

NEVADA DIVISION OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-53  
2017

Kirch Wildlife Management Area  
SOUTHERN REGION



**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
JOB PROGRESS REPORT**

Table of Contents

<u>Contents</u>	<u>Page</u>
SUMMARY .....	1
BACKGROUND .....	1
OBJECTIVES and APPROACHES .....	2
PROCEDURES .....	3
FINDINGS .....	4
MANAGEMENT REVIEW .....	10
RECOMMENDATIONS .....	11

**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
ANNUAL PROGRESS REPORT**

**State:** Nevada  
**Project Title:** Statewide Fisheries Program  
**Job Title:** Kirch Wildlife Management Area  
**Period Covered:** January 1, 2017 through December 31, 2017

**SUMMARY**

Random creel surveys were conducted in conjunction with other activities on the Kirch Wildlife Management Area (WMA). There were 104 anglers contacted and combined catch rates for all five reservoirs and all sport fish species were 3.9 fish/angler and 1.4 fish/angler hour. Species harvested and observed in the creel or reported by anglers were rainbow trout *Oncorhynchus mykiss*, black crappie *Pomoxis nigromaculatus*, and largemouth bass *Micropterus salmoides*.

Three volunteer angler drop-boxes were installed at Adams-McGill, Haymeadow, and Cold Springs reservoirs in 1996 and one at Dacey Reservoir in 2007. These boxes are used to collect voluntary information from anglers who are not contacted by a creel clerk. Drop-boxes collected 25 creel survey forms in 2017. Volunteer data showed 251 fish were caught and 196 as released. Combined catch rates for the four reservoirs were 10 fish/angler and 2.1 fish/angler hour, and reported harvest rates were 2.2 fish/angler and 0.5 fish/angler hour.

Spring electroshocking surveys were not conducted on the management area in 2017 due to inclement weather and electroshocking boat availability.

Rainbow trout were stocked into Cold Springs, Haymeadow, Dacey, and Adams-McGill reservoirs in the spring and fall. A total of 10,153 rainbow trout with a mean total length of 8.7 inches (in) were stocked into Adams-McGill Reservoir. A total of 27,260 rainbow trout with a mean total length of 8.0 in were stocked into Cold Springs Reservoir. Haymeadow Reservoir was stocked with 30,851 rainbow trout having a mean total length of 9.1 in. Dacey Reservoir was stocked with 14,978 rainbow trout having a mean total length of 7.1 in.

Monitoring was conducted for quagga mussels *Dreissena bugensis* on all four reservoirs. Visual and tactile survey transects were found negative for adult mussels. Plankton tows to sample mussel larvae or “veligers” also came up negative. Efforts to coordinate reservoir water management were maintained with Kirch WMA personnel.

**BACKGROUND**

Wayne E. Kirch Wildlife Management Area, located in the White River drainage of eastern Nye County, contains five reservoirs totaling 1,589 surface acres. Adams-McGill is the largest at 785 surface acres, Cold Springs at 275, Tule at 154,

Haymeadow at 190, and Dacey at 185 acres. Water sources for Kirch WMA include the Flag Springs-Sunnyside Creek system, Hot Creek Spring system (both provide year-round water supply), and the White River drainage (supplies water during spring and large rain events).

All reservoirs are shallow, with surface water temperatures ranging from freezing in the winter to the mid-70s (Fahrenheit) in the summer. Reservoirs have a naturally sustaining largemouth bass fishery and an artificially propagated rainbow trout fishery. Black bullhead *Ameiurus melas* and black crappie are believed to have been introduced illegally.

## **OBJECTIVES and APPROACHES**

### **General Sport Fisheries Management**

Objectives: Monitor angler use, catch rates, and changes in fish population dynamics. Develop and analyze information about fishery conditions for developing annual coldwater stocking recommendations and identifying changes in management prescriptions.

Approaches:

- Manage black bass and stocked rainbow trout fisheries to meet management objectives as general and quality waters.
- Monitor fish populations and angler performance at levels necessary to validate management prescriptions and identify necessary management actions.
- Coordinate reservoir management to insure compatibility with fishery and waterfowl management objectives.
- Implement strategies to minimize impacts from avian predation and invasive aquatic species on the fisheries.
- Conduct a general fisheries assessment through opportunistic angler contacts at all four Kirch WMA reservoirs.
- Maintain volunteer angler drop-boxes at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.
- Coordinate water management and reservoir management needs with the Kirch WMA and update the fisheries management sections of the Kirch WMA Conceptual Management Plan (CMP) in cooperation with the Kirch WMA.
- Continue implementation of bird predation, control strategies through the management of unoccupied bird habitat and adjustments to trout stocking strategies.
- Provide sport fishery information to anglers directly and through NDOW channels.
- Implement strategies for early detection and long term monitoring for quagga mussels and other invasive species consistent with NDOW Southern Region and statewide aquatic invasive species plans.

- Implement strategies to prevent introduction and reduce spread of quagga mussels through signage, information delivery, and angler/boater contacts.

### Black Bass Evaluation

Objectives: Describe the current structure and condition of the Kirch WMA largemouth bass fishery and examine if changes are needed in existing largemouth bass harvest regulations.

Approaches:

- Evaluate black bass catch and harvest data from volunteer angler drop-box responses at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.
- Complete a spring electroshocking survey at Dacey and Adams-McGill reservoirs to assess rainbow trout overwintering growth and survival, and other warm-water species population structure and recruitment.
- Complete a spring electroshocking or hoop/gillnet survey at Haymeadow and Cold Springs reservoirs to assess rainbow trout overwintering growth and survival, and other warmwater species population structure and recruitment.
- Evaluate existing and new data on the black bass population in the reservoirs and identify possible changes in black bass harvest regulations that would benefit the fishery.

## **PROCEDURES**

### General Sport Fisheries Management

Opportunistic creel surveys were conducted monthly at Dacey, Cold Springs, Haymeadow, and Adam-McGill reservoirs. Angler drop-boxes were checked monthly at all four reservoirs. Data consisted of the fish species caught, number of fish kept and released, length and weight of fish, and angler origin. All data was entered and maintained in a database.

Electroshocking surveys were not conducted on any reservoir in 2017 due to electroshocking boat and area biologist availability. Twenty-two hours (h) at Dacey Reservoir, 2 h at Adams-McGill Reservoir, and 4.5 h at Haymeadow Reservoir were spent conducting hook-and-line surveys to compensate for the lack of electroshocking surveys. No hook-and-line survey was completed at Cold Springs Reservoir.

Fixed substrate samplers were maintained and visual/tactile transects completed for adult quagga mussel detection in June and September at all four reservoirs. Plankton tows were conducted in July at all four reservoirs. Kirch WMA personnel visually monitored the reservoirs for avian predators.

## Black Bass Evaluation

Opportunistic creel surveys were conducted monthly at Dacey, Cold Springs, Haymeadow, and Adam-McGill reservoirs. Angler drop-boxes were checked monthly at all four reservoirs. Data consisted of the fish species caught, number of fish kept and released, length and weight of fish, and angler origin. All data was entered and maintained in a database.

Electroshocking surveys were not conducted on any of the reservoirs in 2017 due to electroshocking boat and area biologist availability. Twenty-two hours (h) at Dacey Reservoir, 2 h at Adams-McGill Reservoir, and 4.5 h at Haymeadow Reservoir were spent conducting hook-and-line surveys to compensate for the lack of electroshocking surveys. No hook-and-line survey was completed at Cold Springs Reservoir.

## **FINDINGS**

### General Sport Fisheries Management

#### *Adams-McGill Reservoir*

Twenty-six anglers were contacted at Adams-McGill Reservoir in 2017. Anglers expended 105 hours to catch 132 fish, two of which were rainbow trout and the rest were largemouth bass. Average reported catch rates were 5.1 fish/angler and 1.3 fish/hour (Table 1), which combines anglers targeting a single species and anglers showing no preference in catching rainbow trout and largemouth bass.

**TABLE 1.** Adams-McGill Reservoir Contact Creel Data Summary, 2012-2017.

Year	<u>Total Catch Rates</u>		<u>Mean Total Length</u>			
	Fish/angler	Fish/hour	rainbow trout (mm)	rainbow trout (in)	largemouth bass (mm)	largemouth bass (in)
2012	6.2	3.5	323	12.7	279	11.0
2013	3.0	0.8	345	13.6	343	13.5
2014	1.0	0.4	368	14.5	330	13.0
2015	6.2	1.3	-	-	323	12.7
2016	9.8	2.6	-	-	325	12.8
2017	5.1	1.3	368	14.5	330	13.0
6-year Mean	5.2	1.7	351	13.8	323	12.7

Volunteer drop-box creel data forms were completed by four anglers who expended 15 h to catch 45 fish, of which five were rainbow trout and 40 were largemouth bass. The average reported catch rate was 11.3 fish/angler with a harvest rate of 2.3 fish/angler (Table 2). In 2017, reported rainbow trout sizes were 1 or 20% below 12 in total length (TL), 3 or 60% between 12 and 16 in TL, and 1 or 20% above 16 in TL. Reported largemouth bass sizes were 18 or 45% less than 12 in TL, 12 or 30% between 12 and 14 in TL, and 10 or 25% greater than 14 in TL.

**TABLE 2.** Adams-McGill Reservoir Volunteer Creel Survey Data, 2009-2017.

Year	No. Fish Captured	Fish Released (%)	Fish Harvested (%)	Fish/Angler		Fish/Hour	
				Catch	Harvest	Catch	Harvest
2009	327	100	0	65.4	0	9.6	0
2010	37	81	19	12.3	2.33	3.22	1.64
2011	95	44	1	7.9	1.0	1.54	0.11
2012	290	73	27	16	4.3	3.6	0.95
2013	372	69	31	9.8	3.0	2.1	0.65
2014	70	73	27	14	3.8	3.0	0.80
2015	42	38	62	10.5	6.5	1.7	1.1
2016	126	49	51	9.7	4.9	1.7	0.9
2017	45	80	20	11.3	2.3	3	0.6

Adams-McGill Reservoir received 10,153 rainbow trout in 2017 (Table 3). These fish had a mean total length of 8.7 in.

**TABLE 3.** Total Numbers, Pounds, and Mean Total Length of Rainbow Trout Stocked into Adams-McGill Reservoir, 2008-2017.

Year	Number of Rainbow Trout	Total Weight (lb)	Mean Total Length (in)
2008	25,362	4,925	7.5
2009	8,067	No Data	9.0
2010	8,120	1,400	7.6
2011	8,160	1,700	8.0
2012	12,160	3,500	9.0
2013	19,605	3,650	8.0
2014	18,137	4,920	8.9
2015	7,400	2,500	9.5
2016	15,375	5,725	9.4
2017	10,153	2400	8.7

### *Cold Springs Reservoir*

Opportunistic creel surveys were conducted in conjunction with other activities at Kirch WMA. A total of 44 anglers were contacted on Cold Springs Reservoir in 2017. They expended 106.5 hours to catch 88 fish, 42 were largemouth bass, 43 rainbow trout, and 3 black crappie. The average reported catch rate was 2.0 fish/angler (Table 4).

**TABLE 4.** Cold Springs Reservoir Contact Creel Data Summary, 2013-2017.

Year	No. Anglers	Rainbow Trout		Largemouth Bass		Catch Rates	
		No. Caught	Mean TL (in)	No. Caught	Mean TL (in)	Fish/Angler	Fish/Hour
2013	4	4	14.7	2	13.0	1.5	0.4
2014	9	2	11.5	19	12.8	2.6	0.9
2015	NO CREEL SURVEY IN 2015						
2016	18	0	-	130	12.3	7.2	1.7
2017	44	43	13.4	42	12.3	2.0	0.8

Drop-box forms were completed by five anglers who expended 21 hours to catch 34 fish, of which 24 were rainbow trout and 10 were largemouth bass. The reported

catch was 6.8 fish/angler with a harvest rate of 3.2 fish/angler (Table 5). Reported sizes for rainbow trout were 10 or 41% below 12 in TL, 10 or 41% between 12 and 16 in TL, and 4 or 16% above 16 in TL. All largemouth bass were greater than 12 in TL.

**TABLE 5.** Cold Springs Reservoir Volunteer Creel Survey Data Summary, 2009-2017.

Year	No. Fish Caught	% Fish Released	% Fish Harvested	Fish/Angler		Fish/Hour	
				Catch	Harvest	Catch	Harvest
2009	360	51	49	17.1	8.5	3.8	1.9
2010	220	36	64	12.2	7.8	2.3	1.5
2011	52	21	79	7.4	1.6	1.7	0.4
2012	155	71	29	9.1	2.6	1.9	0.6
2013	402	73	27	13.4	3.6	3.1	0.8
2014	213	72	27	8.9	2.4	1.7	0.5
2015	55	64	36	5.5	2.0	1.8	0.7
2016	159	69	31	14.5	4.5	3.6	1.1
2017	34	53	47	6.8	3.2	1.6	0.8
9-Year Mean	183.3	57	43	10.5	4.0	2.4	0.9

Cold Springs Reservoir was stocked with 27,260 rainbow trout in 2017 (Table 6). These fish had a mean total length of 8.0 in.

**TABLE 6.** Total Number, Pounds, and Mean Total Length of Rainbow Trout Stocked into Cold Springs Reservoir, 2008-2017.

Year	No. Rainbow Trout	Total Weight (lb)	Mean Total Length (in)
2008	32,877	6,615	8.0
2009	12,415	6,825	9.35
2010	38,480	9,362	8.5
2011	38,224	12,000	9.2
2012	38,416	10,825	8.9
2013	63,785	17,450	8.8
2014	35,455	9,970	8.9
2015	26,520	7,900	9.0
2016	26,520	7,800	9.1
2017	27,260	6250	8.0

### *Haymeadow Reservoir*

Twenty-five anglers were contacted at Haymeadow Reservoir in 2017. They expended 59 hours to catch 59 fish, 26 were largemouth bass and 29 rainbow trout. The catch rate was 2.4 fish/angler (Table 7).

Volunteer drop-box forms were completed by six anglers who expended 29 hours to catch 86 rainbow trout. The average reported angler catch rate was 14.3 fish/angler with a reported harvest of 1.5 fish/angler (Table 8). Rainbow trout sizes ranged from 31 or 36% below 12 in TL, 45 or 52% between 12 and 16 in TL, and 2 or 2% above 16 in TL.

**TABLE 7.** Haymeadow Reservoir Contact Creel Survey Data Summary, 2014-2017.

Year	No. Anglers	Rainbow Trout		Largemouth Bass		Fish/Angler	Fish/Hour
		No. Fish	Mean TL (in)	No. Fish	Mean TL (in)		
2014	4	0	-	8	13.0	2.0	0.6
2015	4	16	13.3	11	12.4	4.0	1.2
2016	22	6	12.0	103	13.3	5.0	1.4
2017	25	29	13.0	26	13.6	2.4	1.0

**TABLE 8.** Haymeadow Reservoir Volunteer Creel Survey Data, 2009-2017.

Year	No. Fish Caught	% Fish Released	% Fish Harvested	Fish/Angler		Fish/Hour	
				Catch	Harvest	Catch	Harvest
2009	237	77	23	19.8	4.3	4.1	0.9
2010	216	68	32	10.8	3.5	2.4	0.8
2011	113	55	45	9.4	4.3	1.9	0.8
2012	416	73	27	11.0	3.0	2.7	0.8
2013	473	73	27	15.3	4.1	3.5	0.9
2014	474	86	14	17.6	2.3	3.7	0.5
2015	143	43	57	7.2	4.1	1.6	0.9
2016	169	90	10	18.8	1.9	3.6	0.4
2017	86	89	11	14.3	1.5	3.0	0.3
9-Year Mean	258.6	73	27	13.8	3.2	2.9	0.7

Haymeadow Reservoir received 30,851 rainbow trout in 2017 (Table 9). These fish had a mean total length of 9.1 in.

**TABLE 9.** Total number, weight, and Mean Total Length of Rainbow Trout Stocked into Haymeadow Reservoir, 2013-2017.

Year	No. Rainbow Trout	Total Weight (pounds)	Average Total Length (in)
2013	66,002	17,660	8.7
2014	35,788	10,050	8.9
2015	16,736	4800	8.9
2016	22,416	6630	9.1
2017	30,851	9650	9.1

### *Dacey Reservoir*

Opportunistic creel surveys were conducted in conjunction with other activities on the Kirch WMA. Nine anglers were contacted, fishing for 25 hours and caught 3 rainbow trout and 122 largemouth bass. The average reported angler catch rate was 5.0 fish/hour and 13.8 fish/angler (Table 10).

Volunteer drop-box forms were completed by 10 anglers who expended 53.5 hours to catch 86 fish, of which, 21 were rainbow trout and 65 were largemouth bass. The average reported angler catch rate was 8.6 fish/angler and the reported harvest was 2.1 fish/angler (Table 11). In 2017, anglers reported size classes for 21 rainbow trout; 100% of those were above 16 in TL. Size classes for largemouth bass included 36 or 75% less than 12 in TL, 9 or 19% between 12 and 14 in TL, and 3 or 6% greater than 14 in TL.

**TABLE 10.** Catch Rates and Mean Total Lengths from Contact Creel Surveys at Dacey Reservoir, 2010-2017.

Year	Catch Rates		Mean Total Length (in)	
	Fish/Angler	Fish/Hour	Largemouth Bass	Rainbow Trout
2010	3.0	4.6	12.1	-
2011	2.4	1.5	13.0	15.5
2012	3.2	1.5	10.6	17.3
2013	8.0	1.5	13.1	15.5
2014	1.0	1.0	13.5	-
2015	4.2	1.6	13.6	-
2016	3.5	1.4	-	-
2017	13.8	5.0	12.5	-

**TABLE 11.** Dacey Reservoir Volunteer Creel Survey Data Summary, 2012-2017.

Year	No. Fish Caught	% Fish Released	% Fish Harvested	Fish/Angler		Fish/Hour	
				Catch	Harvest	Catch	Harvest
2012	257	76	24	8.9	2.1	2.1	0.5
2013	127	81	19	7.1	1.3	1.3	0.3
2014	284	95	5	13.0	0.6	2.8	0.1
2015	91	93	7	10.1	0.7	2.8	0.2
2016	242	96	4	17.3	0.8	4.2	0.2
2017	86	76	24	8.6	2.1	1.6	0.4

Electroshocking surveys were not conducted on Dacey Reservoir in 2017 due to the electroshocking boat and biologist being unavailable. The 1-trout limit at Dacey Reservoir makes obtaining biological data (e.g., lengths and weights) from creel surveys difficult since anglers immediately release their catch. Hook-and-line surveys targeting rainbow trout were used throughout the year to compensate for the lack of creel and electroshocking data. The hook-and-line survey caught 16 rainbow trout in 22.25 hours for a catch rate of 0.72 fish/hour. Rainbow trout had a mean total length of 17.6 in, which was up from last year's mean of 14.6 in (Table 12). Current harvest regulations for Dacey Reservoir were effective beginning in March 2010 to improve the average size of fish.

**TABLE 12.** Hook-and-Line Survey Data for Rainbow Trout at Dacey Reservoir, 2013-2017.

Year	No. Rainbow Trout	Mean Total Length (in)	Max Total Length (in)
2013	29	17.7	21.0
2014	45	16.0	20.5
2015	19	13.1	18.0
2016	44	14.6	18.0
2017	16	17.6	18.5

In 2017, 14,978 rainbow trout were stocked into Dacey Reservoir (Table 13). These fish had a mean total length of 7.1 in.

**TABLE 13.** Total Number, Weight, and Mean Total Length of Rainbow Trout Stocked into Dacey Reservoir, 2008-2017.

Year	No. Rainbow Trout	Total Weight (lb)	Mean Total Length (in)
2008	8,815	1,550	7.0
2009	4,601	2,000	10.3
2010	5,320	1,400	8.7
2011	5,280	1,200	8.3
2012	5,100	1,500	8.7
2013	10,675	1,750	7.3
2014	10,200	2,550	8.5
2015	9,650	3,000	9.3
2016	0	0	-
2017	14,978	3,650	7.1

### Black Bass Evaluation

#### *Adams-McGill Reservoir*

Electroshocking surveys were not conducted on Adams-McGill Reservoir in 2017 due to the unavailability of the electroshocking boat and area biologist. However, hook-and-line sampling was performed to make up for the lack of other data collection (Table 14).

Data on largemouth bass from the creel and hook-and-line surveys was used to calculate relative weight ( $W_r$ ), an index of condition, and Proportional Stock Density (PSD), an index of the percentage of fish in a population that are quality size (12 in TL or greater). When mean  $W_r$  is well below 100, problems exist in food and feeding relationships. When mean  $W_r$  is well above 100, fish may not be making the best use of available food. Largemouth bass sampled in Adams-McGill Reservoir had a mean  $W_r$  value of 87.7, which was lower than last year's index of 90.5 but still suggested that fish were in good health and utilizing available forage. The PSD value for 2017 was 78, which was lower than 92 from 2016.

**TABLE 14.** Summary of Hook-and-Line Data for Largemouth Bass at Adams-McGill Reservoir, 2013-2017.

Year	No. Largemouth Bass	Mean Total Length (in)	Max Total Length (in)
2013	61	11.6	14.5
2014	26	13.2	17.0
2015	8	13.8	16.0
2016	73	13.3	16.0
2017	7	13.8	15.0

#### *Cold Springs Reservoir*

Electroshocking surveys were not conducted on Cold Springs Reservoir in 2017 due to the unavailability of the electroshocking boat and area biologist. Data on largemouth bass from contact creel surveys was used to calculate  $W_r$  and PSD. Largemouth bass had a mean  $W_r$  value of 90.7, which was lower than 96.2 found last

year, but still indicated excellent health. The PSD value for 2017 was 73, which was higher than last year's 71.

#### *Haymeadow Reservoir*

An electroshocking survey was not conducted on Haymeadow Reservoir in 2017 due to electroshocking boat and area biologist availability. Instead, a hook-and-line survey was completed for 4.5 h and resulted in the catch of one 11.0 in largemouth bass.

Data on largemouth bass from the creel and hook-and-line surveys were used to calculate  $W_r$  and PSD. Largemouth bass sampled in Haymeadow Reservoir had a mean  $W_r$  value of 89.6, which was the same as last year and indicated excellent health. The PSD value for 2017 was 95, which was much higher than the 88 recorded in 2016.

#### *Dacey Reservoir*

Electroshocking surveys were not conducted on Dacey Reservoir in 2017 due to the electroshocking boat and area biologist availability. Instead, 22.25 h of hook-and-line surveys produced 52 largemouth bass with a mean total length of 12.4 in (Table 15). Data on largemouth bass from contact creel and hook-and-line surveys were used to calculate  $W_r$  and PSD. Largemouth bass ( $N=52$ ) showed excellent health with mean  $W_r$  value of 79.3, which was lower than the 83.4 measured in 2016. The PSD value for 2017 is 63.

**TABLE 15.** Hook-and-Line Survey Data for Largemouth Bass at Dacey Reservoir, 2013-2017.

Year	No. largemouth bass	Mean Total Length (in)	Max Total Length (in)
2013	13	12.8	15.0
2014	2	12.0	12.0
2015	0	-	-
2016	0	-	-
2017	52	12.4	16.0

### **MANAGEMENT REVIEW**

The sport fishery at Kirch WMA appears to be performing well. The overall health of largemouth bass seems to be excellent and the overall size of largemouth bass being caught is up from last year. PSD was in the 70 range for all reservoirs. A regulation change for waters of the management area was implemented in 2017 to help increase the PSD. A concerted effort to contact more anglers for increasing sample size is recommended in 2018. Black crappie was introduced illegally and was found in population and creel surveys at Adam's-McGill, Cold Springs, and Haymeadow reservoirs. Black crappie appears to be increasing in numbers particularly in Cold Springs Reservoir and anglers are excited for this new opportunity. Surveys focusing on black crappie will occur in 2018 to assess population size and size structure. The average size of rainbow trout stocked into all reservoirs was about the same in 2017 compared to 2016. It is recommended rainbow trout be stocked at a larger average

size in spring when fishing pressure increasing. It is not as important for fall stocking since fish are able to grow throughout the winter when fishing is at a minimum. Dacey Reservoir is now managed as a quality fishery; therefore, the average stocking size for trout should be 9.0 in TL or larger.

The warmwater fisheries at Adams-McGill, Cold Springs, Haymeadow, and Dacey reservoirs are managed under a General Warmwater Fishery Concept, which should produce catch rates around 1 to 2 fish/angler and 0.25 to 0.75 fish/hour, and ample largemouth bass that measure at least 12 in TL. The trout fishery at Haymeadow Reservoir is managed as a Coldwater General Fishery, which should produce catch rates around 1 to 2 fish/angler and 0.25 to 0.75 fish/hour. Adams-McGill, Cold Springs, and Dacey reservoirs are managed as Coldwater Quality Fisheries, which should produce catch rates around 2 to 3.5 fish/angler and 0.3 to 1.25 fish/hour and ample rainbow trout larger than the size when stocked. Catch rates from contact or drop-box creel surveys showed that each water body met its Concept's target catch rate, with rates ranging from 2.0 to 8.6 fish/angler and 0.8 to 1.7 fish/hour. Mean total length of largemouth bass measured during creel surveys ranged from 12.3 to 13.6 in, indicating there were sufficient numbers of 12.0 in largemouth bass available to anglers. Mean total length of rainbow trout measured from creel surveys at Adams-McGill, Cold Springs, and Haymeadow reservoirs ranged from 13 to 13.8 in, indicating ample quantities of rainbow trout available to anglers that were larger than when they were stocked.

Dacey Reservoir has a conservative possession limit to promote a trophy trout fishery. It is currently managed under a Coldwater Quality Fishery Concept, which should produce rainbow trout larger than when stocked but smaller than a "trophy." Under a Coldwater Trophy Concept, rainbow trout averaging 16 in or larger should be readily available to anglers. Based on creel data and population survey data, Dacey Reservoir nearly meets targets of a Coldwater Trophy Fishery. In the volunteer creel surveys, anglers reported all of their fish being over 16 in. Population data from hook-and-line surveys resulted in a mean total length of 17.6 in; both forms of data meet the target of a Trophy Fishery Concept. However, the mean length of rainbow trout captured during hook-and-line surveys over the past five years was 15.8 in, just shy of the 16 in target for a Trophy Fishery.

The current fishery management concepts for waters at Kirch WMA seem appropriate. Additional population monitoring data at Dacey Reservoir may help determine the need to change the coldwater fishery from a Quality Concept to a Trophy Concept.

## **RECOMMENDATIONS**

- Conduct a general fisheries assessment through opportunistic angler contacts at all four Kirch WMA reservoirs.
- Maintain volunteer angler drop-boxes at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.

- Coordinate water management and reservoir management needs with the Kirch WMA manager and update the fisheries management sections of the Kirch WMA CMP in cooperation with the Kirch WMA manager as required.
- Continue implementation of bird predation control through management of unoccupied habitat and adjustments to rainbow trout stocking strategies.
- Provide sport fishery information to anglers directly and through NDOW channels.
- Implement strategies for early detection and long-term monitoring for quagga mussels and other invasive species consistent with NDOW Southern Region and statewide aquatic invasive species plans.
- Implement strategies to prevent introduction and prevent spread of quagga mussels through signage, information delivery, and angler/boater contacts.
- Evaluate black bass catch and harvest data from volunteer angler drop-box responses at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.
- Complete a spring electroshocking survey at Adams-McGill Reservoir to assess rainbow trout overwintering growth and survival, and warm-water community structure and recruitment.
- Complete a spring electroshocking or hoop/gill net survey at Haymeadow and Cold Springs reservoirs to assess trout overwintering growth and survival, and warm-water community structure and recruitment.
- Continue to evaluate the new black bass harvest regulation for the management area.
- Identify current conditions in Dacey Reservoir using hook-and-line and electroshocking surveys.
- Stock up to 7,000 9.0 in TL or longer rainbow trout in Dacey Reservoir in late fall every year.
- Conduct an electroshocking survey in Dacey Reservoir annually in the spring to evaluate age structure and species composition of the sport fishery.
- Collect angler success and satisfaction data at Dacey Reservoir through direct contact creel surveys semi-monthly and maintain a volunteer, angler drop-box to provide supplemental angler use information.

Prepared by: Mark Beckstrand  
Biologist III, Southern Region

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