

NEVADA DIVISION OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-50  
2014

Kirch Wildlife Management Area  
SOUTHERN REGION



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

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

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**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, 2014 through December 31, 2014

**SUMMARY**

Random creel surveys were conducted during 2014 in conjunction with other activities at the Kirch Wildlife Management Area (WMA). There were 27 anglers contacted and the combined catch rate for all five reservoirs and all sport fish species was 1.7 fish/angler and 0.63 fish/angler hour. Species harvested and observed in the creel or reported by anglers were rainbow trout *Oncorhynchus mykiss* and largemouth bass *Micropterus salmoides*.

Three volunteer creel drop-boxes were installed at Adams-McGill, Haymeadow, and Cold Springs reservoirs in 1996 and one at Dacey Reservoir in 2007. These boxes were used to collect voluntary information from anglers who were not contacted by a creel clerk. In 2014, drop-boxes collected 78 creel survey forms and showed 894 (86%) fish out of 1,041 fish caught were released. The combined catch rates for the four reservoirs were 13.3 fish/angler and 2.8 fish/angler hour and harvest rates were 1.9 fish/angler and 0.4 fish/angler hour.

Spring electroshocking surveys were not conducted on the management area in 2014 due to inclement weather and the electroshocking boat was unavailable.

Rainbow trout were stocked at the management area during spring and fall. A total of 18,137 rainbow trout averaging 8.9 inches (in) total length (TL) were stocked into Adams-McGill Reservoir. A total of 35,455 rainbow trout averaging 8.9 in TL were stocked into Cold Springs Reservoir. Haymeadow Reservoir was stocked with 35,788 rainbow trout averaging 8.9 in TL. Dacey Reservoir received 10,200 rainbow trout averaging 8.5 in TL.

Monitoring was conducted for quagga mussels *Dreissena bugensis* on all four reservoirs. Visual and tactile transects were negative for adult mussels as well as negative results for plankton tows to sample larvae or “veligers.” Efforts to coordinate reservoir water management were maintained with Kirch WMA personnel.

**BACKGROUND**

Wayne E. Kirch Wildlife Management Area (Kirch WMA), 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 the 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. The reservoirs have a naturally sustaining largemouth bass fishery and an artificially propagated rainbow trout fishery. Black bullhead *Ameiurus melas* and black crappie *Pomoxis nigromaculatus* are believed to have been introduced illegally.

## **OBJECTIVES and APPROACHES**

### **Kirch WMA General Sport Fisheries Management**

Objectives: Monitor angler use, catch rates, and changes in the fish population dynamics. Develop and analyze information on fishery conditions to develop annual coldwater stocking recommendations and identify future changes in management prescriptions.

#### Approaches:

- Manage black bass and stocked rainbow trout fisheries to meet management objectives as general or 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 to the fisheries from avian predation and invasive aquatic species.
- 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 Conceptual Management Plan (CMP) in cooperation with the Kirch WMA manager as required.
- 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.

### Kirch WMA 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 largemouth bass and other warmwater species population structure and recruitment.
- Complete a spring electroshocking or hoop/gillnet survey at Haymeadow and Cold Springs Reservoirs to assess largemouth bass 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.

### Dacey Reservoir Trophy Fishery Evaluation

Objectives: Evaluate angler preference regarding management strategy change, specifically towards developing a special harvest regulation at Dacey Reservoir. Additionally, examine the potential for Dacey Reservoir to support a Trophy or Quality Fishery Management Concept.

Approaches:

- Stock up to 5,000 rainbow trout annually at a minimum size of nine inches TL during late fall.
- Conduct an electroshocking survey annually in the spring to evaluate age structure and species composition of the rainbow trout fishery.
- Collect basic water quality data semi-annually (April and October) to evaluate the potential effects of waterfowl and water management strategies on rainbow trout.
- Collect angler success and satisfaction data through direct contact creel surveys at least twice a month from August to October and to maintain a volunteer, angler drop-box.

## **PROCEDURES**

### Kirch WMA General Sport Fisheries Management

Opportunistic creel surveys were conducted semi-monthly at Dacey and Cold Springs reservoirs and monthly at Adam-McGill Reservoir. Angler drop-boxes were checked monthly at all four reservoirs. Data consisted of fish species caught, number of fish kept and released, lengths and weights 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 2014 due to electroshocking boat and area biologist availability. Twenty-two hours (hr) at Dacey Reservoir, 8.5 hr at Adams-McGill Reservoir, and 16.5 hr at Cold Springs Reservoir were spent conducting hook-and-line surveys to compensate for the lack of electroshocking surveys.

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.

### Kirch WMA Black Bass Evaluation

\_\_\_\_\_ Creel surveys and hook-and-line surveys from General Management was used to evaluate the Trophy Fishery.

### Dacey Reservoir Trophy Fishery Evaluation

Creel surveys and hook-and-line surveys from General Management was used to evaluate the Trophy Fishery.

## **FINDINGS**

### Kirch WMA General Sport Fisheries Management

#### Adams-McGill Reservoir

Opportunistic creel surveys were conducted in conjunction with other activities on the Kirch WMA. Twelve anglers were contacted at Adams-McGill in 2014. Table 1 summarizes contact creel data from 1996 to present.

TABLE 1. Adams-McGill Reservoir contact creel data summary, 1996-2014

Year	Catch Rates		Average TL (in)			Comments
	Fish/Ang.	Fish/Hr.	RB	LMB	UK	
1996	3.56	0.75			11.7	
1997	3.59	0.85			11.2	
1998	3.56	1.35			11.8	
1999	1.78	0.44			11.9	
2000	2.17	0.54			10.5	
2001		No Creel Data Available				Reservoir Dewatering
2002		No Creel Data Available				Reservoir Dewatered
2003		No Creel Data Available				Reservoir Dewatered
2004	2.25	1.25	13.5	12.5		Creel was conducted twice and contacted 2 parties fishing from shore.
2005	2.25	1.00	14.0	11.8		Most anglers after trout
2006	2.16	0.85	15.0	11.9		Most anglers fly fishing for trout
2007					No Creel Data Available	
2008					No Creel Data Available	
2009					No Creel Data Available	
2010	2.75	2	15.0	11.0		none
2011					No Creel Data Available	
2012	6.2	3.54	12.7	11.0		Most anglers after trout
2013	3.0	0.75	13.6	13.5		
2014	1.0	0.14	14.5	13.0		

RB = rainbow trout, LMB = largemouth bass, UK = unknown-species not noted

Volunteer angler drop-box creel data forms were completed by five anglers, who expended 23.5 hr to catch 70 fish, of which, 28 were rainbow trout and 41 were largemouth bass. The average catch rate was 14 fish/angler with a harvest rate of 3.8 fish/angler. In 2014, 27 rainbow trout were measured and of those, 18 or 66% were below 12 in TL, 7 or 25% were between 12 and 16 in TL, and 2 or 7% were above 16 in TL. Forty-one largemouth bass were measured from Adams-McGill Reservoir. Of those, 18 or 43% were less than 12 in TL, 5 or 12% were between 12 and 14 in TL, and 18 or 43% were above 14 in TL. Harvest and catch rates calculated from the volunteer creel data is summarized in Table 2.

A total of 18,137 rainbow trout averaging eight inches total length were stocked into Adams-McGill reservoir in 2014. Table 2 summarizes the rainbow trout stocking since 2003.

TABLE 2. Adams-McGill Reservoir volunteer creel survey data, 1996-2014.

Year	# Fish captured	% Fish released	% Fish harvested	fish/angler		fish/hour	
				Catch	Harvest	Catch	Harvest
1996	254	82	18	No data	No data	No data	No data
1997	376	86	14	14.5	2.0	3.06	0.42
1998	65	86	14	10.8	1.50	2.50	0.35
1999	52	69	31	5.78	1.78	1.25	0.39
2000	97	55	45	9.70	5.30	1.41	0.77
2001	No data						
2002	Reservoir draw-down initiated; Reservoir closed						
2003	Reservoir remains closed during renovation; Trout stocked fall 2003						
2004	49	71	29	8.3	2.3	4.9	1.4
2005	105	73	28	9.3	2.4	4.5	1.3
2006	235	57	43	8.5	2.0	3.5	1.0
2007	117	53.8	46.1	3.0	2.5	0.7	0.6
2008							
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

Table 3. Total numbers, pounds, and average total length of rainbow trout stocked into Adams-McGill Reservoir, 2003-2014.

Year	Number of rainbow trout	Total weight (pounds)	Average total length (in)
2003	16,582	No Data	9.0
2004	28,112	6,604	8.5
2005	27,931	5,066	7.6
2006	22,000	5,296	8.4
2007	3,298	4,623	9.2
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	4920	8.9

### Cold Springs Reservoir

Opportunistic creel surveys were conducted during 2014 in conjunction with other activities on the Kirch WMA. Nine anglers were contacted on Coldsprings Reservoir in 2014. Table 4 summarizes contact creel data from 1996 to present.

Volunteer creel data forms were completed by 24 anglers, who expended 122 hours to catch 213 fish, of which 197 were rainbow trout, 11 were largemouth bass, and five were black crappie. The average catch was 8.9 fish/angler, with a harvest of 2.4 fish/angler. In 2014, 193 rainbow trout were measured and of those, 100 or 51% were below 12 in TL, 93 or 48% were between 12 and 16 in TL, and none were above 16 in TL. Eleven largemouth bass were measured from Cold Springs Reservoir, of those, seven or

63% were less than 12 in TL and four or 36% were greater than 12 in TL. Five black crappie were measured from Cold Springs Reservoir. Of those, 3 or 60% were less than 10 in TL and two or 40% were greater than 10 in TL. Harvest and catch rates calculated from the volunteer creel data is summarized in Table 5.

Cold Springs Reservoir was stocked with 35,455 rainbow trout averaging 8.8 in TL in 2013. Table 6 summarizes the rainbow trout stocking since 1996.

### Haymeadow Reservoir

Opportunistic creel surveys were conducted in conjunction with other activities on the Kirch WMA. Four anglers were contacted on Haymeadow Reservoir in 2014. Table 7 summarizes contact creel data from 1996 to present.

Angler drop-box data forms were completed by 27 anglers, who expended 129 hrs to catch 474 fish, of which 453 were rainbow trout and 21 were largemouth bass. The average reported angler catch rate was 17.6 fish/angler with a reported harvest of 2.3 fish/angler. In 2014, 369 rainbow trout were measured and recorded and of those, 259 or 70% were below 12 in TL, 104 or 28% were between 12 and 16 in TL, and six or two percent were above 16 in TL. Fourteen largemouth bass were measured and recorded on Haymeadow Reservoir, of those, 2 or 14% were less than 12 in TL, 12 or 85% were between 12 and 14 in TL, and none were greater than 14 in TL. Harvest and catch rates calculated from the volunteer creel data is summarized in Table 8.

TABLE 4. Cold Springs Reservoir contact creel data summary, 1996-2014.

Year	Days creel	# Anglers	Total hours	RB		LMB		fish/ angler	fish/ hour
				#	Avg. TL (in)	#	Avg. TL (in)		
1996	20	127	471.5	177	14.2	2	11.0	2.20	0.59
1997	22	102	361.5	153	14.4	0	-	1.50	0.42
1998	7	50	199.5	59	13.7	54	13.0	2.26	0.57
1999	11	143	643.5	171	13.1	36	11.5	1.45	0.22
2000	39	308	1064	329	13.9	109	11.7	1.23	0.36
2001				No data					
2002	5	17	9.5	7	ND	4	ND	0.65	0.40
2003	10	70	94	219	ND	0	ND	3.12	2.32
2004	5	15	66	28	13.9	5	12.2	2.2	0.5
2005	10	30	50	50	ND	24	ND	2.46	0.9
2006	24	48	144	95	ND	10	ND	2.2	0.73
2007	3	2	2.5	9	14	0	-	4.5	3.6
2008				No data					
2009				No data					
2010	ND	9	17	23	13.1	0	-	2.7	1.41
2011				No contacts made in 2011					
2012				No contacts made in 2012					
2013	ND	4	14	4	14.7	2	13	1.5	0.43
2014	ND	9	26	2	11.5	19	12.8	2.6	0.90

RB = rainbow trout, LMB = largemouth bass, ND = no data

TABLE 5. Cold Springs Reservoir volunteer creel survey data summary, 1996-2014.

Year	# Fish caught	# Fish released	% Released	# Fish kept	% Fish kept	fish/angler		fish/hour	
						Catch	Harvest	Catch	Harvest
1996	194	79	41	115	59	9.24	5.48	3.01	1.78
1997	575	258	45	317	55	7.28	4.01	1.55	0.85
1998	798	425	53	373	47	9.27	4.33	1.99	0.93
1999	1192	781	64	431	36	12.16	4.40	245	0.89
2000	939	468	50	471	50	11.05	5.54	2.01	1.01
2001					No data				
2002	329	223	68	106	32	6.09	4.12	1.6	0.48
2003	858	381	45	477	55	12.4	5.77	3.15	1.4
2004	386	183	47	203	53	10.2	5.3	2.3	1.25
2005	768	425	55	343	45	10.3	5.6	5.4	3.0
2006	801	415	52	386	48	8.75	4.4	2.8	1.44
2007	806	425	53	381	47	9.71	4.6	2.45	1.16
2008					No data				
2009	360	182	51	178	49	17.1	8.48	3.8	1.87
2010	220	80	36	140	64	12.2	7.8	2.3	1.47
2011	52	11	21	41	79	7.4	1.6	1.7	0.35
2012	155	110	71	45	29	9.1	2.6	1.9	0.56
2013	402	295	73	107	27	13.4	3.6	3.1	0.83
2014	213	155	72	58	27	8.9	2.4	1.7	0.48

A total of 35,788 rainbow trout averaging 8.7 in TL were stocked into Haymeadow Reservoir in 2013. Table 9 summarizes trout stocking since 1996.

### Kirch WMA Black Bass Evaluation

#### Adams-McGill Reservoir

Electroshocking surveys were not conducted on Adams-McGill Reservoir in 2014 due to electroshocking boat and area biologist availability. Table 10 summarizes population sampling on Adams-McGill Reservoir from 1996 to present.

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 of quality size (12 in TL or greater) in a population. When mean  $W_r$  values are well below 100, problems exist in food and feeding relationships. When mean  $W_r$  values are 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 82.7, which is lower than last year's index of 90.45 but still suggests that the fish are in good health and utilizing available forage. The PSD value for 2014 is 81%, which is much higher than last year of 44%.

TABLE 6. Total number, pounds, and average total length of rainbow trout stocked into Cold Springs Reservoir, 1996-2014.

Year	# Rainbow trout	Total weight (pounds.)	Average total length (in)
1996	39,167	14,384	9.38
1997	30,275	9,188	9.00
1998	26,030	8,398	9.40
1999	29,273	10,910	9.70
2000	28,024	9,069	9.31
2001	28,282	9,390	9.20
2002	29,327	7,795	8.70
2003	31,040	9,935	9.26
2004	31,561	7,477	8.6
2005	26,302	No Data	7.6
2006	24,841	5,654	8.3
2007	14,167	17,645	9.57
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	9970	8.9

TABLE 7. Haymeadow Reservoir contact creel survey data summary, 1996-2014.

Year	Days surveyed	# Anglers	Angler hours	RB		LMB		fish/angler	fish/hour
				# Fish	Mean TL (in)	# Fish	Mean TL (in)		
1996	51	888	3,436	1,583	14.7	46	11.79	1.83	0.47
1997	32	477	1,636	639	14.0	78	11.86	1.60	0.44
1998	9	137	607	265	12.3	4	12.12	1.97	0.45
1999	11	156	684	130	12.8	99	12.15	1.47	0.34
2000	36	356	998.5	319	12.7	38	12.65	1.00	0.36
2001					No Data				
2002	13	113	138	222	-	46	ND	3.33	3.75
2003	10	94	62.5	215	-	6	ND	2.35	3.5
2004	4	22	82.5	41	12.1	29	6.5	3.2	0.84
2005	40	60	141	70	11.5	50	11.5	2.0	0.84
2006	24	223	618	327	-	108	-	1.95	0.70
2007					No Data				
2008					No Data				
2009					No Data				
2010	-	17	31.5	90	12.6	49	12.5	8.2	4.41
2011	-	3	9.25	0	-	10	12.6	3.3	1.1
2012	-	2	2.75	12	12.9	0	-	6	4.36
2013					No Data				
2014	-	4	14	-	-	8	13	2	0.57

RB = rainbow trout, LMB = largemouth bass

TABLE 8. Haymeadow Reservoir volunteer creel survey data, 1996-2014.

Year	# Fish caught	# Fish released	% Fish released	# Fish kept	% Fish kept	fish/angler		fish/hour	
						Catch	Harvest	Catch	Harvest
1996	744	474	64	270	36	10.33	3.75	2.06	0.75
1997	1,915	1,095	57	820	43	9.48	2.66	1.62	0.69
1998	1,639	1,004	61	635	39	9.99	3.87	2.00	0.77
1999	1,289	796	62	493	38	11.41	4.36	2.45	0.94
2000	1,087	677	62	410	38	11.09	4.18	2.20	0.83
2001	1,335	809	61	526	39	10.46	3.76	2.07	0.80
2002	1,877	1,373	73	504	27	16.46	3.54	4.16	0.89
2003	810	595	73	215	27	12.62	5.77	2.75	0.93
2004	434	245	66.2	164	33.8	12.7	4.9	2.9	1.1
2005	1,023	870	85	144	15	11.0	3.3	7.0	2.1
2006	1,705	1,120	66	585	34	8.9	5.8	2.8	1.8
2007	699	329	52.9	329	47.06	12.26	5.77	2.8	1.3
2008					No Data				
2009	237	182	77	51	22	19.75	4.25	4.1	0.87
2010	216	147	68	69	32	10.8	3.5	2.4	0.78
2011	113	62	55	51	45	9.4	4.25	1.9	0.83
2012	416	302	73	114	27	11	3	2.7	0.75
2013	473	346	73	127	27	15.3	4.1	3.5	0.93
2014	474	411	86	63	13	17.6	2.3	3.7	0.49

Table 9. Total number, weight, and average total length of rainbow trout stocked into Haymeadow Reservoir, 1996-2014.

Year	Number of rainbow trout	Total weight (pounds)	Average total length (in)
1996	31,938	10,050	9.25
1997	32,083	9,685	9.00
1998	27,984	8,755	9.50
1999	35,174	13,076	9.75
2000	35,085	11,038	9.25
2001	33,049	9,970	9.00
2002	40,709	11,720	8.90
2003	32,271	9,440	9.02
2004	39,943	29,005	9.0
2005	22,721	4,025	7.6
2006	36,265	8,634	8.4
2007	11,997	3,728	9.15
2008	42,035	8,370	8.0
2009	16,174	9,913	9.2
2010	43,101	11,015	8.6
2011	43,652	13,025	9.1
2012	45,394	12,250	8.8
2013	66,002	17,660	8.7
2014	35,788	10,050	8.9

Cold Springs Reservoir

Electroshocking surveys were not conducted on Cold Springs Reservoir in 2014 due to electroshocking boat and area biologist availability. Table 11 summarizes population sampling on Cold Springs Reservoir from 1996 to present.

Data on largemouth bass from the creel and population surveys was used to calculate  $W_r$  and PSD. Largemouth bass sampled in Cold Spring Reservoir had a mean  $W_r$  value of 85.8, which was lower than last year's 93.86, but still indicated excellent health. The PSD value for 2014 was 55%, which was up from last year's 33%.

TABLE 10. Summary of population sampling data for Adams-McGill Reservoir, 1996-2014.

Year	# Fish			Time (hours)	fish/hour	Avg. total length (in)			Max total length (in)		
	RB	LMB	UK			RB	LMB	UK	RB	LMB	UK
1996	-	-	71	1.5	47.3	-	-	9.5	-	-	13.2
1997	-	-	118	1.5	78.7	-	-	6.9	-	-	12.8
1998	-	-	134	0.5	223.2	-	-	7.7	-	-	12.3
1999	-	-	124	0.7	185.1	-	-	7.8	-	-	14.3
2000	-	-	218	0.7	317.7	-	-	8.8	-	-	12.5
2001					No Survey						
2002					No Survey						
2003					No Survey						
2004	-	-	40	0.5	80.0	-	-	7.5	-	-	13.1
2005					No Survey						
2006					No Survey						
2007	-	-	107	0.4	243.2	-	-	8.0	-	-	19.0
2008					No Survey						
2009					No Survey						
2010	28	13	-	0.9	44.6	14.4	11.3	-	18.1	13.0	-
2011	3	28	-	1.2	28.4	9.7	9.1	-	12.0	14.0	-
2012					No Survey						
2013	61	0	-	18.5	3.3	0	11.6	-	0	14.5	-
2014	2	26	-	8.5	3.3	13.5	13.2	-	14	17	-

RB = rainbow trout, LMB = largemouth bass, UK = unknown, species not noted

### Haymeadow Reservoir

Electroshocking surveys were not conducted on Haymeadow Reservoir in 2014 due to electroshocking boat and area biologist availability. Table 12 summarizes population sampling on Haymeadow Reservoir from 1996 to 2014.

Data on largemouth bass from the creel and population surveys was used to calculate  $W_r$  and PSD. Largemouth bass sampled in Haymeadow Reservoir had a mean  $W_r$  value of 83.3, which was lower than last year of 96.95, but still indicated excellent health. The PSD value for 2014 not applicable since there was a small sample size.

TABLE 11. Electroshocking survey data for Cold Springs Reservoir, 1996-2014.

Year	Number				Sampling (hours)	Fish/hour	Average Total Length (in)				Max Total Length (in)			
	LMB	RB	BB	BC			LMB	RB	BB	BC	LMB	RB	BB	BC
1996							No Survey							
1997	37	41	0	0	1.50	52.0	5.4	12.6	-	-	11.6	16.3	-	-
1998	65	25	0	0	0.53	170.5	8.4	12.4	-	-	13.5	8.0	-	-
1999	47	139	0	0	0.69	269.6	9.3	13.3			12.3	16.0		
2000	60	40	7	0	0.61	185.3	9.2	11.7	11.5	-	13.0	16.0	13.8	-
2001							No Survey							
2002							No Survey							
2003	46	13	12	0	0.48	145.7	8.9	9.0	11.3	-	13.4	14.4	15.0	-
2004 <sup>b</sup>	34	3	10	0	0.30	141.0	5.2	13.4	11.3	-	14.5	17.6	13.0	-
2005							No Survey							
2006							No Survey							
2007	62	21	1	0	0.4	210	12.5	11.6	-	-	15.0	20.0	-	-
2008							No Survey							
2009							No Survey							
2010	5	17	2	5	0.6	48.3	13.9	11.4	13.3	8.0	16.2	15.5	13.5	8.2
2011	13	3	2	4	0.98	22.4	12.1	12.0	12.5	9.0	19.0	14.0	13.0	10.0
2012	20	19	2	1	0.62	68	10.3	10.8	11.4	8.0	12.4	14.5	12.0	8.0
2013 <sup>a</sup>	30	0	8	4	0.47	89	10.8	-	12.4	7.1	13.5	-	14.0	7.5
2014 <sup>a</sup>	23	2	-	8	16.5	2	11.1	13.25	-	10.25	13	13.5	-	12

LMB = largemouth bass, RB = rainbow trout, BB = black bullhead, BC=black crappie.

<sup>a</sup>Hook-and-line surveys.

<sup>b</sup>2004 survey was in the fall and should NOT be compared to the spring data.

TABLE 12. Haymeadow Reservoir population sampling data summary, 1996-2014.

Year	#				Sampling time (hours)	Fish/Hr	Avg. Total Length (in)				Max Total Length (in)			
	LMB	RB	BB	BC			LMB	RB	BB	BC	LMB	RB	BB	BC
1996	20	85	1	0	1.00	106.0	10.3	10.9	10.0	-	11.8	19.5	10.0	-
1997	44	23	6	0	0.91	80.21	10.0	13.0	9.7	-	13.5	17.8	12.1	-
1998	288	43	13	0	0.53	264.39	10.5	13.1	11.0	-	18.0	16.0	12.0	-
1999	63	10	38	0	0.40	280.44	13.8	11.0	11.0	-	14.6	16.0	13.1	-
2000	51	33	62	0	0.82	119.19	11.1	11.1	11.8	-	15.5	19.5	13.4	-
2001							No Survey							
2002							No Survey							
2003	3	45	3	0	1.0	51	14.4	10.2	12.0	-	30.8	11.2	13.5	-
2004	15	0	17	0	0.30	96	6.8	-	10.8	-	14.7	-	12.8	-
2005							No Survey							
2006							No Survey							
2007	112	20	2	0	0.526	254	10.9	14.0	11.1	-	16.0	17.0	11.5	-
2008							No Survey							
2009							No Survey							
2010*	7	34	9	0	1.83 net nights	27.3 F/NN	10.9	11.4	13.2	-	15.1	15.2	14.4	-
2011							No Survey							
2012	42	10	5	2	0.6	98	9.3	12.8	12.0	6.0	21.5	18.0	13.0	7.0
2013	19	2	2	1	0.73	34	11.7	12.0	11.3	8.5	19.0	12.5	12.5	8.5

LMB = largemouth bass, RB = rainbow trout, BB = black bullhead, BC=black crappie

NOTE: 2004 survey was in the fall and should NOT be compared to the spring data from other years

\*2010 was a gill net survey. A net night =12 hrs.

Dacey Reservoir Trophy Fishery Evaluation

Opportunistic creel surveys were conducted in conjunction with other activities on the Kirch WMA. A total of two anglers were contacted, fishing for a total of two hours. Anglers caught two largemouth bass. The average reported angler catch at Dacey Reservoir in 2014 was one fish per hour and one fish per angler. Table 13 summarizes contact creel data from 1996 to present.

TABLE 13. Dacey Reservoir contact creel survey data summary, 1996-2014.

Year	Catch rates		Avg. total length (in)			Comments
	fish/angler	fish/hour	LMB	RB	UK	
1996	0.84	0.43	-	-	13.3	First creel since 1990
1997	6.25	0.84	-	-	11.8	Bass tournament
1998	3.50	0.50	-	-	12.0	Bass tournament
1999	2.83	0.35	-	-	12.4	Bass tournament
2000	1.54	0.28	-	-	12.5	Bass tournament
2001			No contact creel documented			
2002			No contact creel documented			
2003			No contact creel documented			
2004			No contact creel documented			
2005			5 anglers had 2 trout of 18 inches total length			
2006			No contact creel documented			
2007			No contacts were documented; Drop- box installed late fall			
2008				No data		
2009				No data		
2010	3.0	4.6	12.1	-	-	No trout in the creel
2011	2.4	1.5	13.0	15.5	-	Only 4 bass in the creel
2012	3.2	1.5	10.6	17.3	-	Only 5 bass in the creel
2013	8.0	1.5	13.1	15.5	-	Only 2 anglers contacted
2014	1.0	1.0	13.5	-	-	Only 2 anglers contacted

LMB = largemouth bass, RB = rainbow trout, UK = unknown, species not noted

Volunteer angler drop-box creel data forms were completed by 22 anglers, who expended 101.5 hours to catch 284 fish, of which 245 were rainbow trout and 39 were largemouth bass. The average catch rate was 13 fish/angler with a harvest rate of 0.22 fish/angler. In 2014, 245 rainbow trout were caught and measured, of those, seven or three percent were below 12 in TL, 85 or 35% were between 12 and 16 in TL, and 153 or 62% were above 16 in TL. Thirty-nine largemouth bass were caught and measured on Dacey Reservoir, of those, 16 or 41% were less than 12 in TL, 13 or 33% were between 12 and 14 in TL, and six or 15% were greater than 14 in TL. Harvest and catch rates calculated from the volunteer creel data is summarized in Table 14.

TABLE 14. Dacey Reservoir volunteer creel survey data, 2012-2014.

Year	# Fish caught	# Fish released	% Fish released	# Fish kept	% Fish kept	fish/angler		fish/hour	
						Catch	Harvest	Catch	Harvest
2012	257	195	76	62	24	8.9	2.1	2.1	0.51
2013	127	103	81	24	19	7.1	1.3	1.3	0.25
2014	284	270	95	14	5	13	0.64	2.8	0.12

Electroshocking surveys were not conducted on Dacey Reservoir in 2014 due to electroshocking boat and area biologist availability. The trophy regulations governing rainbow trout are such that it is very difficult to creel for rainbow trout because most rainbow trout are released immediately after capture. Hook-and-line surveys targeting rainbow trout were used throughout the year to compensate for the lack of rainbow trout in the creel. Forty-five rainbow trout were caught in 22.25 hours for a catch rate of two fish per hour. Rainbow trout averaged 16 in TL, which represents an excellent size for a trophy fishery. Trophy harvest regulations for Dacey Reservoir were developed in 2009 and put into effect in March 2010. Table 15 summarizes population sampling on Dacey Reservoir.

Data on largemouth bass from the creel and population surveys was used to calculate  $W_r$  and PSD. Largemouth bass sampled in Dacey Reservoir had a mean  $W_r$  value of 83.4, which was down from last year's 90.36, but still indicated excellent health. The PSD value for 2014 was not applicable due to a small sample size.

TABLE 15. Electroshocking and hook-and-line survey data for Dacey Reservoir, 2010-2014.

Year	#		Sampling Hours	Fish/Hour	Avg. total length (in)		Max total length (in)	
	RB	LMB			RB	LMB	RB	LMB
2010	13	11	0.9	26.7	17.5	12.0	19.0	14.0
2011	12	38	1.5	33.3	14.0	12.0	21.0	15.4
2012	4	31	0.95	37	15.0	11.2	18.0	15.0
2013*	29	13	28.25	1.5	17.7	12.8	21.0	15.0
2014*	45	2	22.25	2.1	16	12	20.5	12

\*note: hook-and-line surveys

In 2014, 10,200 rainbow trout averaging 7.3 in TL were stocked into Dacey Reservoir. Table 16 summarizes trout stocking on Dacey since 2004.

TABLE 16. Total number, weight, and average total length of rainbow trout stocked into Dacey Reservoir, 2004 -2014.

Year	# Rainbow trout	Total weight (pounds)	Average total length (in.)
2004	3,002	435	7.0
2005		No Trout Stocking	
2006	10,135	2,100	8.1
2007	2,040	600	9
2008	8,815	1,550	7.0
2009	4601	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	2550	8.5

## MANAGEMENT REVIEW

The sport fishery at Kirch WMA seems to be doing well. Overall health of largemouth bass seems to be excellent and the overall size of largemouth bass being caught is up from last year. The PSD is in the 70% range for all the reservoirs. A regulation

change for the management area will be explored in 2015 to try and increase that percentage. A concerted effort to contact more anglers to increase sample size in the creel will be done in 2015. Black crappie has been introduced illegally to the management area. It is not known when this occurred, but it is showing up in population and creel surveys on 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 be done in 2015 to assess population and size structure. The average size of rainbow trout stocked into all reservoirs was about the same in 2014 compared to 2013. A larger average size of fish is recommended for stocking in spring when fishing pressure increases. It is not as important for fall stocking since fish are able to grow throughout the winter. Dacey Reservoir is now being managed as a trophy fishery; therefore average fish size being stocked is more desirable at nine inches total length or larger.

### **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.
- Implement an in-depth evaluation of the black bass fishery in Kirch WMA reservoirs to evaluate the efficacy of and need for existing restricted harvest regulations and to provide better information on the current status and condition of the fishery to help identify and develop reservoir management strategies.
- 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 rainbow trout overwintering growth and survival, and warm-water community structure and recruitment.
- Evaluate existing and historical data on the black bass population in the reservoirs and identify possible changes in bass harvest regulations that would benefit the fishery.
- Evaluate the trophy trout regulation for Dacey Reservoir.

- Identify current conditions in Dacey Reservoir using hook-and-line and electroshocking surveys.
- Stock up to 5,000 nine inches total length 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.

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