampled in both sections of the river, most of which were young-of-the-year (YOY) fish. Due to the high flows that the Redwater River had in 2011 in conjunction with the elevated elevation of the Missouri River, it is very possible that larger bodied riverine fishes made it upstream of the Nickwall Crossing. Two YOY river carpsuckers were sampled in the upstream section of the river, which would indicate this species made it upstream of the crossing for spawning that occurred earlier in the year. In addition, one adult goldeye was also captured upstream of the crossing. Both of these species are large river fishes and you would not expect them to be year round residents in the small Redwater River.

The presence of other native game and non-game fishes in the lower section downstream of the Nickwall Road crossing lends further evidence that this tributary may be an important spawning and nursery stream to the Missouri River. Sauger, walleye, channel catfish and northern pike were all observed in the lower section just downstream of the road crossing. Future fish passage at the Nickwall Road crossing may be important to connect the mainstem Missouri to this tributary in more normal water years.

Table 7. Summary of seining data for the Redwater River collected on July 20, 2011.

	Downstream of Nickwall Crossing		Upstream of Nickwall Crossing	
	48.031621, -105.125297		48.031289, -105.125228	
Species	# Sampled	Mean Length (in)	# Sampled	Mean Length (in)
Bigmouth Buffalo	6	1.68	None	
Channel Catfish	1	3.5	1	18
Common Carp	14	2.64	22	1.52
Flathead Chub	4	2.7	7	3.34
Fathead Minnow	13	1.53	10	1.38
Goldeye	None		1	14.8
Northern Pike	3	6.8	None	
Northern Redbelly Dace	1	2	None	
Plains Minnow	None		26	2.73
River Carpsucker	None		2	0.85
Sand Shiner	57	2.12	16	1.88

	Downstream of Nickwall Crossing		Upstream of Nickwall Crossing	
	48.031621, -105.125297		48.031289, -105.125228	
Species	# Sampled	Mean Length (in)	# Sampled	Mean Length (in)
Sauger	1	11.5	None	
Shorthead Redhorse	1	4.8	None	
Walleye	2	3	None	
White Sucker	None		2	3.55

Sand Creek

Boat electrofishing was conducted in the lower portions of Sand Creek in McCone County near its confluence with the Missouri River on June 22nd. The objective the sampling was to identify what species were present. A total of 76 fish consisting of 12 species were sampled in the lower portion of Sand Creek (Table 8). River carpsuckers were the most abundant species with 28 captured, flowed by smallmouth buffalo with 13. Four species of game fish, including channel catfish, northern pike, sauger and walleye were also captured.

Table 8. Electrofishing summary data for Sand Creek, collected on June 22, 2011 (Latitude 48.014238, Longitude -105.43336)

Species	# Sampled	Mean Length (in)	Mean Weight (lbs)	Fish/hour
Bigmouth Buffalo	1	31.1	14.4	0.2
Common Carp	8	19.5	4.8	1.2
Channel Catfish	1	20.3	3.3	0.2
Emerald Shiner	4	3.3		0.6
Goldeye	6	11.2	0.5	0.9
Northern Pike	1	24.2	2.8	0.2
River Carpsucker	28	17.4	2.4	4.2
Sauger	6	12.1	0.5	0.9
Shorthead Redhorse	2	13.1	0.8	0.3
Smallmouth Buffalo	13	18.8	3.9	2
Walleye	1	21.7	3.5	0.2
Western Silvery Minnow	5	4.4		0.8

2011 Survey of Northeast Montana Ponds

The majority of northeast Montana prairie ponds sampled in 2010 are lacking the needed depth to harbor productive self-sustaining fish populations. Since many of the ponds that FWP has managed over the past decades are relatively old stock ponds, many are shallow due to the sedimentation that has occurred over the ponds life. Identifying the highest quality waters within the region and actively manage those ponds will be key to the overall success of the ponds program. Additionally, low quality ponds may need to be dropped from the program to free up sufficient resources for the ponds that have potential as fisheries. Only a fraction of the managed ponds in many of counties listed below were sampled during 2010, while those that were not visited in 2010 are not listed.

Daniels County

Buer Pond

Buer Pond was sampled on June 28, 2011 with four trap nets, which yielded 637 yellow perch and 18 creek chubs (Table 9). Yellow perch averaged 5.3 inches in length, slightly smaller than the 5.5 inch average of the October 2010 sampling. During the fall Buer pond was used as a donor pond for yellow perch being transferred to Box Elder and Pederson Reservoirs in Sheridan County as well as Whitetail and Killenbeck Reservoirs in Daniels County. In total, 2,900 adult perch were taken out of Buer Pond for stockings. Due to the high relative abundance and small average size of yellow perch in Buer Pond, we felt that reducing the population may free up some resources that might equate to larger perch in the future.

The landowner has mentioned that there are largemouth bass in the pond, however we have not captured any in the past two years of sampling. Buer Pond is a relatively new pond compared to most in the area. A spring creek that runs year round enters the pond at the east end. The maximum depth was approximately 14 ft. Yellow perch were last stocked into Buer Pond in 2002 with 35 fish. Largemouth bass were last stocked in 1999.

Whitetail Reservoir

During January 2011 we received reports of a fish kill at Whitetail Reservoir. Technicians went to the pond and witnessed dead yellow perch under the ice. Knowing that at least a partial winter kill of yellow perch occurred, we transplanted 500 yellow perch averaging 2.5 inches from Nelson Reservoir in Phillips County during the spring. Another yellow perch transplant was made in the fall, with 528 adult yellow perch being stocked from Buer Pond in Daniels County. In addition to perch transplants, rainbow trout and channel catfish were stocked into the reservoir during the spring.

Two gill nets and two trap nets were set in Whitetail Reservoir on August 22, 2011 (Table 9). Gill nets produced 13 northern pike and 7 rainbow trout averaging 17.5 and 10.1 inches in length, respectively. Trap nets collected a total of 200 fathead minnows averaging 2.3 inches in length.

Table 9. Fish species sampled by gear for ponds sampled in northeast Montana during 2011 (numbers in parentheses under gear represent the # of deployments).

County	Reservoir	Date	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)
Daniels	Buer Pond	6/28/2011	Trap (4)	Creek Chubs	18	4.9	4.8-5.0
				Yellow Perch	637	5.3	4.1-7.0
Daniels	Whitetail Reservoir	8/22/2011	Gill (2)	Northern Pike	13	17.5	9.7-20.9
				Rainbow Trout	7	10.1	9.1-11
			Trap (2)	Fathead Minnow	200	2.3	1.7-2.8
Sheridan	Holtan Reservoir	9/15/2011	Trap (2)	Brook Stickleback	300		
				Fathead Minnow	5,000		
Valley	Glasgow Airforce Base Pond	6/8/2011	Gill (1)	Yellow Perch	1	6.0	
			Trap (2)	No Fish			
Valley	Big Reservoir	6/21/2011	Gill (1)	No Fish			
			Trap (3)	No Fish			
Valley	Burke Pond	9/28/2011	Gill (1)	Yellow Perch	89	9.6	5.3-13.9
			Trap (2)	Fathead Minnow	340		
				Yellow Perch	23	10.2	7.3-13.1
Valley	Homerun Pond	5/26/2011	Seine	Black Bullhead	1	6.0	
				Fathead Minnow	161		
				Yellow Perch	2	5.0	
Valley	Hose Reservoir	9/8/2011	Gill (1)	No Fish			
			Trap (2)	Fathead Minnow	700		
Valley	Langen Reservoir	9/26/2011	Gill (1)	Largemouth Bass	4	5.3	5.1-5.5
			Trap (2)	Fathead Minnow	125	2.5	1.8-3.4
				Largemouth Bass	1	5.4	
Valley	McNabb Reservoir	8/17/2011	Gill (1)	No Fish			
			Trap (2)	Fathead Minnow	25,000		
Valley	O'Juel Reservoir	9/26/2011	Gill (1)	Rainbow Trout	10	7.8	6.2-10.0
				White Sucker	12	12.3	8.8-16.3

County	Reservoir	Date	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)
			Trap (2)	Brook Stickleback	100		
				Fathead Minnow	100		
				Rainbow Trout	60	7.4	5.8-9.2
				White Sucker	19	13.0	7.3-15.4
Valley	Paulo Reservoir	8/10/2011	Gill (1)	Bluegill	2	5.0	4.8-5.1
				Largemouth Bass	1	5.6	
			Trap (3)	Bluegill	148	3.4	1-6.5
				Black Bullhead	246	2.4	1.2-10.5
				Common Carp	4	9.4	8.1-10
				Fathead Minnow	1	2.7	
				Largemouth Bass	20	1.9	1.2-4.0
				White Sucker	1	9.5	
Valley	Troika Reservoir	6/28/2011	Trap (2)	Fathead Minnow	1,282		
Valley	Valley Reservoir	9/28/2011	Gill (1)	Yellow Perch	3	8.0	7.2-8.6
			Trap (2)	Fathead Minnow	1,500		
				Yellow Perch	3	7.7	6.9-8.7
Valley	VR009 (Lower Base Pond)	6/8/2011	Gill (1)	No Fish			
			Trap (2)	Fathead Minnow	4	2.2	2.0-2.4
Valley	Winter Harbor Pond	6/9/2011	Gill (1)	Bluegill	9	4.5	3.8-6.0
				Largemouth Bass	1	15.1	
				Yellow Perch	5	7.2	7.0-7.4
			Trap (3)	Bluegill	79	5.3	3.0-8.3
				Yellow Perch	2	7.1	6.5-7.7

McCone County

No ponds were sampled in McCone County during 2011. Management authority of Flat Lake was given to the Fort Peck Reservoir biologist, therefore reporting on the management of Flat Lake will likely occur within the Fort Peck Reservoir report.

Richland County

No ponds in Richland County were sampled during 2011. However, Marottek Reservoir was stocked with 1,000 rainbow trout averaging 3.5 inches on June 13, 2011.

Roosevelt County

No ponds were sampled in Roosevelt County during 2011. However, several ponds were stocked with rainbow trout in Roosevelt County during 2011.

Sheridan County

Box Elder Creek Reservoir

Box Elder Reservoir is the largest reservoir in northeastern part of Region 6 with approximately 74 surface acres. The reservoir has a maximum depth of approximately 30 ft. Box Elder Reservoir has been sampled four of the past six years a variety of netting and electrofishing techniques. The reservoir had been stocked with walleye on almost an annual basis since 1985 to 2010. The largest number of walleye stocked was in 2006, when just over 100,000 fish consisting of about half fingerlings and half fry were stocked.

The current management objective of Box Elder Reservoir is to bring back a sustainable yellow perch fishery. Over the past several decades the yellow perch fishery in Box Elder Reservoir has deteriorated from an excellent ice fishery to an almost non-existent fishery. To do so, walleye stocking has been eliminated for the short-term. Walleye stocking was reduced in 2010 to 25,000 walleye fry and no walleye were stocked in 2011. In addition, adult yellow perch stockings have occurred over the past two years. For 2012 and beyond, a daily bag limit of 25 yellow perch will be implemented.

Only one yellow perch was sampled from 2006 to 2009, even though 2,500 adult perch were transplanted into Box Elder during 2008. Transplanting adult perch again occurred in 2010 and 2011 with approximately 6,500 adult perch stocked in 2010 and 1,926 during 2011. Due to the public's concern over the common carp population in Box Elder Reservoir, we used night electrofishing on July 21, 2011 to get a general idea of the relative abundance of adult common carp. Very few adult carp were observed during electrofishing runs. However, a large cohort of which appeared to be age-1 common carp were present in the reservoir. This correlates well to the large number of age-0 common carp that were sampled in netting efforts during 2010. At this point we do not feel that common carp are causing significant damage to the fishery of Box Elder Reservoir. Conversely, juvenile common carp are currently one of the main prey items for walleye and northern pike in the reservoir.

Five other species besides common carp were collected during the electrofishing effort of 2011 (Table 10). Walleye were the most abundant species with 29 sampled, followed by common carp (n = 17), white suckers (n = 12), northern pike (n = 5), black bullheads (n = 5) and yellow perch (n = 4). Walleye averaged 9.3 inches in length, which was similar to 2010 when gill net caught walleye averaged 9.8 in length (Figure 8). The largest fish captured in 2011 was a 44 inch northern pike. The four yellow perch averaged 8.7 inches in length and were likely from one of our perch stockings that occurred in 2010 or 2011. No young-of-the-year yellow perch have been captured in the last three years of sampling, even after the stockings. This indicates that either no reproduction is occurring or that juvenile yellow perch are being predated on at a high rate by predators such as walleye and northern pike. However, during the 2011 and 2010 sampling efforts adult perch have been captured in our nets and by electrofishing, which is positive since no yellow perch were sampled in the reservoir in 2009. Therefore, the perch we have been stocking are surviving and we hope to see reproduction and recruitment occur in the future, especially as we curtain walleye stocking.

Table 10. Electrofishing summary data for Box Elder Creek Reservoir for July 21, 2011.

Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)	CPUE Fish/Hour
Black Bullhead	5	6.7	6.0-7.0		12.4
Common Carp	17	7.9	5.3-24.5	4.9	27.3
Northern Pike	5	25.0	18.3-44	5.1	10.7
White Sucker	12	6.5	4.1-18.2	2.8	29.8
Walleye	29	9.3	7.2-16.7	0.8	40.1
Yellow Perch	4	8.7	8.5-9.1	0.3	8.5

While no gill nets were set in Box Elder Reservoir during 2011, four gill nets and two trap nets were set on September 20, 2010. Walleye were the most abundant fish sampled in the gill nets with a total of 201 sampled. Gill net caught walleye averaged 9.8 inches in length with a range of 7.1 to 20.9 inches. Walleye CPUE was estimated at 50.25 fish/net in 2010, a substantial increase over the past three sampling years (Figure 9).

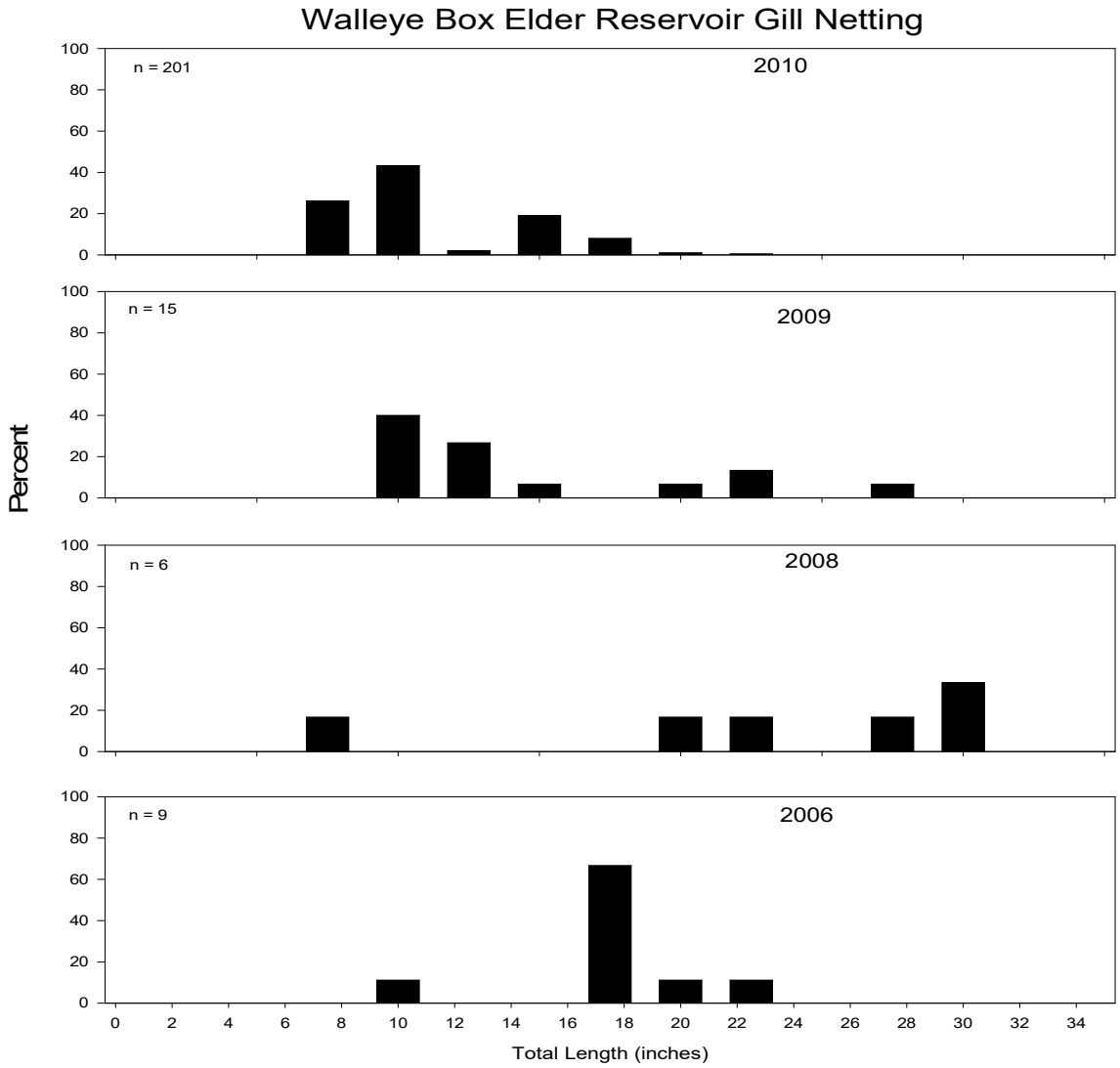

Figure 8. Length frequency histogram (percent of total catch) of walleye sampled using gill nets in Box Elder Reservoir 2006-2010.

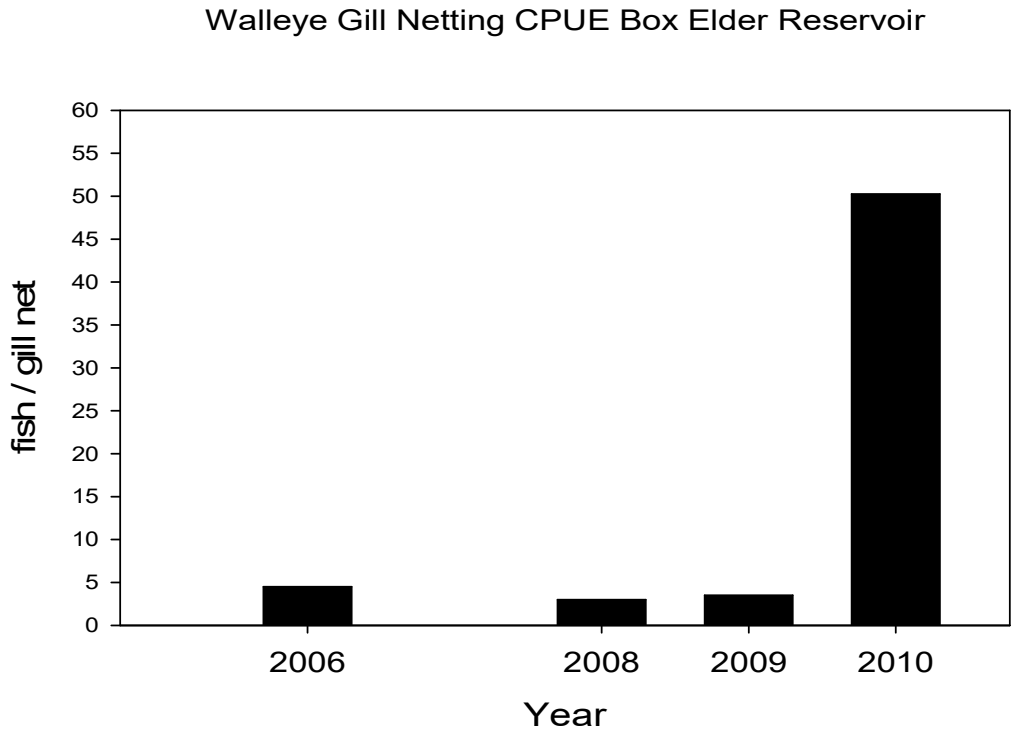

Figure 9. Box Elder Reservoir gill net walleye CPUE 2006-2010.

Walleye in the 7 to 10 inch range dominated the population in 2010 with a good number of 14 to 18 inch walleye present. The increase in smaller sizes of walleye sampled in 2010 give evidence to good recruitment of the 2010 stocked fish. Although few walleye were captured in the past sampling when compared to 2010, the size distribution of walleye sampled in the reservoir changed to a population dominated by the smaller size classes of fish (Figure 8).

Aging of walleye sampled in 2009 and 2010 give further evidence of strong recruitment of the 2010 year class (Figure 10). The large number of 7-inch fish collected in 2010, were confirmed as age-0 fish through aging otoliths. The 2010 year class grew on average seven inches from the time of stocking on May 19 to September 20, which equates to a growth rate of approximately 0.06 inches/day. No age-0 fish were sampled during the 2009 effort. During 2009 walleye at 8 inches in length were confirmed as age-1 fish, suggesting these fish were from the 2008 year class, which had significantly lower growth than the 2010 year class.

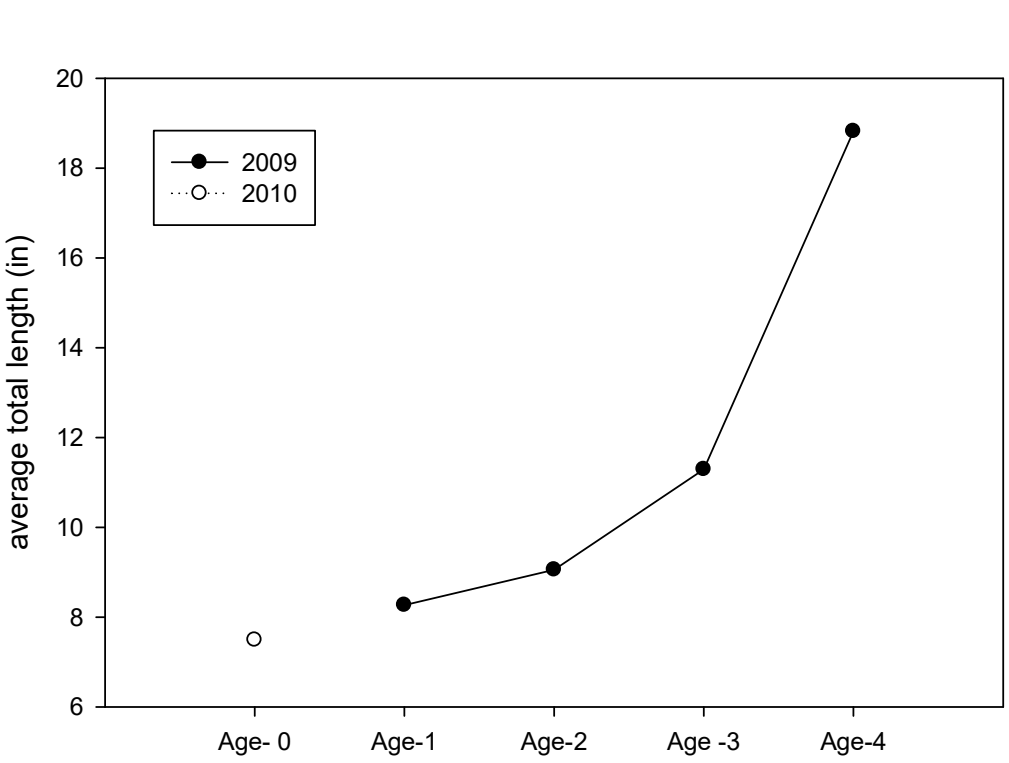

Figure 10. Length at age for Box Elder Reservoir walleye (2009-2010)

Higher reservoir elevations in 2010 likely contributed to the substantial recruitment and excellent growth of the 2010 year class of walleye. With the higher reservoir elevations we also observed a substantial increase in young-of-the-year (YOY) carp abundance. Trap nets in 2010 had an average of 222 YOY carp, a significant increase from 2009 when no YOY carp were collected in the trap nets. Visual stomach analysis of walleye also indicated that all size classes of walleye were foraging heavily on these YOY carp.

Raymond Dam

Raymond Dam is a 13 acre impoundment that was dredged out in 2009 to make the pond deeper. The maximum depth near the dam is currently at 15 ft. The deep area of the pond only makes up a small percentage of the total surface acres, with the majority being very shallow. Before 2010 the last stocking occurred in 1997 with yellow perch. In 2009 the pond was sampled with a gill net and a trap net and only fathead minnows and brook sticklebacks were observed. Raymond Dam was stocked with 500 rainbow trout averaging 7.4 inches in length on June 27, 2011 and during 2010.

Valley County

Fort Peck Dredge Cut Trout Pond

Fort Peck Dredge Cut Trout Pond was sampled on two occasions during 2011, once on June 9th and again on September 22nd. Yellow perch were the most abundant fish captured in gill nets during both sampling occasions (Table 11). Yellow perch averaged 6.8 inches during June and 7.1 inches during September. A total of four walleye were captured in gill nets during both sampling events. Over the past several years walleye abundance appears to be decreasing while yellow perch abundance is increasing. The size of yellow perch has also been slightly increasing over the past couple of years. For instance, yellow perch averaged 6.6 inches in 2010 and 6.0 inches in 2009.

Rainbow trout have been stocked into Trout Pond in both 2011 and 2010. During 2011 10,000 2.9 inch fish were stocked on May 11 and 1,000 7.0 inch fish were stocked on June 15. During 2010 a total of 9,952 rainbow trout averaging 3.8 inches were stocked into Trout Pond. So far, we have not captured a single rainbow trout in three sampling occasions since the initial stocking in 2010. In addition, we have had no reports of anglers catching rainbow trout in Trout Pond. Trout Pond is a relatively deep pond with depths over 20 ft, which should sustain cold enough water during the summer for trout to persist. However, there are quite a few predators in this system, which could explain the lack of recruitment from these stocking events. We will continue to stock Trout Pond with rainbows in 2012 and if no survival is observed we will reconsider this as a management option.

Table 11. Trout Pond gill netting summary data for June 9th and September 22nd, 2011.

	June 9th Sampling					September 22nd Sampling				
Species	# Sampled	Length Avg (inches)	Weight Avg (lbs)	Relative Wt Avg	CPUE fish/net night	# Sampled	Length Avg (inches)	Weight Avg (lbs)	Relative Wt Avg	CPUE fish/net night
Bluegill	1	4.8	0.08	103.83	0.3	1	7	0.3	111.43	0.3
Common Carp	1	24.8	6.53	86.43	0.3	None				0.0
Northern Pike	5	22.2	2.65	99.5	1.7	6	25.58	4	95.13	2.0
Shorthead Redhorse	2	19.2	3.44	0	0.7	None				0.0
White Sucker	13	18.11	2.49	95.22	4.3	2	19.75	2.7	79.66	0.7
Walleye	3	20.93	3.37	92.62	1.0	1	21.5	4.1	104.22	0.3
Yellow Perch	50	6.78	0.14	92.2	16.7	20	7.11	0	0	6.7

Missouri River Dredge Cuts

The Missouri River Dredge Cuts have been sampled annually using both experimental and smelt gill nets since 1979. The monitoring began as a tool to evaluate the fishery since a re-regulation dam downstream of Fort Peck Dam was being proposed. Until 2010 the dredge cuts and the Fort Peck Dam tailrace were sampled twice a year, once in June and once in September using 10-125 ft experimental mesh and 4-100 x 6 ft gill nets with ½ inch mesh nets (smelt nets). In 2010 the spring sampled was eliminated, given that an evaluation of the data showed redundancy. However, due to the spill that occurred from Fort Peck Reservoir during 2011, the spring sample event was conducted again in 2011 to get a better understanding of how spill may affect the species composition and relative abundance in the Dredge Cuts. Spill began in early May with a peak around 10,000 cfs and then was halted by the end of May. Spill began again in June and peaked at around 52,000 cfs in late June and was progressively reduced until the end of September.

Due to the hypolimnetic withdrawals from Fort Peck Dam the tailrace area can be characterized as a relatively stable area with cold summer water temperatures and warm winter temperatures as well as low productivity due to Fort Peck Reservoir acting as a nutrient sink. The Dredge Cuts are connected to the Missouri River, but a much higher retention time equates to warmer summer water temperatures and a more diverse littoral area. Both areas have become very popular recreation areas with anglers, boaters and water skiers.

In 2011 the Dredge Cuts were sampled on both June 8th and 9th and again on September 6th and 7th (Table 12). Ten experimental mesh gill nets and four smelt nets were used during both sampling events. A total of 335 and 322 fish were captured during June and September, respectively. While walleye relative abundance during June did not greatly differ from years past, walleye relative abundance during September was at a nineteen year high, with only 1997 having a similar catch rate. Interestingly, 1997 was the last time Fort Peck Reservoir spilled water. Walleye were caught at a rate of 4.3/net night during September in 2011, which was a significant increase from the less than 2/net night observed in the fall of 2010 (Figure 10). In addition, walleye relative weight slightly increased from 2010 (Figure 11), with an average relative weight of 85.

Table 12. Missouri River Dredge Cuts gill netting summary data, 2011.

	6/8 & 6/9 Gill Netting (10 Nets)				9/6 & 9/7 Gill Netting (10 nets)			
Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Bluegill	2	4.3	4.1-4.5		1	6.1		2.0
Bigmouth Buffalo	None				1	20.9		3.5
Channel Catfish	59	15.6	13.4-20.2		38	16.5	14.0-24.0	
Common Carp	6	19.8	17.7-21.7		3	22.4	20.4-24.1	1.7
Cisco	40	10.5	5.7-14.4		94	10.5	4.6-15.1	1.5
Freshwater Drum	None				2	15.5	14.8-16.1	
Goldeye	41	13.1	10.0-15.0		38	14.2	12.3-15.5	0.2
Lake Whitefish	3	19.4	19.1-19.6		1	19.8		5.3
Lake Trout	None				1	32.8		1.4
Longnose Sucker	6	17.6	15.2-19.1		None			
Norther Pike	10	26.7	14.2-31.9	1.1	3	25.2	14.5-35.3	5.3
Rainbow Smelt	1	6.9		3.3	None			
River Carpsucker	8	16.4	14.3-17.9	0.4	12	17.5	15.1-22.9	0.4
Shovelnose Sturgeon	59	23.7	16.7-32.2	0.7	16	23.8	21.9-27.0	1.7
Sauger	18	16.0	11.4-21.1	2.1	14	16.6	12.6-21.5	1.0
Shorthead Redhorse	19	15.8	10.7-21.3	2.1	2	15.4	13.3-17.4	3.1
Smallmouth Bass	None				1	8.0		11.5
Smallmouth Buffalo	3	19.1	17.3-20.5	4.8	1	17.6		5.6
Spottail Shiner	1	4.3			None			
White Sucker	39	15.1	6.3-19.5	2.0	51	16.0	10.5-18.8	2.5
Walleye	20	15.8	11.0-23.2	2.0	43	17.6	10.2-32.4	2.2

Conversely to walleye, sauger relative abundance was similar during both the spring and fall of 2011 and was also similar to the fall of 2010 (Table 12 and Figure 11). Gill nets had a sauger catch rate of 1.4/net night in the fall of 2011, similar to the 1.5 sauger/net night observed during 2010. The average relative weight of sauger decreased from 85 in 2010 to 79 in 2011 (Figure 12).

Similar to sauger, the relative abundance of northern pike and channel catfish did not differ greatly in 2011 from previous years (Figure 11). However, the influence of fish from Fort Peck Reservoir was apparent in the abundance of cisco between the spring and fall sampling. During June cisco catch rates were at 4.0/net night, while in September they more than doubled to 9.4/net night. Many other less abundant game fishes and abundant non-game species were sampled in the Dredge Cuts in 2011. The catches of those fishes can be found in Table 12.

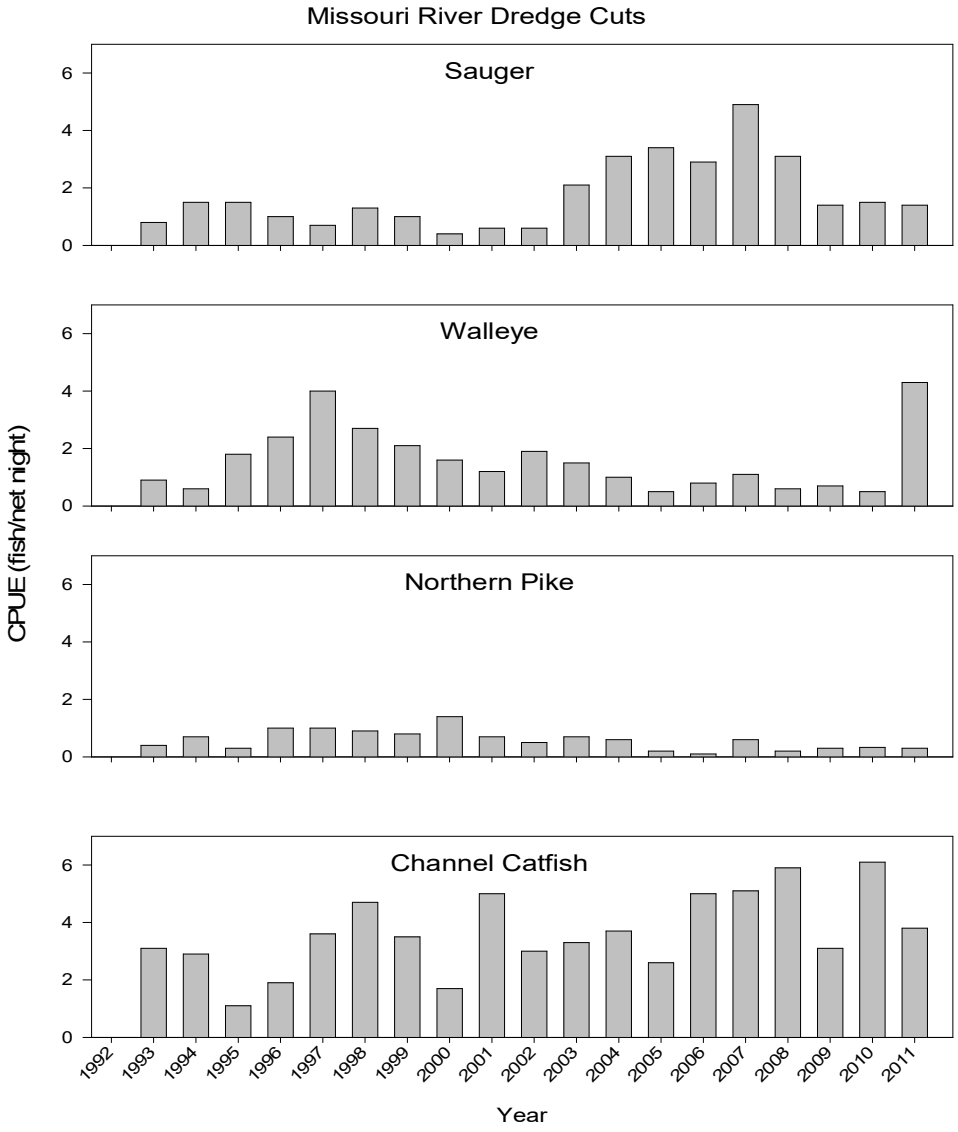

Figure 11. Gill netting CPUE of sauger, walleye, northern pike and channel catfish in the Missouri River Dredge cuts from 1992-2011.

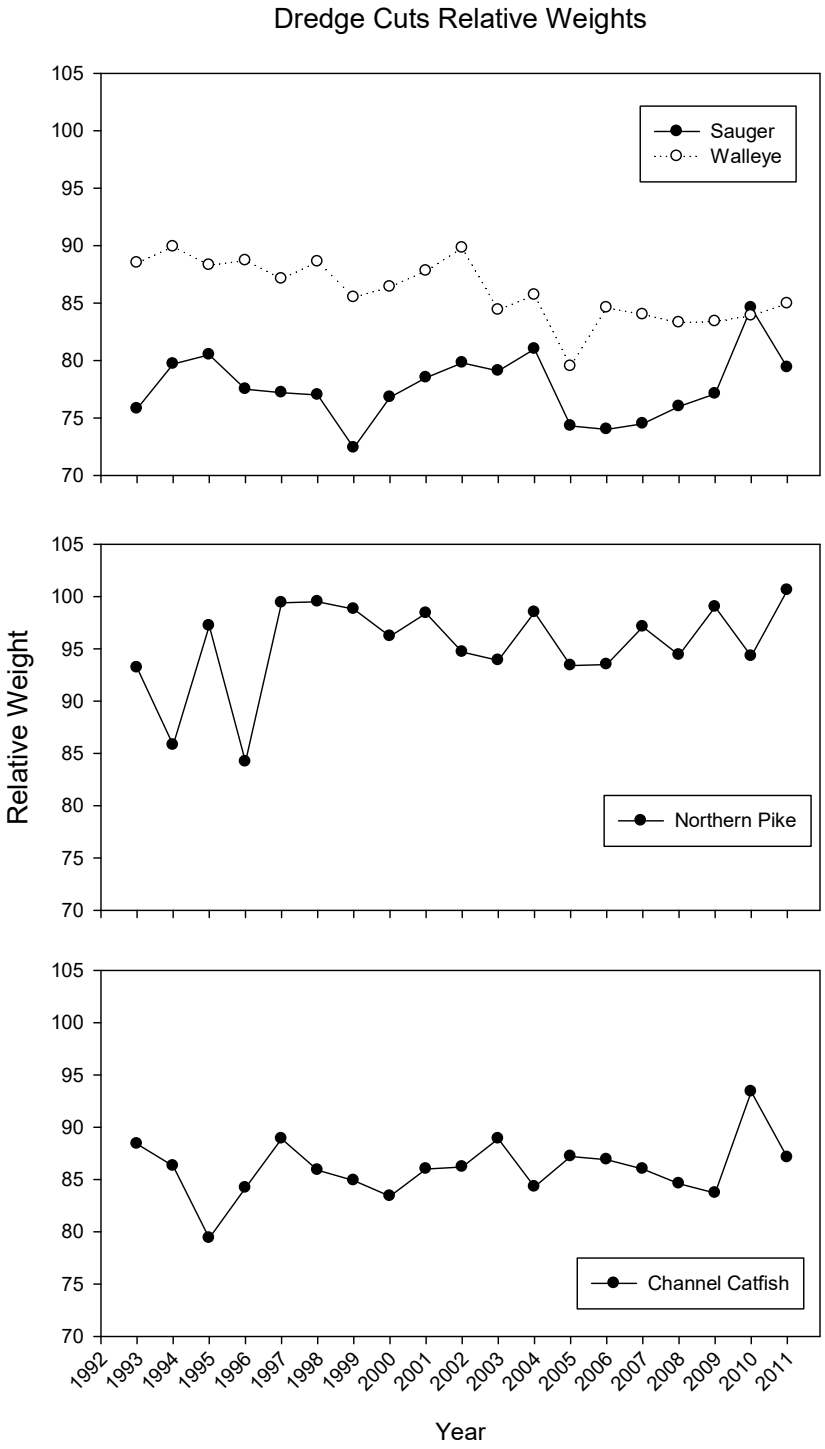

Figure 12. Relative weights of sauger and walleye (top panel), northern pike (middle panel) and channel catfish (bottom panel) captured in the Missouri River Dredge Cuts 1992-2011.

Big Reservoir

Big Reservoir was sampled using one gill net and three trap nets on June 21, 2011 and no fish were captured (Table 9). This leads us to believe that a complete winter kill occurred. The previous year's sampling found black crappie and fathead minnows in trap nets. The largest crappie captured in 2010 was 10.2 inches in length. Although we wanted to transplant adult black crappie into Big Reservoir during the summer or fall of 2011, trapping at Tongue River Reservoir was not as successful as we had hoped so no fish were moved. We plan on transplanting adult crappie into Big Reservoir during 2012.

Burke Reservoir (Desert Coulee Reservoir)

Burke Reservoir was sampled on September 28, 2011 with one gill net and two trap nets (Table 9). A total of 112 yellow perch and 340 fathead minnows were sampled. Yellow perch averaged 10.2 inches in trap nets and 9.6 inches in the gill net. Yellow perch were on average larger than during 2010 when they averaged 7.2 inches in length. The largest yellow perch captured was 13.9 inches in length, which was the largest perch we have captured in the past few years in Burke Reservoir.

Although the deepest water we could find in Burke Reservoir in 2010 was 9 feet, with an estimated average depth of 8 feet, yellow perch made it through the tough winter of 2010/2011. Due to the extremely wet spring, the dam area of Burke Reservoir sustained damage and is in jeopardy of failing with another large water event.

Glasgow Air Force Base Pond

The upper Glasgow Air Force Base Pond was sampled on June 8 with one gill net and two trap nets. The only fish captured was a yellow perch that measured 6.0 inches (Table 9). This was in contrast to the 2010 sampling when the gill net collected 19 yellow perch averaging 6.6 inches in length, 2 rainbow trout averaging 10.7 inches and one northern pike of 23.2 inches. It is interesting that this pond winter killed, since the pond has a maximum depth of approximately 20 ft, making it one of the deeper prairie ponds in the region.

Due to winter kill, Base Pond was stocked with 1,000 rainbow trout on June 15th. In addition, a request was made to stock both channel catfish and northern pike during the spring/summer of 2011.

Home Run Pond

Due to the flooding of the Milk River, Home Run Pond was closed to angling for much of the spring and early summer. At the peak of Milk River flows, Home Run Pond was captured by the Mikl River for an extended period of time. A large seine was pulled throughout the pond on May 26 to assess what species were present. Seining found yellow perch, black bullheads and fathead minnows (Table 9). Rainbow trout were then stocked into Homerun Pond on September 15, which included 379 fish averaging 11.4 inches and another batch of 27 rainbow trout averaging 22 inches in length

Langen Reservoir

Langen Reservoir was sampled using one gill net and two trap nets on September 26, 2011. In total, five largemouth bass averaging 5.3 inches and 125 fathead minnows were captured (Table 9). The largemouth bass were smaller than those captured in 2010, which averaged 10.7 inches in length. This is likely a sign that multiple year classes of largemouth bass occupy Langen Reservoir and that the winter of 2010/2011 did not cause a complete winter kill. Langen was last stocked in 2002 with 3,000 1.2 inch largemouth bass.

McNabb Reservoir

McNabb Reservoir was sampled on August 17 using one gill net and two trap nets (Table x). The gill net produced no fish, while the trap nets captured approximately 25,000 fathead minnows. Several age classes of black crappie had been sampled in 2008, indicating a winter kill. On August 17th it was evident that McNabb Reservoir had been decreasing in elevation. We contacted the Bureau of Land Management office in Glasgow, MT and they went out to evaluate the problem. They ended up draining the pond to concrete in the stand pipe that had been leaking. Further reconnaissance of the pond will be needed to check on water levels before stocking occurs.

O'Juel Reservoir

O'Juel Reservoir was sampled on September 26th using one gill net and two trap nets (Table 9). A total of 70 rainbow trout averaging just over 7 inches in length were captured. White suckers were also captured in both the gill net and trap nets. White suckers averaged about 12.5 inches in length with the largest specimen measuring 16.3 inches. Fathead minnows were also abundant with 100 sampled. O'Juel Reservoir was stocked with 3,500 3.7 rainbow trout on June 27th. Therefore, these fish grew approximately 3.5 inches in a three month period.

Paulo Reservoir

Paulo Reservoir was sampled using one gill net and three trap nets on August 10, 2011. A total of six species were captured. Black bullheads were the most abundant species with 246 caught, followed by bluegills (n = 150), largemouth bass (n = 21), common carp (n = 4) and one fathead minnow and white sucker (Table 9). Largemouth bass captured in the trap nets averaged 1.9 inches, while the one that was caught in the gill net was 5.6 inches in length. Bluegill averaged 3.4 inches in trap nets and 5.0 inches in the gill net. The majority of black bullheads were young-of-the-year fish, although the largest measured 10.5 inches.

During 2010 six largemouth bass averaging 9.9 inches were captured. It is not known if these large bass perished during the harsh winter, but it is apparent that several species did survive. Paulo Reservoir was last stocked with largemouth bass in 2007 with 1,500 fish averaging 1.2 inches.

Troika Reservoir

Two trap nets were placed in Troika Reservoir on June 28, 2011. The nets captured 1,282 fathead minnow and zero game fish (Table 9). A stocking request was put in for fingerling largemouth bass and future sampling will be needed to see if those fish survive and grow. This was the second year in a row that we sampled Troika with only fathead minnows being captured.

Troika Reservoir had a maximum depth of 11 ft in front of the dam and in the spillway corner. Due to the high water year, the spillway at Troika received severe damage. Another large water event could breach the spillway, which would likely result in Troika evacuating a good proportion of its total water volume.

Valley Reservoir

Valley Reservoir has a maximum depth of approximately 12 ft near the dam and in the middle. The inlet area has a depth of 8 feet. The reservoir was sampled using on gill net and two trap nets on September 28, 2011. A total of six yellow perch ranging in size from 6.9-8.7 inches were captured (Table 9). This was a significant decrease from 2010 when 82 yellow perch were captured in one gill net. Although yellow perch took a significant hit from the winter, fathead minnows were abundant. Future monitoring will need to be conducted to make sure yellow perch were in sufficient numbers to restart the population.

VR009 (Lower Glasgow Air Force Base Pond)

Lower Glasgow Air Force Base Pond was sampled on June 8, 2011 using one gill net and two trap nets. No fish were captured in the gill net and only four fathead minnows were caught in the two trap nets (Table 9). The reservoir had sufficient water in it so we stocked 1,000 rainbow trout averaging 4.0 inches in length on July 6th.

Winter Harbor Pond

Winter Harbor pond was sampled on June 9th using one gill net and three trap nets. A total of three species were captured, including bluegill, largemouth bass and yellow perch (Table 9). Eighty eight bluegill were captured ranging in size from 3.0-8.3 inches in length. Seven yellow perch averaging 7.2 inches and one 15.1 inch largemouth bass was captured. The U.S. Army Corps of Engineers was having problems with their inflow to Winter Harbor and the water elevation had dropped and was maintained at a lower elevation throughout the summer and into the winter of 2011/2012.

Northeast Montana Wild Fish Transfers

Several wild fish transfers were performed in Northeast Montana during 2011, all of which were the movement of yellow perch (Table 13). On the 4th and 6th of May, adult yellow perch were transferred from Nelson Reservoir in Phillips County to Box Elder Reservoir located in Sheridan County and Whitetail Reservoir located in Daniels County. In all, 400 yellow perch averaging 3.0 inches were moved to Box Elder Reservoir and 500 averaging 2.5 inches were moved to Whitetail Reservoir.

During the fall yellow perch were transferred from Buer Pond in Daniels County again to Box Elder and Whitetail reservoirs as well as Killenbeck Reservoir in Daniels County and Pederson Pond in Sheridan County. On October 26, 582 and 1,526 yellow perch averaging 6.0 inches in length were transferred to Pederson Pond and Box Elder Reservoir, respectively. On October 27, 528 and 264 yellow perch averaging 6.0 inches were transferred to Whitetail and Killenbeck reservoirs, respectively.

Table 13. Wild fish transfers for northeast Montana during 2011.

Species	Donor Water	Recipient Water	Date	# of fish	Average Size (inches)
Yellow Perch	Nelson Reservoir (Phillips)	Whitetail Reservoir (Daniels)	5/4/2011	500	2.5
Yellow Perch	Nelson Reservoir (Phillips)	Box Elder Reservoir (Sheridan)	5/6/2011	400	3
Yellow Perch	Buer Pond (Daniels)	Box Elder Reservoir (Sheridan)	10/26/2011	1,526	6
Yellow Perch	Buer Pond (Daniels)	Pederson Pond (Sheridan)	10/26/2011	582	6
Yellow Perch	Buer Pond (Daniels)	Whitetail Reservoir (Daniels)	10/27/2011	528	6
Yellow Perch	Buer Pond (Daniels)	Killenbeck Reservoir (Daniels)	10/27/2011	264	6

Prepared by: Tyler M Haddix

Date: April 2012

Waters referred to:

Big Muddy Creek

Box Elder Creek Reservoir	16-4495
Dredge Cut Trout Pond	16-5145
Missouri River Section 05	16-00AK
Missouri River Dredge Cuts	
Milk River	
Redwater River	
Sand Creek	

Keywords

Small ponds	Shovelnose sturgeon
Yellow Perch	Largemouth bass
Northern pike	Bluegill
Rainbow trout	Walleye
Black bullhead	Fathead minnow
Brook stickleback	

Appendix A. Fish species sampled by gear for ponds sampled in northeast Montana during 2010 (numbers in parentheses under gear represent the # of deployments).

County	Reservoir Name	Date	Maximum Depth (ft)	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Daniels	Buer Pond	10/12/2010		Gill net (1)	Yellow Perch	22	6.0	5.2-7.5	
				Trap (2)	Yellow Perch	521	5.5	4.5-7.5	0.1
					Creek Chubs	19	4.9	4.1-5.4	
Daniels	Carney Pond #1	8/5/2010		Gill net (2)	White Sucker	236	7.2	6.0-9.5	0.2
				Trap (2)	White Sucker	50	7.2		
					Fathead Minnow	25	2.6		
					Brook Stickleback	35	1.8		
Daniels	Chabot Reservoir	10/12/2010	10	Gill net (1)	Rainbow Trout	42	9.6	8.5-11.5	0.48
				Trap net (1)	Rainbow Trout	5	9	8.3-9.6	
Daniels	Danelson Reservoir	8/6/2010	14	Gill net (1)	No Fish				
				Trap net (1)	Brook Stickleback	11	1.3	0.9-1.6	
Daniels	Hatfield Reservoir	10/14/2010	12	Gill net (1)	Rainbow Trout	50	9.5	7.5-11.5	0.46
				Trap net (2)	Rainbow Trout	11	9.1		0.49
					Brook Stickleback	126	1.7	1.2-3.0	
Daniels	Killenbeck Reservoir	8/5/2010	11	Gill net (2)	Rainbow Trout	105	9	5.0-11.5	0.3
				Trap (2)	No Fish				
Richland	Keuster	11/3/2010	7	Gill net (2)	Yellow Perch	2	8.6	8.5-8.6	0.35
				Trap (2)	Fathead Minnow	48	2.4		

Appendix A. continued.

County	Reservoir Name	Date	Maximum Depth (ft)	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Sheridan	Box Elder Reservoir	9/20/2010	25+	Gill net (4)	Walleye	201	9.8	7.1-20.9	1.02
					Northern Pike	24	17.3	13.3-38.0	1.78
					Yellow Perch	32	9.1	7.3-10.1	0.38
					White Sucker	14	17.3	16.0-19.2	2.25
					Black Bullhead	22	8.9	5.0-12.2	0.53
					Carp	5	4.7	4.1-4.9	0.03
				Trap net (2)	Walleye	1	7.3		
					Black Bullhead	858	3.8		
					Carp	222	2.9		
					White Sucker	4	13.3		
Sheridan	Raymond Dam	9/20/2010	15	Gill net (1)	Rainbow Trout	8	11	8.6-12.7	0.69
				Trap (1)	Fathead Minnow	346	2.3		
Valley	Atlas Reservoir	10/5/2010	12	Gill net (2)	No Fish				
				Trap net (2)	Fathead Minnow	1,400	2.2	1.8-2.7	
Valley	Big Reservoir	9/2/2010	14	Gill net (1)	No Fish				
				Trap (2)	Black Crappie	70	4.2	2.8-10.4	0.11
					Fathead Minnow	167	2.7		
Valley	Burke Reservoir	8/9/2010	9	Gill net (1)	Yellow Perch	93	7.5	0.8-12.0	0.3
				Trap (1)	Yellow Perch	28	4.6	3.0-7.1	
					Fathead Minnow	32	2.2		

Appendix A. continued.

County	Reservoir Name	Date	Maximum Depth (ft)	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Valley	Dredge Cuts Trout Pond	10/6/2010	20+	Gill Net (3)	Yellow Perch	52	6.6	0.07-8.1	0.13
					Northern Pike	6	22.2	19.2-32.0	3.23
					Bluegill	1	3.9		
					Carp	5	26.3		8.25
					White Sucker	1	17.4		
				Trap (2)	Bluegill	150	1.7	1.4-2.0	
Valley	Glasgow Air Force Base Pond	8/4/2010	14	Gill net (1)	Yellow Perch	19	6.6	5.9-7.0	
					Northern Pike	1	23.2		
					Rainbow Trout	2	10.7	10.2-11.2	
				Trap (1)	Northern Pike	1	16.1		
Valley	Langen Reservoir	9/3/2010		Gill net (2)	Largemouth Bass	9	10.7	9.5-12.9	0.83
				Trap net (2)	Fathead Minnow	562	2.4	2.2-2.9	

Appendix A. continued.

County	Reservoir Name	Date	Maximum Depth (ft)	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Valley	Missouri River Dredge Cuts	9/1 & 9/2/2010	20+	Gill Nets (10)	Walleye	3	14.5	11.2-19.3	1.1
					Sauger	9	15.1	12.4-17.0	1
					Northern Pike	2	31.3	21.7-40.9	9.1
					Channel Catfish	61	16.3	13.0-22.6	1.4
					Shovelnose Sturgeon	8	24.4	22.6-26.1	2.1
					Yellow Perch	2	5.9	5.5-6.3	0.1
					Lake Whitefish	4	18.3	17.7-18.7	2.6
					Cisco	43	11.6	4.7-14.7	0.7
					River Carpsucker	12	16.9	15.0-18.1	2.3
					Carp	6	21.1	18.0-29.4	5.1
					Rainbow Smelt	2	6	5.9-6.0	0.07
					Goldeye	25	13.9	12.6-17.1	0.8
					White Sucker	59	15.3	6.4-18.5	1.9
					Spottail Shiner	1	4.1		
Valley	Paulo Reservoir	9/15/2010		Gill net (2)	Largemouth Bass	6	9.9	6.9-11.7	0.54
					Bluegill	9	5.8	4.0-7.2	0.18
					Black Bullhead	1	10		0.56
				Trap (2)	Largemouth Bass	2	2.6	1.7-3.5	
					Bluegill	94	4.4	1.1-7.2	0.12
					Black Bullhead	3	9.9	8.7-10.8	0.56

Appendix A continued.

County	Reservoir Name	Date	Maximum Depth (ft)	Gear	Species	Total Number Sampled	Mean Length (in)	Length Range (in)	Mean Weight (lbs)
Valley	Shoot Reservoir	9/3/2010		Gill net (1)	Rainbow Trout	5	8.6	8.4-9.3	
Valley	Troika Reservoir	10/6/2010	11	Gill net (2)	No Fish				
				Trap Net (2)	Fathead Minnow	3,500	2.7	2.1-3.1	
Valley	Valley Reservoir	8/9/2010	12	Gill net (1)	Yellow Perch	82	7.2	5.3-10.0	0.21
				Trap (1)	Yellow Perch	2			
				Trap (1)	Fathead Minnow	5	2.7		
Valley	VR 009	8/4/2010	< 5	Visual	Extremely low water				