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: 2022 (July 1, 2021 through June 30, 2022)

REPORT PERIOD: April 1, 2022 through November 30, 2022

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INTRODUCTION

From the diverse and complex Milk and Missouri Rivers to ponds and small reservoirs less than an acre in size, a wide array of angling opportunities are found in the eastern portion of Fish Wildlife and Parks (FWP) Region 6 fisheries management area. In 2022, fisheries surveys were conducted in the management district which includes Valley, Daniels, Sheridan, and Roosevelt counties and portions of Richland, McCone, Prairie, and Dawson counties. Waterbodies managed by FWP include the Milk River east from Rock Creek to the mouth, the Missouri River from the Fort Peck Dam to the North Dakota border, and all ponds, reservoirs, and prairie streams from Rock Creek east to the North Dakota border (Figure 1). FWP does not manage any fisheries contained within the Fort Peck Indian Reservation.

Many of the diverse fisheries throughout northeast Montana continued to be negatively impacted by the persistent drought of 2022. Low water levels combined with high water temperatures were observed in many ponds, small reservoirs, and prairie streams during the summer and fish populations and assemblages in these systems were adversely impacted. Additionally, Milk River discharge peaked at 830 cubic feet per second (cfs) in late March 2022 but did not exceed 500 cfs through the remainder of the year (Figure 2). Missouri River flows peaked at 9,000 cfs at Wolf Point in mid-May 2022 and fluctuated between approximately 7,500 and 8,000 cfs through early October, before dropping to below 5,000 cfs for the remainder of the year (Figure 2). Unlike the Milk River, the Missouri River below Fort Peck Dam is somewhat resilient to drought conditions due to hypolimnetic discharge out of Fort Peck Reservoir. Operation of Fort Peck Dam by U.S. Army Corps of Engineers results in relatively

stable flows throughout the year even during drought conditions, while hypolimnetic discharge results in less extreme water temperatures than surrounding systems (Figure 2).

This report summarizes FWP fisheries management work conducted within the Eastern Region 6 fisheries management district during the 2022 field season.

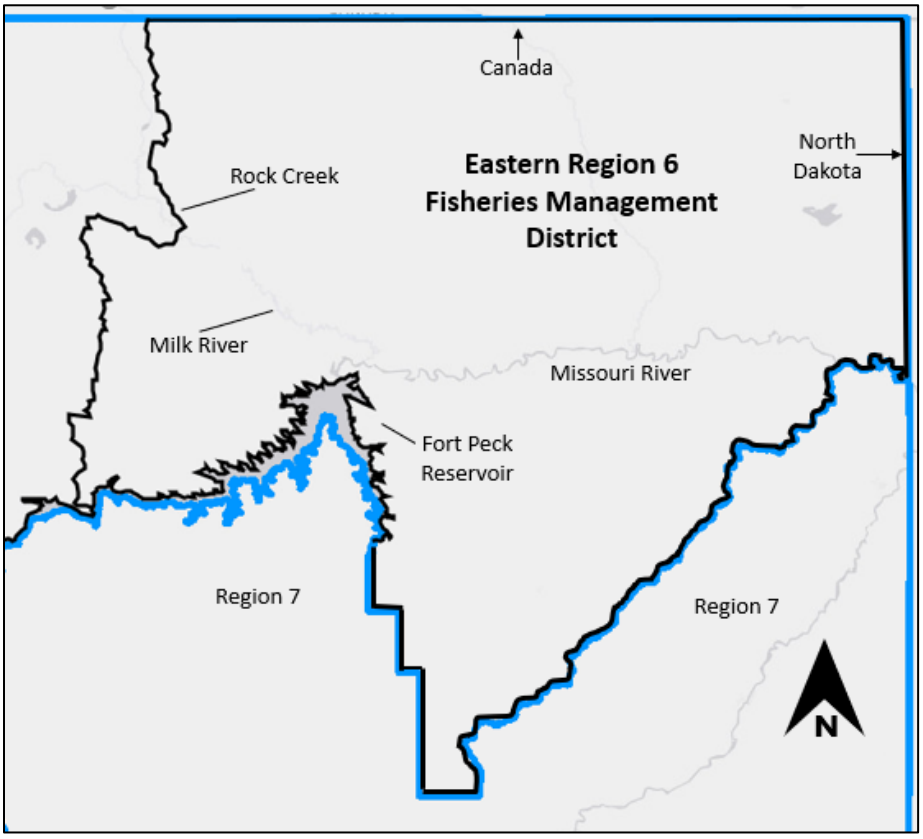


Figure 1. Map depicting the eastern region 6 fisheries management district (black outline).

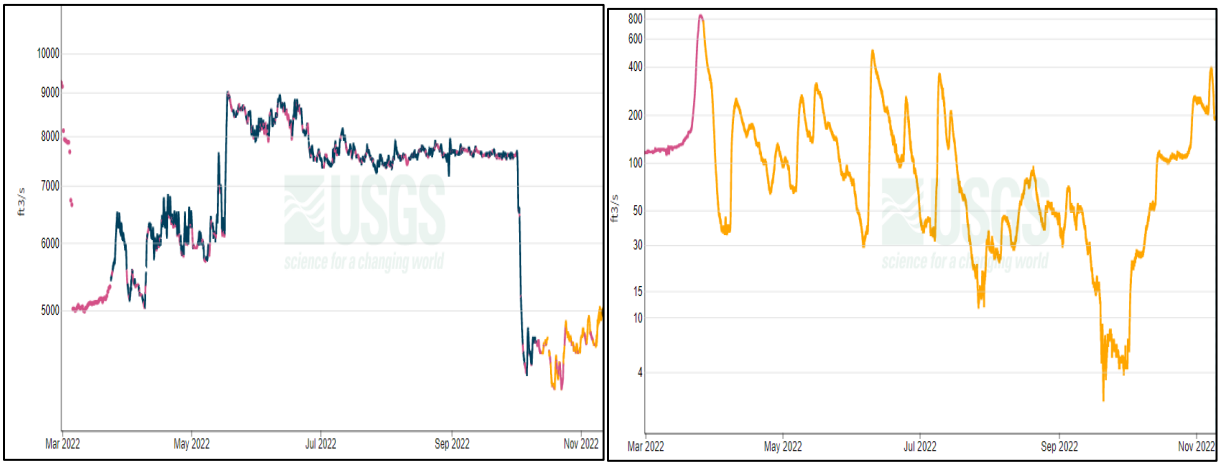


Figure 2. Missouri River near Wolf Point, MT (left) and Milk River at Nashua, MT (right) hydropgraphs, March 2022 through December 2022.

PROCEDURES

POND AND SMALL RESERVIOR SAMPLING

Many ponds and small reservoirs were sampled throughout late spring, summer, and early fall 2022 as part of FWP's long-term monitoring program. Surveys were completed using hook and line sampling, experimental sinking gillnets (125' x 6', 5-25' panels of .75", 1", 1.25", 1.5", 2" bar measure multifilament mesh), fyke nets (3' x 4' hoop, 3' x 50' lead), and mini-fyke (2' x 3' hoop, 2' x 25' lead) nets were used in combination depending on size of the waterbody being sampled. When using gillnets, fyke nets, or mini-fyke nets gear were deployed, left to soak overnight, and retrieved the following morning. When hook and line sampling was utilized two anglers fished for 1 hour each – resulting in two hours of angling effort. Relative abundance was quantified in terms of fish/net (catch per unit effort; CPUE) for net sampling or fish/hour (catch rate) for hook and line sampling. All fish were measured, weighed, and stomach contents examined when applicable. Aging structures (otoliths) were collected opportunistically from Walleye, Yellow Perch, and Bluegill to provide information regarding age and growth rates.

In addition to fisheries sampling, limnological measurements were obtained during the field season for most waterbodies. Elevation (+/- full pool), maximum depth (ft), water clarity (ft), and temperature (°F) were recorded during fisheries sampling, and dissolved oxygen levels (mg/L) were recorded from December – February.

BOXELDER RESERVOIR SAMPLING

Boxelder Reservoir in Sheridan County is one of the larger reservoirs (78 ac) in eastern Montana and provides one of few fishing opportunities for residents and non-residents near Montana's northeastern-most corner. Due to concerns with the status of the fishery, primarily the Yellow Perch population, Boxelder Reservoir was sampled twice in 2022. In early June and early September three sinking experimental gillnets (125' x 6', multifilament) and three fyke nets (3' x 4' hoop, 3' x 50' lead) were set, left to soak overnight, and retrieved the next morning. All fish collected were measured and weighed, and stomach contents examined if applicable. Aging structures were collected from Yellow Perch and Walleye. Relative abundance (fish/net; CPUE) and condition (W_r) were also quantified.

Additional monitoring of Boxelder Reservoir included a temperature and dissolved oxygen monitoring probe (HOBO®) deployed February 2022 and retrieved November 2022.

MISSOURI RIVER AND FORT PECK DREDGE CUT SAMPLING

The Missouri River and Fort Peck Dredge Cuts were sampled in fall 2022 as part of annual long-term monitoring of the fishery below Fort Peck Dam. Fish collected from experimental sinking

gillnets (n=10; 125’ x 6’, multifilament) and smelt nets (n=4; 100’ x 6’, monofilament ½” bar mesh) at 14 fixed sites (Figure 3) were used to evaluate fish assemblage, relative abundance (CPUE; fish/net), and condition (relative weight; W_r) of the diverse fishes residing in the Dredge Cuts. Nets were deployed, left to soak overnight, and retrieved the following day. All collected fish were measured, weighed, and stomach contents evaluated if applicable. Aging structures were also collected from Walleye and Sauger.

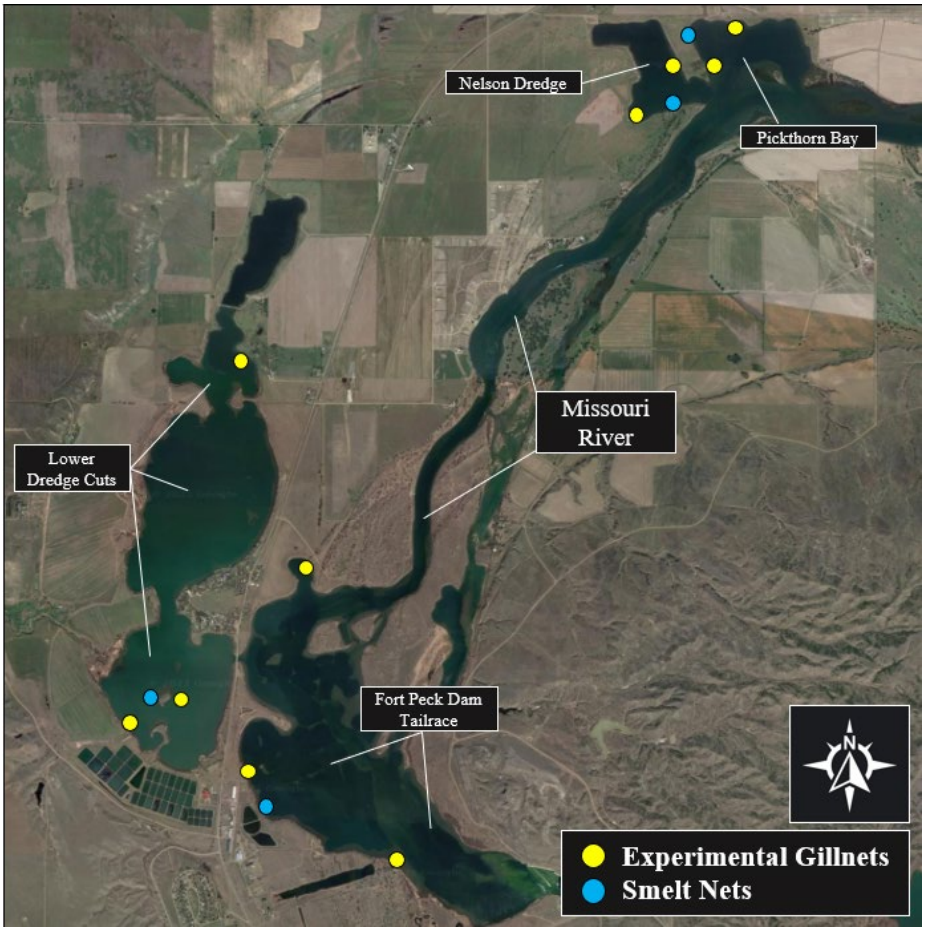


Figure 3. Locations of experimental gillnets (yellow circles) and Smelt nets (blue circles) set in the Missouri River and Fort Peck Dredge Cuts in 2022. Net locations are fixed sites set annually each fall.

BURBOT SAMPLING

Burbot were sampled for within four reaches of the Missouri River in late April and early May 2022 (Figure 4). Hoop nets (7 – 2.5’ diameter hoops, ½” mesh) baited with fresh cut bait were deployed in slack water areas at least 6 feet deep at locations ranging from Fort Peck Dam (RM 1771.6) downstream to Culbertson, MT (RM 1620.8). Hoop nets were left to soak overnight and retrieved the following morning. All captured burbot were enumerated, measured, weighed,

and kept for removal of aging structures (otoliths). Stomach contents, sex, and gonad maturation were also recorded during otolith removal.

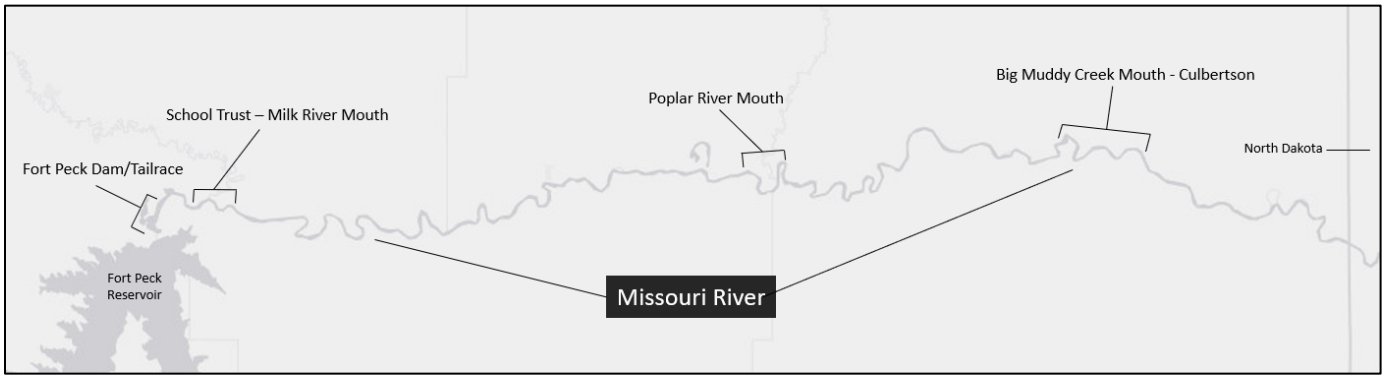


Figure 4. Reaches of the Missouri River sampled in 2022. Four hoop nets were spaced within each individual reach.

REDD COUNTS

Hypolimnetic discharge out of Fort Peck creates favorable conditions for salmonid species (Rainbow Trout, Brown Trout) immediately downstream of Fort Peck Dam. Rainbow trout spawning was investigated within side channel habitat between Duck and Scout Islands along the eastern shore of the Missouri River in spring 2022 (Figure 5). One additional attempt to investigate Brown Trout spawning was made in fall 2022 in the same side channel. During sampling, two FWP staff members in kayaks surveyed active redds as well as spawning adults via visual observation while floating downstream. Quantity of observed redds and number of spawning adults were recorded.

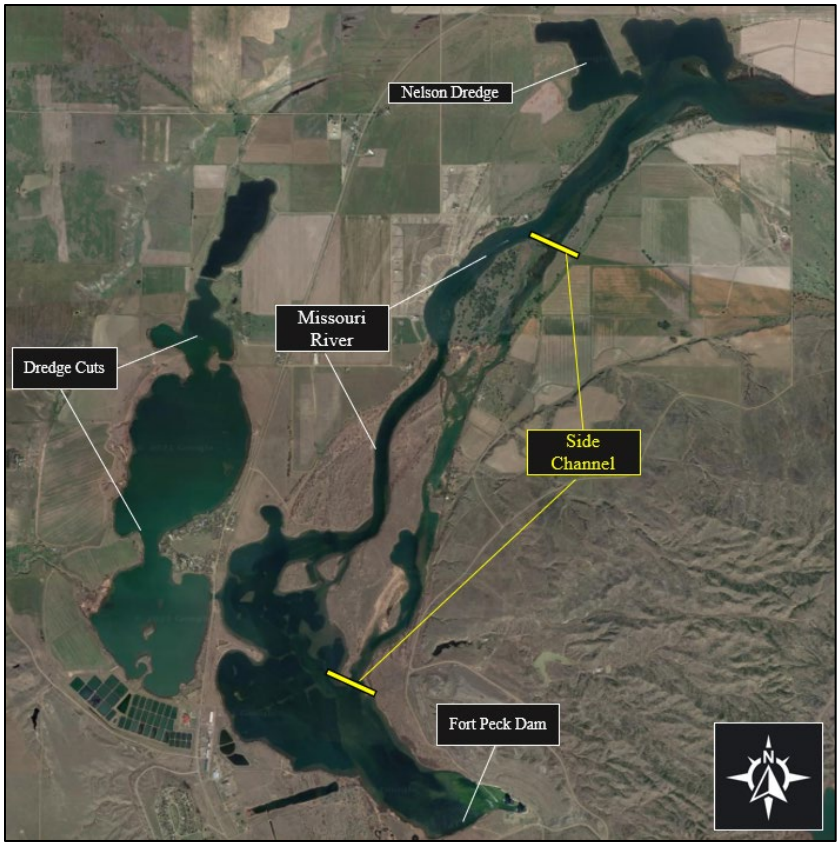


Figure 5. Side channel habitat below Fort Peck Dam within the Missouri River.

DREDGE CUT PADDLEFISH SAMPLING

To monitor Paddlefish movement and population dynamics, four separate attempts were made to capture Paddlefish in the Fort Peck Dredge Cuts during May and June 2022. Three sampling events occurred during daytime, and one occurred at night. Sampling was conducted using a combination of front facing sonar (Garmin Panoptix with LiveScope™) and modified drift nets (200’ long x 12’ deep, 4” bar multifilament mesh). When an individual Paddlefish was located using LiveScope™, efforts were made to deploy a drift net in front of the fish. Maneuvers to keep the net in front of the fish or to drive the fish towards the net were made with the boat while continuing to watch the fish on sonar. Captured Paddlefish were to be measured, weighed, and tagged with a metal band jaw tag specific to the Dredge Cuts.

DREDGE CUT ARCHERY PADDLEFISH SEASON

FWP administers an archery-only Paddlefish season in the Fort Peck Dredge Cuts from July 1 to August 31 each year. Anglers are allowed to harvest one Paddlefish per year using a blue harvest tag, which can be purchased over-the-counter at any time. There is currently no limit on the number of blue harvest tags sold however, anglers may only hold one valid Paddlefish tag (blue, white, or yellow) statewide each year.

As of 2016, anglers are required by law to report harvested Paddlefish and have a variety of options to do so. In 2021, self-creel stations were installed at access points near the Dredge Cuts to provide anglers with an additional reporting option, as well as the opportunity to voluntary submit a dentary sample to FWP. Anglers submitting a dentary sample and all required harvest information receive a unique Montana Paddlefish hat as a reward. Following the season, a phone survey of all blue tag holders is conducted to provide harvest estimates and angler preferences regarding the fishery.

MILK RIVER CATFISH

In 2022, a long-term monitoring program was initiated targeting Channel Catfish within the Milk River. Sampling occurred in late July and early August using set lines (55' long, 10 - 3/0 circle hooks/line on 18" droppers spaced 5' apart) baited with cut sucker and tandem hoop nets (7 – 2.5' diameter hoops, ½" mesh, 3' between each net) baited with cut sucker among six reaches. Reaches were split evenly around Vandalia Dam (Figure 6), with three reaches above and three reaches below. Nets and set lines were deployed, left to soak overnight, and retrieved the following day. With the exception of five channel catfish collected for contaminant testing, captured fish were enumerated, measured, weighed, and released.

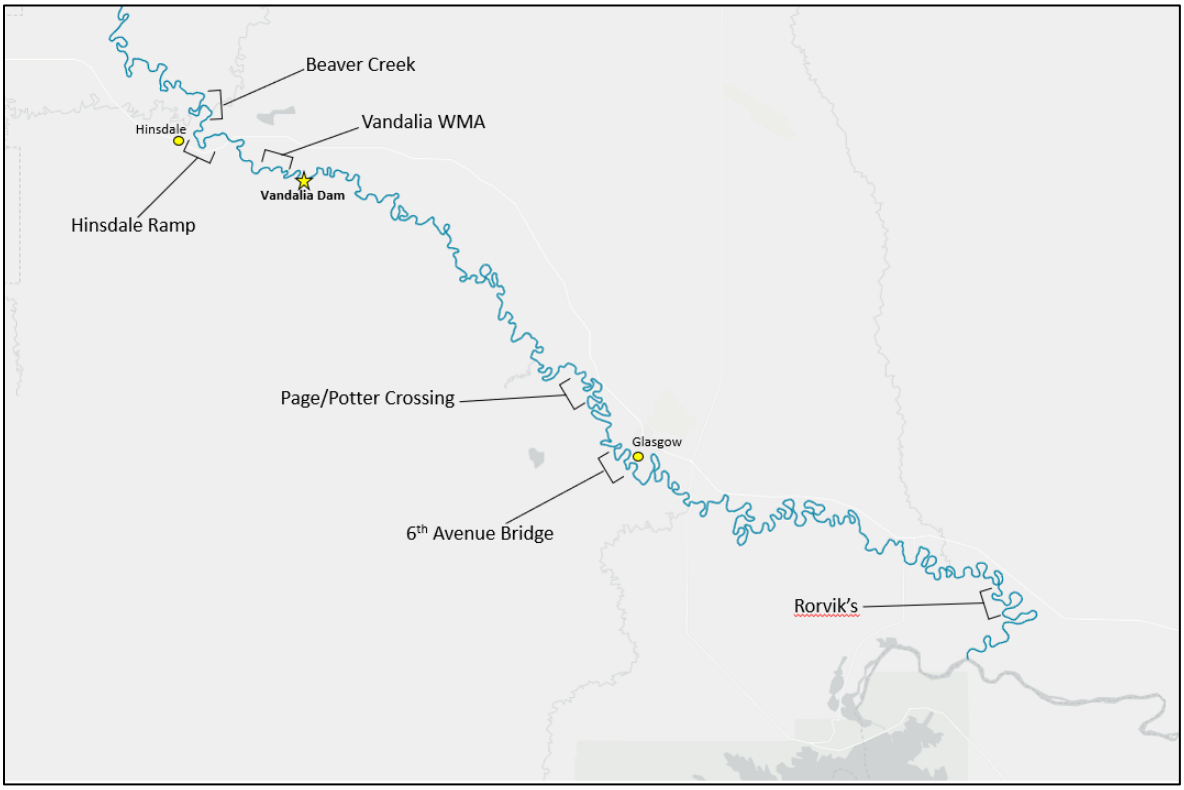


Figure 6. Milk River reaches sampled during long-term Channel Catfish monitoring, 2022.

MILK RIVER SEINING

Similar to initiating long-term monitoring of Channel Catfish in the Milk River, standard sampling for small-bodied, young-of-year, and juvenile fishes also began in summer 2022 via seining. Two seine sizes (200' long x 6' deep x ¼" mesh, 20' long x 4' deep x ¼" mesh) were utilized among five reaches of the Milk River, two above Vandalia Dam and three below Vandalia Dam (Figure 6). Size of seine used and number of seine hauls within each reach varied with conditions. Captured fish were identified by species, enumerated, and released.

TEMPERATURE LOGGERS

Nineteen temperature loggers were deployed in rivers and streams within eastern region 6 during June 2022. Waters in Valley, Daniels, Phillips, Richland, Roosevelt, Mccone, and Sheridan counties received temperature loggers. Loggers were suspended within an aluminum housing before being submerged and staked to the bank with a light cable. Loggers were retrieved in November 2022.

PRAIRIE STREAM SAMPLING

Rock Creek (Valley County), Plentywood Creek (Sheridan County), and Eagle Creek (Sheridan County) were sampled during 2022 as part of a more focused approach to long-term monitoring of prairie streams in eastern region 6. Seines (20' long x 4' deep, ¼" mesh) were used to sample fish assemblages within these streams. Seines were moved upstream for an identified 60 m reach before being brought to the bank. The number of reaches seined at each creek varied. With exception to potential voucher specimens for positive identification of Lake Chub/Pearl Dace, all captured fish were identified by species, enumerated, and released.

Additionally, a contracted flight (Kestrel Aerial Services) of Rock Creek was performed in May 2022 to inventory all potential fish barriers, habitat features, crossings, and intermittent pools from the confluence at the Milk River upstream to river mile (RM) 88.5 near the Canadian Border (Appendix E).

FISH HEALTH TESTING

Several fish species were collected from various northeast Montana waterbodies in 2022 to be tested for disease and pathogens. Fish species from a given waterbody certified as "disease-free" can be used for wild fish transfers to supplement other fisheries in the region. FWP's fish health department requires at least 60 of a single species be submitted for testing and all fish be fresh. Therefore, 60 fish from each sampling location were collected via fyke net (3' x 4' hoop, 3' x 50' lead) or experimental gillnets (125' x 6', multifilament) set overnight and placed on ice for immediate transfer to the fish health lab in Bozeman, MT.

WILD FISH TRANSFERS

Various ponds within eastern region 6 were supplemented in 2022 via wild fish transfers. On four occasions, wild fish were transferred from disease-free populations into bodies of water

elsewhere in region 6 to supplement existing fisheries. All fish transferred were captured via fyke nets (3’ x 4’ hoop, 3’ x 50’ lead) and mini-fyke nets (2’ x 3’ hoop, 2’ x 25’ lead). Captured fish were counted and placed in transfer tanks before being driven to the destination waterbody.

AGING

Aging structures were collected from Yellow Perch, Burbot, Black Crappie, Bluegill, Walleye, Sauger, and Paddlefish in 2021 and 2022. Otoliths were collected from all aforementioned species with the exception of Paddlefish (dentary samples). In general, structures were collected from all fish captured in lethal gears (e.g., gillnets) during sampling. In some cases, otoliths were collected from fish captured in nonlethal gears (e.g., fyke nets) if not enough structures were available from fish captured in lethal gears. Paddlefish dentary samples were collected from anglers who successfully harvested paddlefish during the archery Paddlefish season.

RESULTS AND DISCUSSION

POND AND SMALL RESERVOIR SAMPLING

Thirty ponds and small reservoirs were sampled in Northeast Montana in 2022. Low water prevented sampling on six waterbodies throughout the region in 2022, and many that were sampled likely suffered fish kills between 2021 and 2022 surveys (Appendix A; Appendix B). Due to ongoing drought conditions, FWP is closely monitoring water levels in many reservoirs to determine future management and viability of fisheries during low water periods. Two “new” waters were added for management in 2022: Wold’s Dam (Dawson County) and Atlas Reservoir (Valley County).

BOXELDER RESERVOIR SAMPLING

Following high relative abundance of gillnet-captured Yellow Perch in 2021 (21.0 fish/net), long-term monitoring in summer 2022 resulted in a stark decrease in relative abundance (0.3 fish/net; Appendix C). Relative abundance of Walleye, Black Bullhead, Northern Pike, White Sucker, and Common Carp captured in gillnets were comparatively unchanged from summer 2021 to summer 2022 (Table 1; Appendix C). Fyke nets captured three species including Black Bullhead (n=2), White Sucker (n=5), and Walleye (n=1). No White Crappie or Rainbow Trout were captured in 2022.

Due to concerns over the lack of Yellow Perch observed in summer 2022, a second sampling event was performed in early fall 2022. Yellow Perch relative abundance increased slightly (2.0 fish/net) however; it remained well below 2021 relative abundance. A summary of early fall sampling can be found in Table 2.

Management concerns and consequential actions are summarized in Table 3.

Table 1. Summary of early summer sampling in Boxelder Reservoir, May 31, 2022.

Species	# Sampled	Gillnet CPUE (fish/net)	Avg. TL (in)	Min TL (in)	Max TL (in)	Avg. Wt (lbs)	Avg. Wr
Black Bullhead	15	4.3	9.7	8.9	10.5	0.58	109.1
Common Carp	4	1.3	23.2	21.3	26.1	7.37	120.4
Northern Pike	2	0.7	27.1	24.0	30.1	4.67	94.4
White Sucker	17	4.0	14.7	2.7	20.2	1.89	94.2
Walleye	15	4.7	11.9	8.3	15.6	0.60	90.9
Yellow Perch	1	0.3	10.0	10.0	10.0	0.51	96.9

Table 2. Summary of early fall sampling in Boxelder Reservoir, September 7, 2022.

Species	# Sampled	Gillnet CPUE (fish/net)	Avg. TL (in)	Min TL (in)	Max TL (in)	Avg. Wt (lbs)	Avg. Wr
Black Bullhead	2	0.0	10.9	10.5	11.3	0.75	95.8
Common Carp	3	1.0	22.9	22.3	23.3	6.27	104.9
Northern Pike	2	0.7	27.6	24.3	30.8	4.70	85.5
White Sucker	12	3.0	14.7	3.9	19.4	1.53	87.6
Walleye	23	4.7	11.0	5.0	17.3	0.53	84.9
Yellow Perch	7	2.0	7.2	5.8	10.2	0.23	98.1

Table 3. Recruitment source and management details of fish species sampled from Boxelder Reservoir in 2022. Current and past sampling data as well as stakeholder input were taken into consideration for "Management Direction" decisions.

Species	Recruitment source	Management Type	Management Concerns	Management Direction
Black Bullhead	Wild	General	None	-
Common Carp	Wild	Suppression	Overabundance	Suppress population, monitor abundance in response to Northern Pike stocking change
Northern Pike	Hatchery/Wild	General	None	Monitor impacts of discontinued stocking
Rainbow Trout	Hatchery	Put - Grow - Take	Survival	Increase stocking of fingerlings, potential prey source for piscivorous species
White Sucker	Wild	General	None	-
Walleye	Hatchery	General	Lack of forage, Habitat availability for reproduction and recruitment	Investigate NR contribution from marked fingerlings
White Crappie	Wild	General	None	-
Yellow Perch	Wild	General	Population decline, Lack of forage, Habitat availability for reproduction and recruitment	Investigate age structure, artificial habitat implementation - increase reproduction and recruitment

MISSOURI RIVER AND FORT PECK DREDGE CUT SAMPLING

Sixteen species were observed during Missouri River and Fort Peck Dredge Cut sampling in 2022 (Table 4). Channel Catfish and Cisco were most abundant, followed by Walleye, Shovelnose Sturgeon, and River Carpsucker (Table 4; Figure 7). Condition of most species surveyed was relatively good except for Sauger (Table 4). Walleye catch per unit effort (CPUE) was slightly below the long-term average at 1.7 fish/net, while Sauger CPUE was at its highest since 2011 at 0.9 fish/net (Figure 8).

Table 4. Summary of Missouri River and Fort Peck Dredge Cut sampling, 2022. *Shovelnose Sturgeon were measured to fork-length (inches) rather than total length.

	# Sampled	Min TL (in)	Max TL (in)	Avg. TL (in)	Avg. Wt (lbs)	Avg. Wr
Bigmouth Buffalo	1	21.4	21.4	21.4	5.78	-
Channel Catfish	71	14.8	27.1	18.7	2.37	93.2
Common Carp	2	18.6	22.0	20.3	4.30	97.4
Cisco	22	7.5	14.3	11.3	0.50	-
Goldeye	8	13.2	15.0	14.1	1.00	-
Lake Whitefish	3	19.5	20.8	20.3	3.30	-
Northern Pike	10	23.4	40.7	31.1	8.47	99.3
Plains Minnow	1	4.7	4.7	4.7	0.04	-
Rainbow Smelt	1	5.5	5.5	5.5	0.04	-
River Carpsucker	10	17.2	19.9	18.2	2.87	-
Shovelnose Sturgeon*	13	22.5	35.0	27.2	3.48	101.1
Sauger	9	10.6	16.7	13.9	0.77	76.9
Saugeye	1	15.2	15.2	15.2	0.95	75.6
Smallmouth Buffalo	3	20.0	24.5	22.0	5.49	75.6
White Sucker	9	15.5	20.2	18.1	2.62	99.3
Walleye	17	8.8	22.4	15.9	1.38	83.6

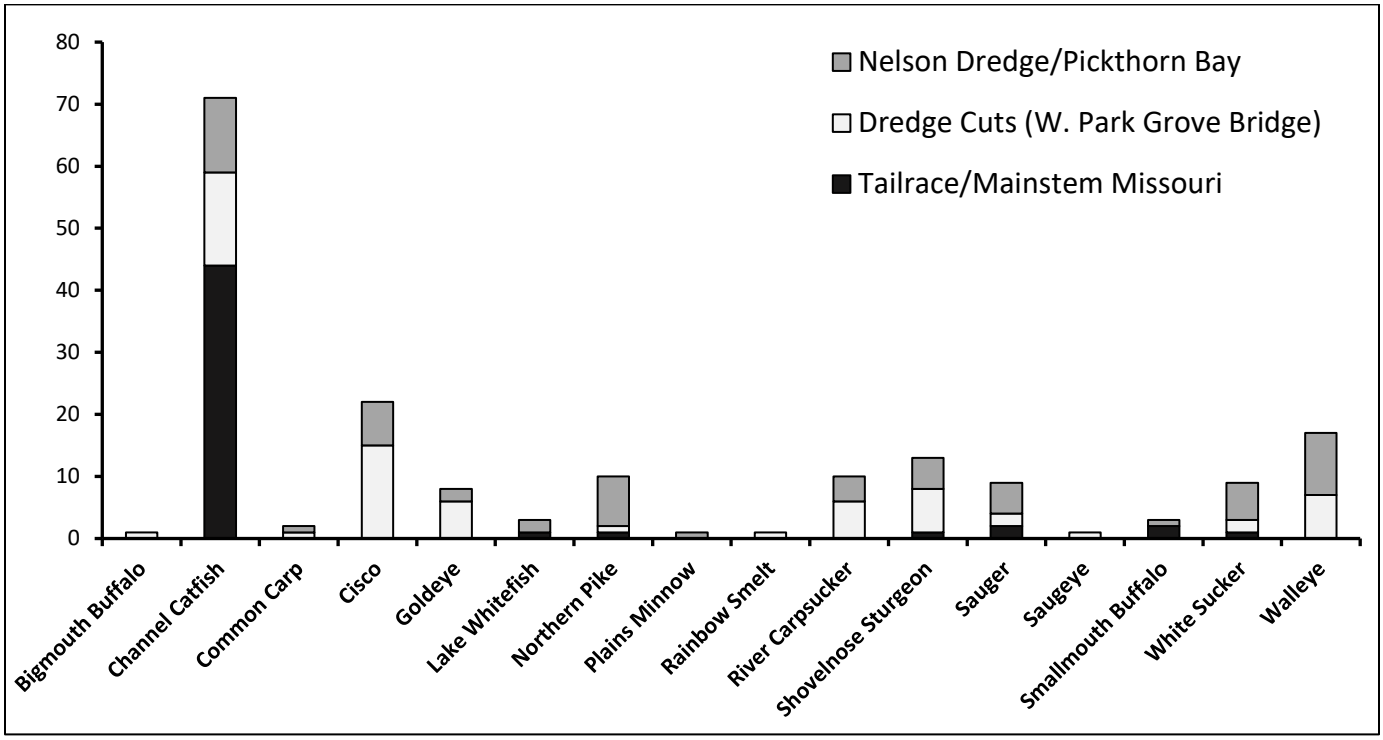


Figure 7. Capture location summary of species sampled during Missouri River and Fort Peck Dredge Cut sampling, 2022.

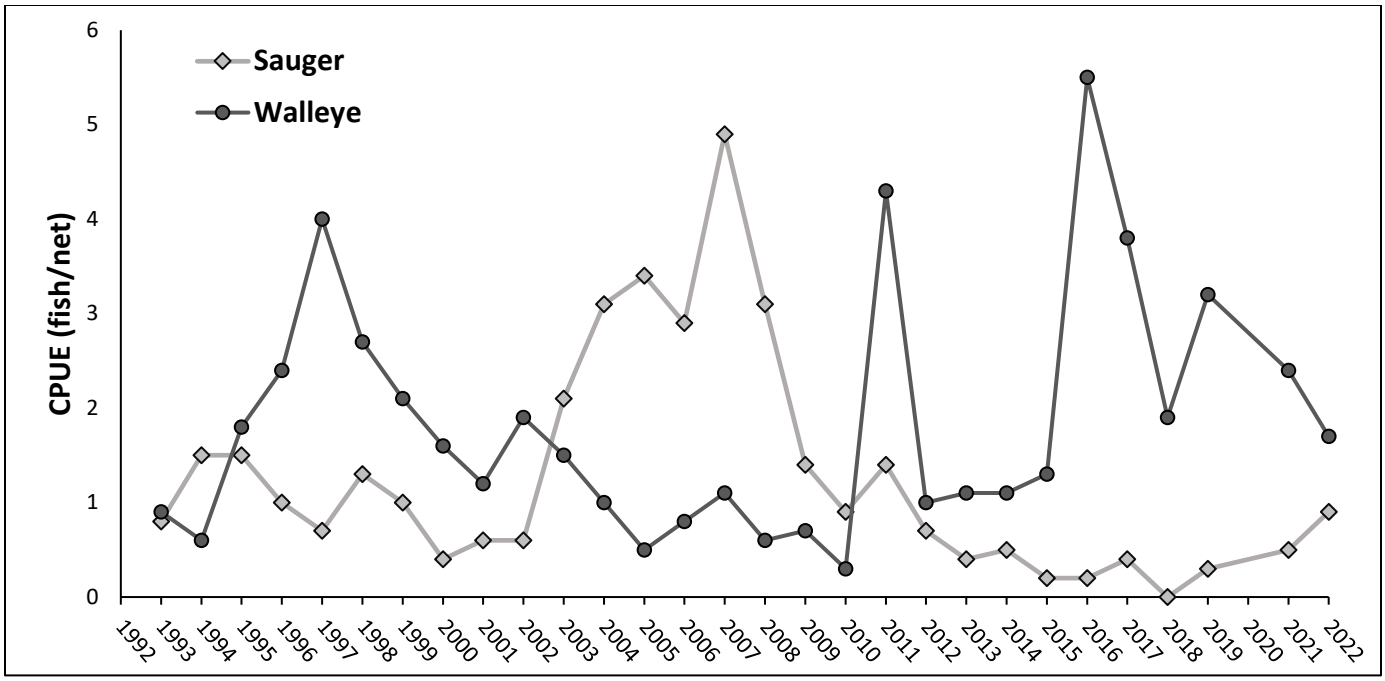


Figure 8. Long-term CPUE data of Walleye and Sauger captured in the Missouri River and Fort Peck Dredge Cuts.

BURBOT SAMPLING

Only seven burbot were captured among four reaches sampled in 2022 (Table 5). Gear modifications, specifically the anchoring system, will be improved in 2023 as we had issues with hoops staying in place even in moderate current. Additionally, 2023 sampling will occur earlier than in 2022. Other species captured during sampling included Sauger (n=2), Emerald Shiner (n=1), Flathead Chub (n=1), Shorthead Redhorse (n=1), and Stonecat (n=11).

Table 5. Summary of Burbot sampled in the Missouri River during 2022.

Reach	Date	# Sampled	CPUE (fish/net)	Avg. TL (in)	Max. TL (in)	Avg. Wt (lb)
Fort Peck Dam/Tailrace	5/2/2022	0	0.0	-	-	-
School Trust - Milk River Mouth	4/25/2022	4	1.0	19.3	24.0	1.54
Poplar River Mouth	4/27/2022	0	0.0	-	-	-
Big Muddy Creek Mouth - Culbertson	5/5/2022	3	0.7	19.5	24.4	1.87

REDD COUNTS

Conditions were favorable during all three springtime redd counts in 2022. Quantity of observed redds and number of adult Rainbow Trout observed was highest during our first count in April (Figure 9). Spawning is likely occurring prior to April, therefore our 2023 redd counts investigating Rainbow Trout spawning will begin in March.

Our singular attempt at investigating fall Brown Trout spawning below Fort Peck Dam was unsuccessful. Low flows significantly reduced spawning habitat availability within the side channel below Fort Peck Dam. Many areas of the side channel utilized by Rainbow Trout in spring were desiccated by the time we expected Brown Trout to be using similar locations for spawning (October-November).

During our fall Brown Trout spawning investigation, we observed ~1,000 young-of-year Rainbow Trout using intermittent pool and riffle habitat within the aforementioned side channel. Observation of these young-of-year Rainbow Trout suggests successful natural reproduction is occurring.

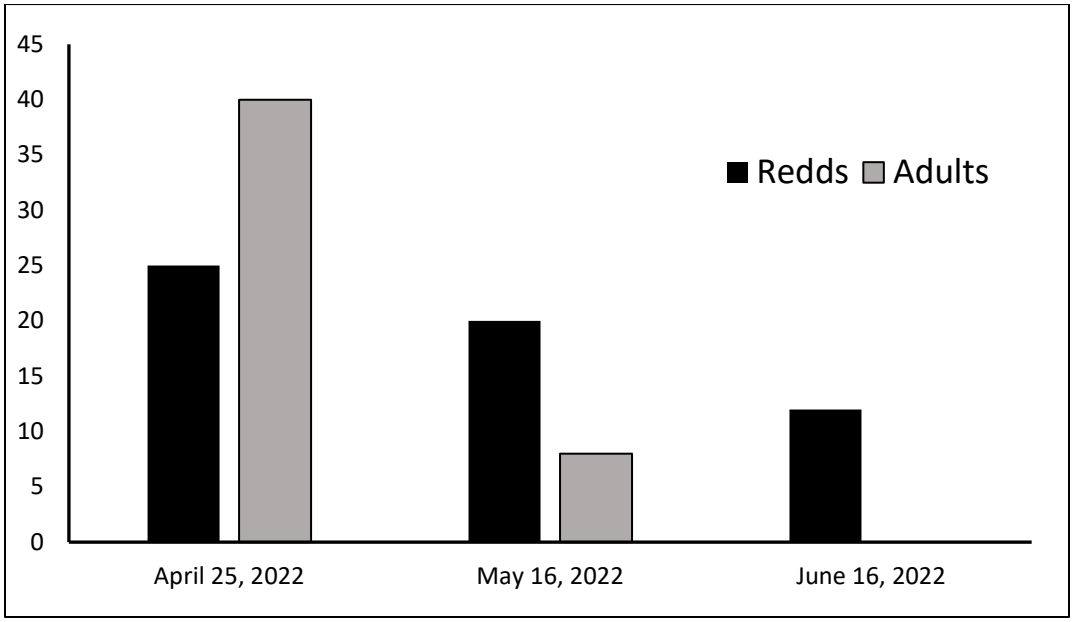


Figure 9. Summary of Rainbow Trout spawning investigations below Fort Peck Dam in spring 2022.

DREDGE CUT PADDLEFISH SAMPLING

No Paddlefish were captured during 2022 sampling, despite many (10-20) being observed on front facing sonar during each individual sampling event. Boat and net avoidance, a likely product of the Dredge Cut's clear water and lentic habitat, was observed by all Paddlefish and prohibited effective capture. Other species captured during Paddlefish sampling included Bigmouth Buffalo (n=4), Smallmouth Buffalo (n=6), Channel Catfish (n=28), Common Carp (n=2), and Walleye (n=1). Alternative sampling procedures are anticipated in 2023.

DREDGE CUT ARCHERY PADDLEFISH SEASON

While the 2022 Dredge Cut archery Paddlefish season saw a slight increase in the total number of angler days, catch rates and creel estimate of harvested fish decreased dramatically (> 50%; Table 6). Similar to 2021, reporting rates exceeded 100% of harvest estimates as anglers

continued to make use of self-creel stations. Likely incentivized by the reward hat program, 16 of 20 successful Paddlefish archers submitted dentary samples to FWP (Table 6).

Conversations with bowfishers combined with phone survey results corroborated decreases in Paddlefish seen per trip and overall harvest compared to 2021. Additionally, comments received from bowfishers during the 2022 phone survey suggested a perceived increase in bowfishing pressure, primarily from nonresidents. While this is something to monitor, the number of tags sold in 2022 was below the long-term (10 year) average (Table 6), and only 37 of 204 (18.1%) tags sold in 2022 were purchased by nonresidents.

Table 6. Summary of angler dynamics and participation in the Dredge Cut archery Paddlefish fishery. Number of fish harvested is based on phone survey data, and mandatory reporting did not begin until 2016.

Year	Total Tags Sold	NR tags	Percent Bow Hunted	Total Angler Days	catch rate (PF/day)	# fish harvested	# fish reported	# dentary samples
2011	108	4	65.8	240	0.023	7		
2012	171	12	70.0	390	0.046	26		
2013	162	20	86.7	401	0.146	51		
2014	213	46	89.4	718	0.078	50		
2015	261	57	83.0	742	0.074	46		
2016	253	56	90.0	168	0.290	43	28	
2017	300	73	80.5	859	0.080	55	27	
2018	210	43	86.0	575	0.080	45	26	
2019	182	32	82.0	493	0.030	14	1	
2020	235	61	83.9	790	0.060	38	14	
2021	217	54	80.9	633	0.066	34	36	33
2022	204	37	85.3	675	0.029	17	20	16

MILK RIVER CATFISH

A total of 22 Channel Catfish were captured in the Milk River during 2022 long-term monitoring. Nine (41%) were captured above Vandalia Dam (Figure 6) and 13 (59%) were captured below Vandalia Dam. Although effort was limited, CPUE of tandem hoop nets was poor (Table 7), and modifications will be made prior to 2023 sampling. Condition (W_r) of Channel Catfish captured among all reaches was relatively poor, although it was better above Vandalia Dam than below (Table 7).

Table 7. Summary of 2022 long-term monitoring for Channel Catfish in the Milk River. Reaches are listed from upstream to downstream, with a complete fish barrier (Vandalia Dam) occurring between Vandalia WMA and Page/Potter Crossing.

Reach	Location	Date	Gear Type (#)	CPUE - fish/tandem	CPUE - fish/set line	Avg. TL (in)	Avg. Wr
Beaver Creek	48.41574, -107.08217	7/25/2022	Tandem Hoop (4) Set Line (2)	0.25	2.0	14.1	80.72
Hinsdale Ramp	48.39732, -107.08323	7/26/2022	Tandem Hoop (4) Set Line (2)	0.0	1.0	22.4	81.68
Vandalia WMA	48.37729, -107.02337	8/1/2022	Set Line (2)	-	1.0	21.9	88.25
Page/Potter Crossing	48.30181, -106.78051	7/28/2022	Set Line (2)	-	2.0	16.4	82.24
6th Avenue Bridge	48.19059, -106.65402	7/28/2022	Set Line (2)	-	2.5	19.9	79.01
Rorvik's	48.09896, -106.29157	7/27/2022	Set Line (2)	-	2.0	17.1	76.02

MILK RIVER SEINING

Sixteen species were captured during 2022 seining efforts within the Milk River. A total of 960 individuals were captured among 5 reaches sampled. Boat access prevented the larger (200' x 6') seine from being used in reaches below Vandalia Dam (6th Ave. Bridge, Page/Potter Crossing, Rorvik's), therefore comparisons of catch rates between sampling locations above and below Vandalia Dam cannot be compared. A summary of results can be found in Appendix D.

TEMPERATURE LOGGERS

Of the 19 temperature loggers deployed in 2022, only 11/19 (58%) were retrieved. Of the eight loggers not retrieved, at least three we believe were stolen at some point during their deployment. The remaining five were frozen in and not retrievable by the time we went to collect them in November.

Of the eleven loggers collected, temperatures varied greatly throughout the year (Table 8). Due to drought conditions and extreme temperatures logged during summer months, we suspect some loggers were not submerged during a portion of the time they were deployed.

Table 8. Summary of temperature loggers deployed in eastern region 6 during 2022. Observed temperatures with an asterisk (*) refer to loggers that likely were not fully submerged during all months of deployment.

Location	# of Loggers	Months Deployed (2022)	Range of observed temperatures (°F)
Milk River	3	June - November	33.8 - 81.8
Poplar River	2	June - Not Retrieved	-
Redwater River	2	June - November	37.1 - 90.7
West Fork Poplar	1	June - Not Retrieved	-
Prairie Elk Creek	1	June - November	32.2 - 89.6
Plentywood Creek	1	June - November	48.3 - 68.4
Frenchman Creek	1	June - Not Retrieved	-
Rock Creek	1	June - Not Retrieved	-
Larb Creek	1	June - November	23.2 - 89.0
Willow Creek	1	June - November	19.4 - 104.1*
Brazil Creek	1	June - November	21.9 - 83.0*
Cherry Creek	1	June - November	23.0 - 89.0*
Timber Creek	1	June - November	23.9 - 117.0*
Porcupine Creek	1	June - November	22.1 - 94.8*
Big Muddy Creek	1	June - Not Retrieved	-

PRAIRIE STREAM SAMPLING

A total of 3,823 individuals spread amongst 15 different species were captured during prairie stream surveys in 2022 (Tables 9 - 11). Five Northern Pearl Dace (Pearl Dace) were captured, four in Eagle Creek and one in Plentywood Creek. Adult Common Carp and adult Northern Pike were observed in Plentywood Creek, and adult Northern Pike were observed in Eagle Creek.

The contracted flight of Rock Creek resulted in > 200 high definition photographs of habitat features. Only one fish barrier exists on Rock Creek, Rock Creek Dam. Rock Creek dam is a one-way barrier allowing only downstream passage. This barrier likely has prevented Northern Pike from expanding further upstream in the Rock Creek drainage. Sample photos from the flight can be found in Appendix E.

Table 9. Summary of Eagle Creek sampling, 2022. Note the four Pearl Dace captured.

System	Location	Date	Effort (60 m reaches)	Species	# Captured
Eagle Creek	48.78095, -105.03679	9/13/2022	Seine - 1	Black Bullhead	186
				Northern Pike	1
				White Sucker	1
				Fathead Minnow	3
				Pearl Dace	4

Table 10. Summary of Plentywood Creek sampling, 2022. Note the singular Pearl Dace captured.

System	Location	Date	Effort (60 m reaches)	Species	# Captured
Plentywood Creek	48.82939 -104.71490	8/30/2022	Seine - 3	Black Bullhead	350
				Lake Chub	25
				Pearl Dace	1
				Common Carp	79
				Iowa Darter	1
				Longnose Dace	1
				Northern Pike	2
				Yellow Perch	10
				White Sucker	16
				Fathead Minnow	24

Table 11. Summary of Rock Creek sampling, 2022.

System	Location	Date	Effort (60 m reaches)	Species	# Captured
Rock Creek	48.44738 -107.05007	8/22/2022	Seine - 8	Black Bullhead	37
				Brook Stickleback	2
				Common Carp	111
				Fathead Minnow	1349
				Golden Shiner	1
				Iowa Darter	3
				Lake Chub	568
				Longnose Dace	22
				Plains Minnow	41
				Stonecat	1
				White Sucker	983
				White Crappie	1

FISH HEALTH TESTING

Three waterbodies were sampled for fish health testing in 2022 (Table 12). Quantity of species required for testing was met in all three waters, and all three were certified as disease free. Disease free species from these waters are eligible for wild fish transfers from 2022-2026.

Table 12. Results of fish health testing on three waterbodies throughout the eastern region 6 fisheries management district.

Waterbody	County	Species	# Captured	Disease Free
Buer Pond	Daniels	Yellow Perch	> 60	Y
Killenbeck Reservoir	Daniels	Fathead Minnow	> 60	Y
Carney Reservoir	Daniels	Fathead Minnow	> 60	Y

WILD FISH TRANSFERS

Three waters were supplemented via four separate wild fish transfers in 2022 (Table 13). One reservoir (Heitz Pond) is managed by Region 7 fisheries staff however, we offered to complete a wild fish transfer in 2022. We anticipate numerous wild fish transfers in 2023 if water conditions improve.

Table 13. Summary of wild fish transfers in 2022. Note, Heitz Pond is managed by Region 7 fisheries staff. Number transferred is approximate, as fish are counted by average weight rather than individuals.

Donor Pond	Recipient Pond	Date	Species	Avg. Size	~Number
Cory's Pond	Kuester Reservoir	5/11/2022	Yellow Perch	5"	175
Winter Harbor	Raymond Dam	5/13/2022	Bluegill	4"	120
Carpenter Creek Reservoir	Kuester Reservoir	5/17/2022	Yellow Perch	6"	575
Carpenter Creek Reservoir	Heitz Pond	10/5/2022	Yellow Perch	6"	50

AGING

A total of 261 aging structures were collected from seven different species during 2021 and 2022. A summary of collected structures can be found below in Table 14. Additional age and growth figures can be found in Appendix F.

Table 14. Summary of age data collected during 2021 and 2022 long-term monitoring. Hyphens (-) represent a given age that no known-age fish were collected. Growth patterns depicted in Appendix _ could be used to estimate mean length-at-age for these gaps however, a more robust sampled size is needed to improve estimates. Asterisks (*) represent data that have not been analyzed.

Species	Location	Year	Structure	# Collected	Min Age	Max Age	μ TL A1	μ TL A3	μ TL A5
Paddlefish	Dredge Cuts	2021	Dentary	33	14	67	-	-	-
	Dredge Cuts	2022	Dentary	16	14	52	-	-	-
Bluegill	Winter Harbor	2021	Otolith	28	2	8	-	4.1	5
	Fort Peck Trout Pond	2021	Otolith	29	1	4	3.2	4.5	-
Walleye	Boxelder Reservoir	2022	Otolith	22	1	7	8.4	-	13.3
	Dredge Cuts	2022	Otolith	15	2	9	-	14	17.7
Sauger	Dredge Cuts	2022	Otolith	9	2	4	-	13.8	-
Yellow Perch	Boxelder Reservoir	2021	Otolith	5	3	4	-	10.4	-
	Boxelder Reservoir	2022	Otolith	5	1	5	6.2	-	9.8
	Bainville E	2021	Otolith	16	1	5	3.9	7.6	6.9
	Bainville E	2022	Otolith	10	2	6	-	5.3	6.3
	Whitetail Reservoir	2021	Otolith	17	1	5	5.3	9.4	11.8
	Whitetail Reservoir	2022	Otolith	9	1	1	5.5	-	-
	Glasgow Base Pond	2022	Otolith	5	1	6	5.9	-	10.25
	Troika Reservoir	2021	Otolith	30	3	3	-	8.6	-
Black Crappie	McNab Reservoir	2021	Otolith	5	3	7	-	9.1	-
Ling	Missouri River	2022	Otolith	7	3	11	-	15.4	-

APPENDIX

Appendix A. 1. Summary of all ponds and small reservoirs sampled in Valley County in 2022.

Waterbody	Sampling Effort	Date	Purpose	Species Captured	Gillnet CPUE	Fyke Net CPUE	Avg. TL (in)	Range TL (in)	Management Recommendations/Comments
Fort Peck Trout Pond	Gillnet - 3 Fyke Net - 1 Mini Fyke - 1	6/6/2022	Long Term Monitoring	BG, NP, W SU, WE, YP	BG - 1.3/net NP - 2.7/net W SU - 2.7/net WE - 0.67/net YP - 0.67/net	BG - 7/net	BG - 4.6 NP - 29.6 W SU - 18.4 WE - 20.7 YP - 5.8	BG 3.3 - 6.5 NP 24.7 - 34.4 W SU 17.2 - 21.4 WE 17.9 - 23.4 YP 5.5 - 6.1	Artificial habitat project underway to potentially increase near-shore spawning and rearing habitat
Glasgow Base Pond	Gillnet - 1 Mini Fyke - 1	5/9/2022	Long Term Monitoring	NP, RB, YP	NP - 25/net RB - 4/net YP - 12/net	RB - 10/net YP - 3/net	NP - 19.2 RB - 16.7 YP - 8.7	NP 9.4 - 26.3 RB 13.0 - 19.0 YP 2.2 - 13.5	Candidate for increased harvest of NP and wild transfer of YP
VR 009 Reservoir	Gillnet - 1 Mini Fyke - 1	5/9/2022	Long Term Monitoring	NO FISH	-	-	-	-	Likely winterkill in 2021/2022. Restocked with RB in spring 2022
Home Run Pond	Hook and Line	5/26/2022	Long Term Monitoring	RB	-	-	RB - 12.0	RB 7.7 - 13.6	Sampled during Glasgow kids fishing day, catch rates were not calculated (~45 angler hours), Total of 46 RB captured
McNab Reservoir	Gillnet - 1 Fyke Net - 1 Mini Fyke - 1	6/23/2022	Long Term Monitoring	BL CR, FH MN	-	BL CR - 1/net FH MN - 25/net	BL CR - 4.9	BL CR 4.8 - 5.0	Significant reduction in relative abundance of BL CR and FH MN from 2021, will continue to monitor
O'Juel Reservoir	Gillnet - 1 Fyke Net - 1 Mini Fyke - 1	8/2/2022	Long Term Monitoring	BR SB, FH MN, RB, W SU	RB - 15/net W SU - 29/net	BR SB - 2/net FH MN - 20/net W SU - 8.5/net	RB - 13.3 W SU - 16.4	RB 6.9 - 19.1 W SU 14.0 - 19.5	Productive reservoir, good relative weights (~100) of RB and W SU
Paulo Reservoir	Gillnet - 1 Mini Fyke - 1	5/10/2022	Long Term Monitoring	BG, CCAT, CARP, LMB, YP	CCAT - 3/net CARP - 3/net LMB - 3/net YP - 1/net	BG - 16/net	BG - 6.0 CCAT - 17.9 CARP - 16.2 LMB - 15.0 YP - 8.6	BG 1.2 - 7.2 CCAT 16.9 - 19.5 CARP 15.9 - 16.8 LMB 14.7 - 15.5 YP - 8.6	Illegal introductions of CCAT and YP during 2021/2022. Additional predators coupled with lack of littoral habitat due to low water may result in reduced BG populations
Shoot Reservoir	Gillnet - 1 Mini Fyke - 1	5/10/2022	Long Term Monitoring	FH MN	-	FH MN - 100/net	-	-	Likely winterkill in 2021/2022, low water (<6') may not allow for viable RB fishery in 2023
Troika Reservoir	Hook and Line	12/9/2022	Long Term Monitoring	YP	-	-	YP - 10.5	YP - 10.5	Catch rate of 0.5 fish/hour. Probably kill during late winter 2021 or summer 2022. Candidate for fish transfer
Valley Reservoir	Did not sample								Lack of fish during 2021 sampling with no stocking or wild fish transfer in 2022 made LTM in 2022 unnecessary
Winter Harbor Pond	Gillnet - 1 Fyke Net - 1	6/16/2022	Long Term Monitoring	BG, W SU, YP	BG - 5/net W SU - 1/net YP - 1/net	BG - 60/net W SU - 2/net	BG - 4.0 W SU - 17.9 YP - 8.8	BG 2.2 - 5.9 W SU 17.4 - 18.4 YP - 8.8	Anecdotal data suggest moderate-high abundance of adult (>14") LMB
Cory's Pond	Fyke Net - 2 Mini Fyke - 1	5/11/2022	Wild Fish Transfer	W SU, YP	-	W SU - 1/net YP - 70.7/net	YP - 5.5	-	Will continue to serve as a donor pond for wild transfer of YP through 2026
Big Reservoir	Gillnet - 1 Fyke Net - 1	8/2/2022	Long Term Monitoring	FH MN	-	FH MN - 700/net	-	-	Probable winterkill in 2021

Hose Reservoir	Gillnet - 1 Fyke Net - 1	6/23/2022	Long Term Monitoring	FH MN, RB	RB - 1/net	FH MN - 1200/net	RB - 16.8	RB - 16.8	Surprisingly low catches of RB, will continue to stock annually
Carpenter Creek Reservoir	Fyke Net - 2 Mini Fyke - 2	5/17/2022	Wild Fish Transfer	YP	-	YP - 126/net	YP - 5.0	-	Will continue to serve as donor source for wild transfers of YP through 2024
Atlas Reservoir	Did not sample	10/12/2022	-	-	-	-	-	-	Discovered fishery in late fall, visually observed adult and juvenile LMB, will sample in 2023

Appendix A. 2. Summary of all ponds and small reservoirs sampled in Daniels County in 2022.

Waterbody	Sampling Effort	Date	Purpose	Species Captured	Gillnet CPUE	Fyke Net CPUE	Avg. TL (in)	Range TL (in)	Management Recommendations/Comments
Buer Pond	Gillnet - 1 Fyke Net - 1	8/8/2022	Long Term Monitoring/Fish health	LMB, YP	YP - 34/net	LMB - 24/net YP - 294/net	LMB - 2.3 YP - 2.8	LMB 2.3 YP 2.3 - 10.5	Donor source for YP through 2027, good recruitment of YP and LMB
Danelson Reservoir	Did not sample								Unlikely to support fish under current conditions, needs major rehabilitation
Hatfield Reservoir	Gillnet - 1 Fyke Net - 1	8/8/2022	Long Term Monitoring	BR SB, RB	RB - 6/net	BR SB - 225/net RB - 4/net	RB - 7.4	RB 6.4 - 8.4	Probable winterkill, captured RB likely stocked in spring 2022
Killenbeck Reservoir	Gillnet - 1 Fyke Net - 1	8/8/2022	Long Term Monitoring	FH MN	-	FH MN - 1,500/net	-	-	Donor source for FH MN through 2027
Whitetail Reservoir	Gillnet - 1 Fyke Net - 1	8/17/2022	Long Term Monitoring	NP, W SU, YP	NP - 12/net W SU - 1/net YP - 19/net	NP - 2/net YP - 27/net	NP - 20.4 YP - 5.0	NP 13.8 - 27.0 YP 2.7 - 9.0	Seemingly adequate natural recruitment of both NP and YP, reduction in abundance of quality-sized YP
Carney Reservoir	Gillnet - 1 Fyke Net - 1	8/8/2022	Long Term Monitoring	FH MN, W SU	W SU - 46/net	FH MN - 4,000/net W SU - 5/net	W SU - 14.6	W SU 13.1 - 16.3	Donor source for FH MN through 2027

Appendix A. 3. Summary of all ponds and small reservoirs sampled in Richland County in 2022.

Waterbody	Sampling Effort	Date	Purpose	Species Captured	Gillnet CPUE	Fyke Net CPUE	Avg. TL (in)	Range TL (in)	Management Recommendations/Comments
Candee Pond	Hook and Line	7/7/2022	Long Term Monitoring	NO FISH	-	-	-	-	Winterkill, observed dead Rainbow Trout stocked just days before sampling
Wold's Dam	Gill Net -1 Fyke Net - 1 Minnow Trap - 1	7/7/2022	Long Term Monitoring	BL BH, NP	BL BH - 52/net NP - 1/net	BL BH - 21/net	BL BH - 7.5 NP - 25.8	BL BH 5.4 - 11.7 NP 25.8	New waterbody, will receive transfer of Yellow Perch in spring 2023
Kuester Reservoir	Did not sample	-	-	-	-	-	-	-	Transferred 750 Yellow Perch in spring 2022
Verschoot Reservoir	Did not sample	-	-	-	-	-	-	-	Low water (< 2') prevented sampling
Johnson Reservoir	Did not sample	-	-	-	-	-	-	-	Low water (< 4') prevented sampling

Appendix A. 4. Summary of all ponds and small reservoirs sampled in Roosevelt County in 2022.

Waterbody	Sampling Effort	Date	Purpose	Species Captured	Gillnet CPUE	Fyke Net CPUE	Avg. TL (in)	Range TL (in)	Management Recommendations/Comments
Bainville East	Gillnet - 1 Fyke Net - 1	8/10/2022	Long Term Monitoring	CARP, FH MN, YP	CARP - 1/net YP - 9/net	CARP - 1/net FH MN - 167/net YP - 256/net	CARP - 17.6 YP - 2.7	CARP 13.4 - 21.7 YP 2.0 - 9.8	Lack of Northern Pike seems to have improved Yellow Perch recruitment
Bainville West	Gillnet - 1 Fyke Net - 1	8/10/2022	Long Term Monitoring	CARP, FH MN, NP, YP	CARP - 1/net NP - 6/net	FH MN - 11/net YP - 167/net	CARP - 22.9 NP - 22.2 YP - 3.1	CARP 22.9 NP 21.2 - 22.5 YP 1.9 - 6.0	Concerns with littoral habitat availability
Hofman Reservoir	Gillnet - 1 Mini Fyke - 1	8/10/2022	Long Term Monitoring	NO FISH	-	-	-	-	Probable winterkill
Knudsen Bros. Reservoir	Gillnet - 1 Mini Fyke - 1	8/10/2022	Long Term Monitoring	FH MN	-	FH MN - 750/net	-	-	Probable winterkill
Ike's Fishing Pond	Hook and Line	5/24/2022	Long Term Monitoring	RB	-	-	RB - 7.5	RB 7.3 - 7.6	Sampled during kids fishing day, catch rates were not calculated (~60 angler hours), Total of 2 RB captured
Big Muddy Reservoir	Did not sample	-	-	-	-	-	-	-	Low water (< 4') prevented sampling
Crusch Reservoir	Did not sample	-	-	-	-	-	-	-	Access prevented sampling

Appendix A. 5. Summary of all ponds and small reservoirs sampled in Sheridan County in 2022, with the exception of Boxelder Reservoir.

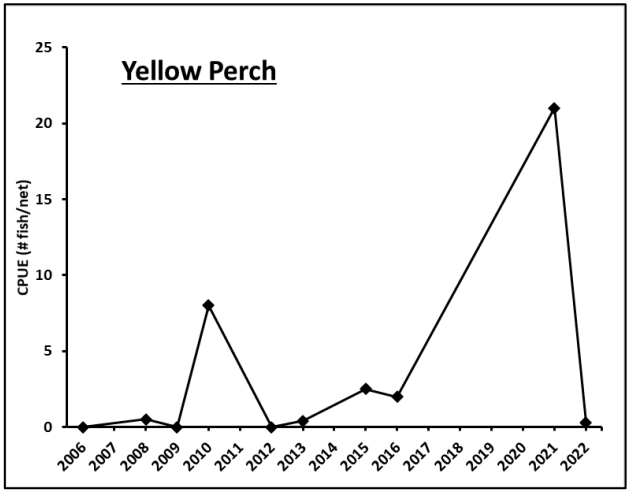
Waterbody	Sampling Effort	Date	Purpose	Species Captured	Gillnet CPUE	Fyke Net CPUE	Avg. TL (in)	Range TL (in)	Management Recommendations/Comments
Carlson Pond	Hook and Line	8/30/2022	Long Term Monitoring	NO FISH	-	-	-	-	Rainbow Trout observed surfacing, fish present just did not capture any
Christensen Dam	Hook and Line	8/30/2022	Long Term Monitoring	NO FISH	-	-	-	-	Algal bloom and low water are a concern, no fish observed
Holtan Reservoir	Gillnet - 1 Mini Fyke - 1	8/17/2022	Long Term Monitoring	FH MN, BR SB	-	BR SB - 2/net FH MN - 20/net	-	-	Probable winterkill
Raymond Dam	Gillnet - 1 Mini Fyke - 1	8/17/2022	Long Term Monitoring	BG, BR SB, FH MN, RB	BG - 3/net RB - 8/net	BG - 3/net BR SB - 12/net FH MN - 300/net	BG - 5.3 RB - 11.3	BG 2.0 - 5.6 RB 10.5 - 12.2	Bluegill stocked in 2021, wild transfer of Bluegill in spring 2022
Wagner Reservoir	Did not sample	-	-	-	-	-	-	-	Dry

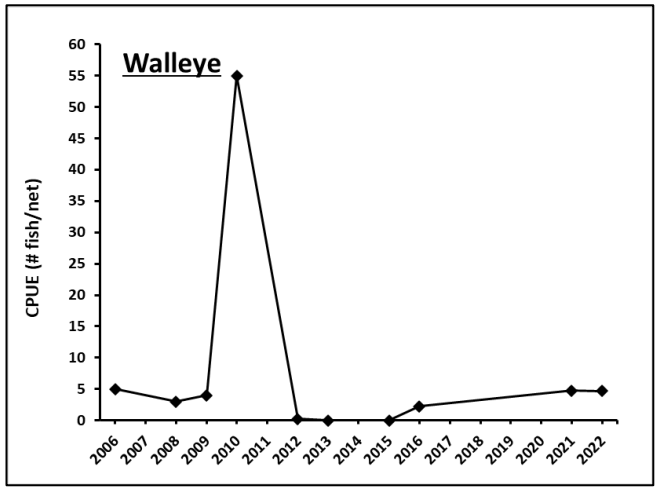
Appendix B. 1. Summary of limnological characteristics of ponds and reservoirs within the eastern region 6 fisheries management district.

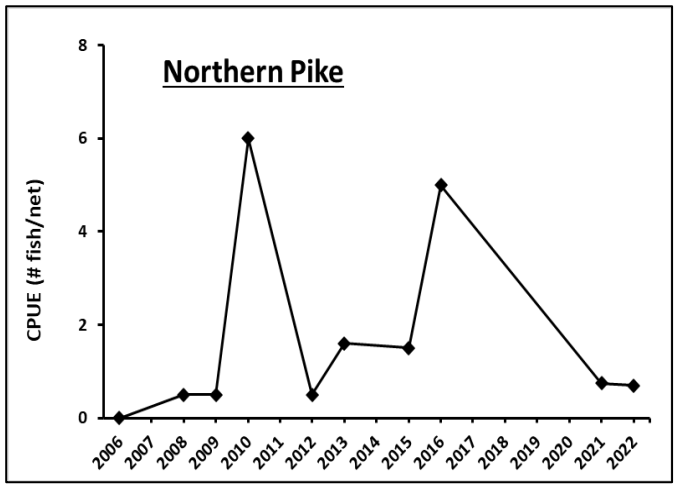
Waterbody	Surface Acres (full pool)	Sampling Date	Elevation (+/- full pool)	Max Depth (ft)	Secchi (ft)	Winter D.O. level (mg/L; avg)	Aerator Present	Comments
Fort Peck Trout Pond	52.9	6/16/2022	0.0	24.2	7.0	6.19	N	Missouri River influence
Glasgow Base Pond	7.8	5/9/2022	1.0	14.7	6.0	0.24	N	Spring influence
VR 009 Reservoir	7.6	5/9/2022	-3.0	9.4	4.0	0.27	N	Confirmed winterkill
Home Run Pond	0.7	5/26/2022	0.0	-	-	0.23	N	Confirmed winterkill
McNab Reservoir	9.1	6/23/2022	-5.0	21.7	2.5	-	Y	Windmill installed August 2021
O'Juel Reservoir	9.5	8/2/2022	-3.0	20.5	4.0	-	N	Spring influence
Paulo Reservoir	7.3	5/10/2022	-7.0	8.1	1.5	0.40	Y	Windmill installed August 2021
Shoot Reservoir	7.3	5/10/2022	-8.0	5.9	1.5	-	N	Confirmed winterkill
Troika Reservoir	3.9	12/9/2022	-8.0	10.1	-	6.65	N	Probable kill in late winter 2021 or summer 2022
Winter Harbor Pond	1.3	5/12/2022	-2.0	9.9	6.5	0.73	N	Missouri River influence
Cory's Pond	1.7	5/11/2022	0.0	9.7	4.5	-	N	Spring influence
Big Reservoir	3.5	8/2/2022	-9.0	12.5	5.5	-	N	Confirmed winterkill
Hose Reservoir	12.4	6/23/2022	-7.0	19.8	1.5	-	N	
Carpenter Creek Reservoir	24.8	5/17/2022	-5	21.7	5	6.45	N	
Buer Pond	4.5	8/8/2022	-2.0	13.0	6.0	-	N	Spring influence
Hatfield Reservoir	4.6	8/8/2022	-4.0	9.0	3.5	-	N	Probable winterkill
Killenbeck Reservoir	36.9	8/8/2022	-2.0	11.5	11.0	8.26	N	Probable winterkill
Whitetail Reservoir	24.5	8/17/2022	-1.0	15.6	14.4	1.85	N	
Carney Reservoir	27.3	8/8/2022	-4.0	10.1	3.5	13.23	N	
Boxelder Reservoir	77.9	9/2/2022	-5.0	16.3	2.0	-	N	Water quality concerns, subject to significant algal blooms
Carlson Pond	0.9	8/30/2022	-8.0	-	-	0.33	Y	
Christensen Dam	4.0	8/30/2022	-5.0	-	-	0.21	Y	Significant blue-green algae
Holtan Reservoir	4.2	8/17/2022	-5.0	14.4	1.5	0.29	N	Probable winterkill
Raymond Dam	21.1	8/17/2022	0.0	13.2	8.5	0.25	N	
Bainville East	5.6	8/10/2022	0.0	12.1	2.0	0.61	N	
Bainville West	4.3	8/10/2022	-2.0	8.9	2.5	2.26	N	Winterkill concerns
Hofman Reservoir	7.8	8/10/2022	-7.0	9.3	9.3	-	N	Confirmed winterkill
Knudsen Bros. Reservoir	14.8	8/10/2022	-10.0	8.6	1.0	-	N	Probable winterkill
Ike's Fishing Pond	1.9	5/24/2022	0.0	-	-	9.90	N	Man-made well maintains water level and temperature
Candee Pond	3.1	7/7/2022	-10.0	-	-	-	N	Confirmed winterkill
Wold's Reservoir	30.8	7/7/2022	-3.0	13.7	13.5	0.27	N	Spring influence
Kuester Reservoir	66.4	-	-	-	-	3.43	N	Did not sample, fishless prior to 2022
Verschoot Reservoir	2.9	-	-	-	-	-	N	Did not sample, dry
Johnson Reservoir	3.4	-	-	-	-	-	N	Did not sample, water levels < 4'

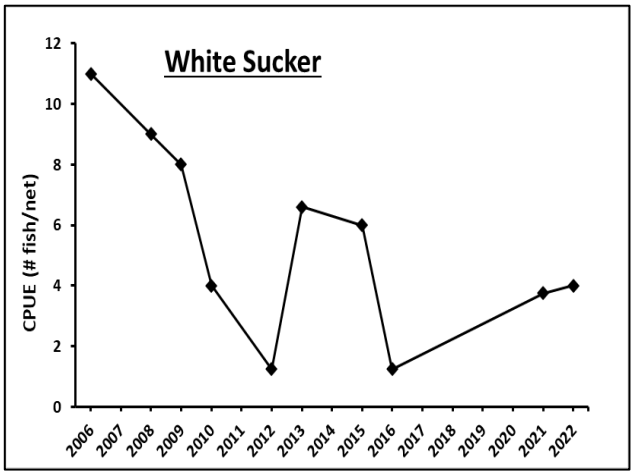
Danelson Reservoir	10.1	-	-	-	-	-	N	Did not sample, no longer viable fishery
Valley Reservoir	5.7	-	-	-	-	-	N	Did not sample, likely fishless
Big Muddy Reservoir	3.5	-	-	-	-	-	N	Did not sample, dry
Crusch Reservoir	7.4	-	-	-	-	-	N	Did not sample, water levels < 4'
Atlas Reservoir	6.7	-	-	-	-	-	N	Did not sample, discovered fishery in Oct. 2022
Wagner Reservoir	1.9	-	-	-	-	-	N	Did not sample, dry

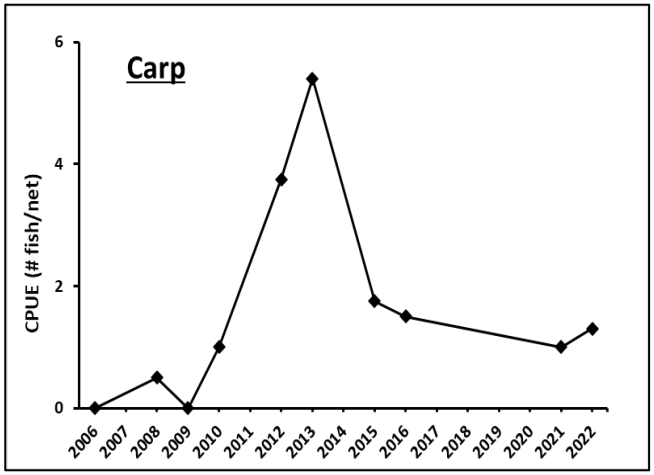
Appendix C. Long-term spring gillnet trends of fish species captured in Boxelder Reservoir.

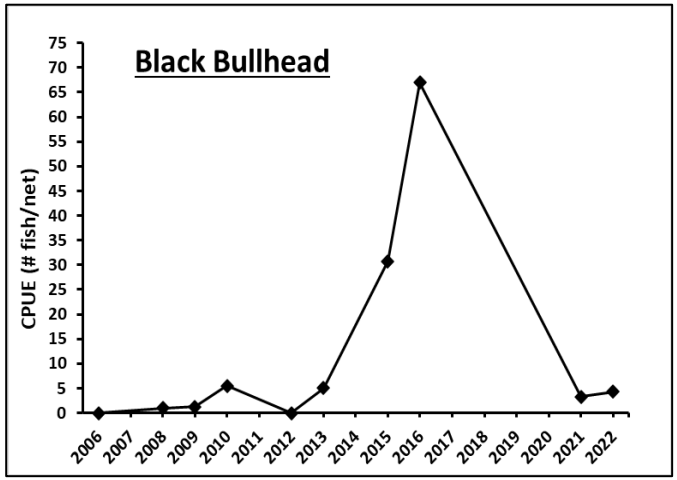










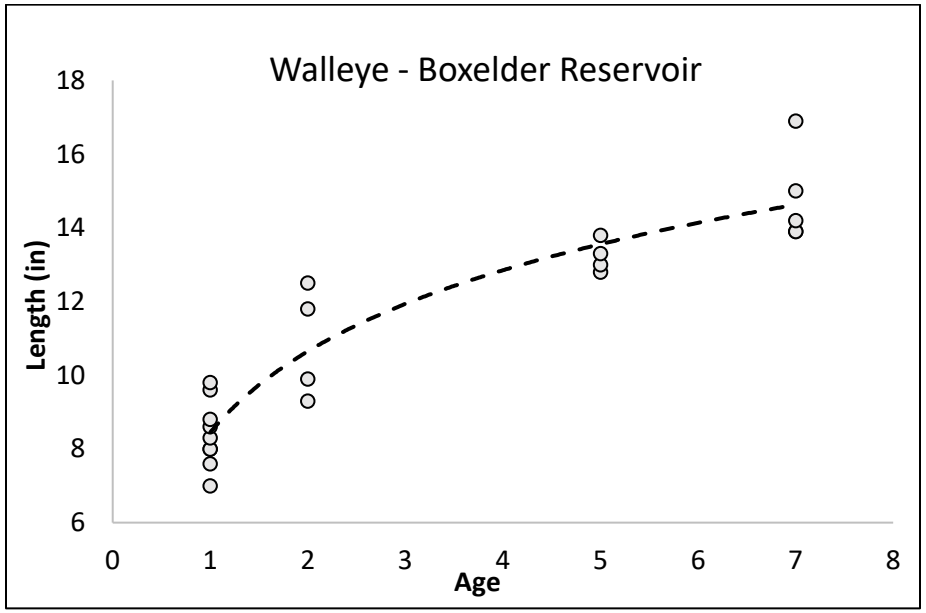


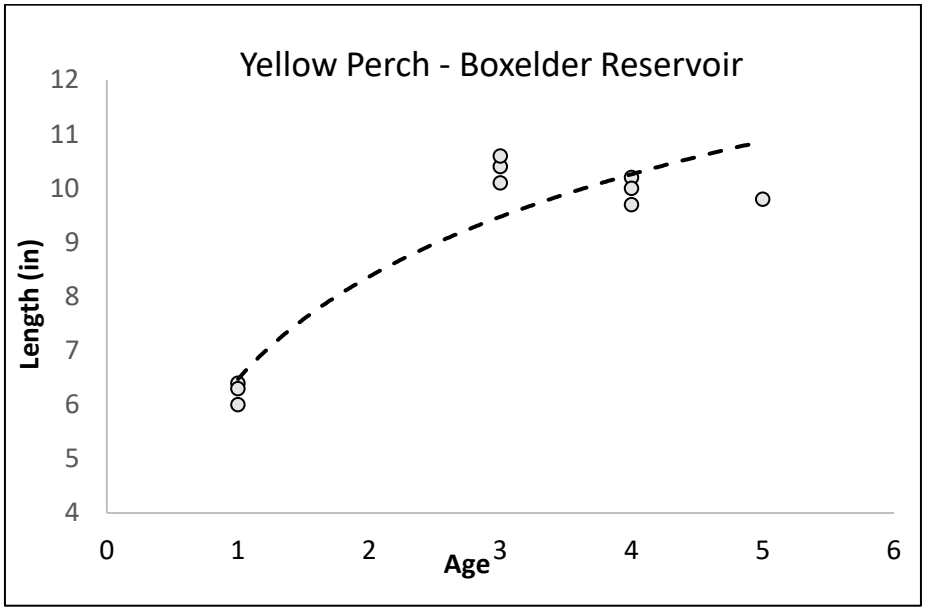
Appendix D. 1. Summary of 2022 Milk River seining efforts.

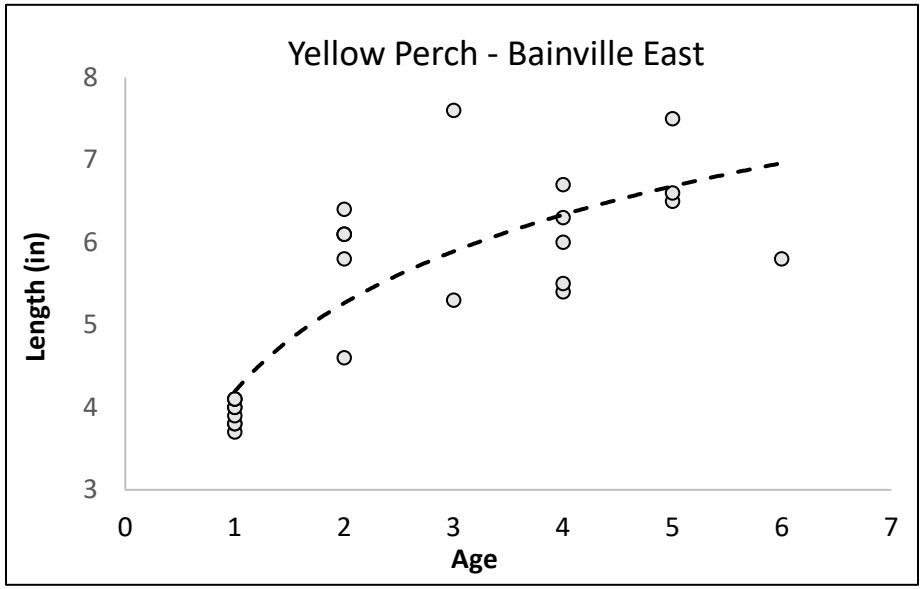
Reach	Location	Date	Seine Hauls	Species	# Captured
Beaver Creek	48.41574, -107.08217	7/25/2022	2	Buffalo spp.	2
				Common Carp	1
				Crappie	18
				Drum	6
				Emerald Shiner	45
				Northern Pike	1
				River Carpsucker	1
				Smallmouth Bass	3
				Spottail Shiner	11
				Walleye	4
				Yellow Perch	13
Hinsdale Ramp	48.39.86, -107.08108	7/26/2022	2	Buffalo spp.	5
				Common Carp	8
				Crappie	106
				Drum	28
				Emerald Shiner	67
				River Carpsucker	34
				Smallmouth Bass	6
				Walleye	1
				Yellow Perch	8
6th Avenue Bridge	48.19059, -106.65402	7/28/2022	2	Channel Catfish	1
				Drum	1
				River Carpsucker	2
				Smallmouth Bass	1
Page/Potter Crossing	48.30246, -106.78073	7/28/2022	3	Common Carp	13
				Crappie	1
				Drum	2
				Emerald Shiner	352
				Fathead Minnow	121
				Shorthead Redhorse	1
				Smallmouth Bass	2
				White Sucker	26
Rorvik's	48.09841, -106.29430	7/27/2022	4	Common Carp	9
				Drum	1
				Emerald Shiner	9
				Fathead Minnow	12
				River Carpsucker	26
				Spottail Shiner	9
				Stonecat	1
				Walleye	1
				Yellow Perch	1

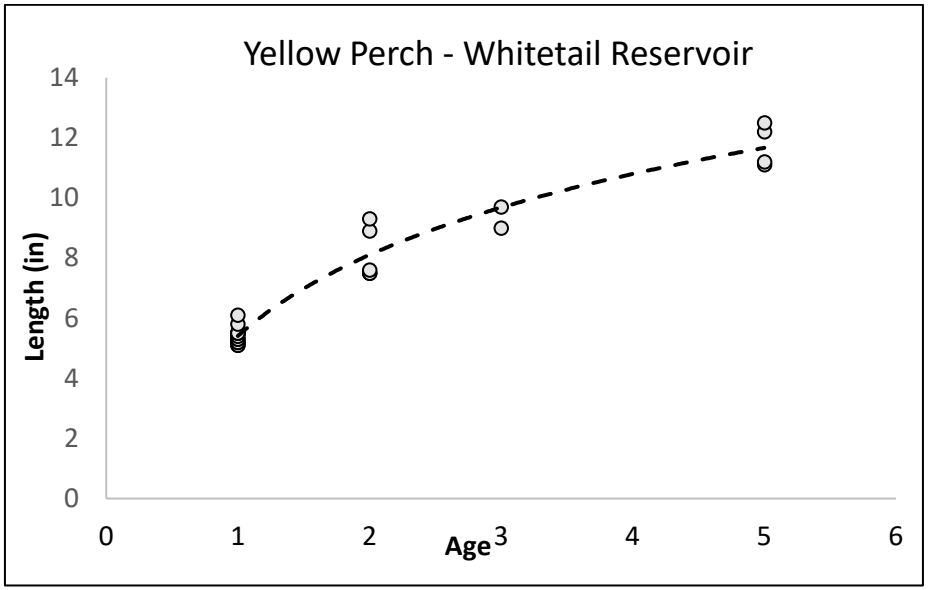
Appending E. 1. Sample photographs taken during the aerial survey of Rock Creek in 2022.

Appendix F. 1. Growth dynamics of various species throughout eastern region 6. Grey dots represent individual known-age fish. Note the differing Y-axes when interpreting growth trajectories.









Appendix F. 1. Cont.