

NEVADA DIVISION OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

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2012

Kirch Wildlife Management Area
SOUTHERN REGION



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

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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, 2012 through December 31, 2012

SUMMARY

Random creel surveys were conducted during 2012 in conjunction with other activities on the Kirch Wildlife Management Area (KWMA). There were 19 anglers contacted throughout the KWMA. The 2012 combined catch rate for all five reservoirs and all sport fish species was 4.26 fish per angler and 2.2 fish per angler hour. The species of fish harvested and observed in the creel or reported by anglers were rainbow trout, *Oncorhynchus mykiss*, 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 were used to collect voluntary information from anglers who were not contacted by a creel clerk. Drop-boxes collected 102 survey forms in 2012. Volunteer data showed there were 1,118 fish caught with 820 (73%) of those fish reported as released. The combined catch rate for the four reservoirs was 11 fish per angler and 2.3 fish per hour, while the harvest rate was 2.9 fish per angler and 0.7 fish per hour.

Spring electroshocking surveys were conducted with the help of KWMA personnel. Dacey, Cold Springs, and Haymeadow reservoirs were electroshocked. Adams-McGill reservoir was not sampled due to not having the shocking boat available.

Rainbow trout were stocked into Cold Springs, Haymeadow, and Adams-McGill reservoirs in the spring and fall. Total rainbow trout stocked into Adams-McGill reservoir were 12,160, which averaged 9.0 in. A total of 38,416 rainbow trout averaging 8.9 in were stocked into Cold Springs Reservoir. The total rainbow trout stocked into Haymeadow reservoir was 45,394, which averaged 8.8 in. An additional 5,100 fish at 8.7 in were stocked into Dacey Reservoir.

Monitoring was conducted for quagga mussels, *Dreissena bugensis*, on all four reservoirs. Visual and tactile transects were negative for adult mussels. Plankton tows to sample for mussel larvae or "veligers" also came up negative. Efforts to coordinate reservoir water management were maintained with KWMA 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 the KWMA 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-seventies (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 white crappie, *Pomoxis annularis*, are believed to have been introduced illegally.

OBJECTIVES AND APPROACHES

KWMA 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 KWMA reservoirs.
- Maintain volunteer angler drop-boxes at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.
- Coordinate water management and reservoir management needs with the KWMA manager and update the fisheries management sections of the KWMA Conceptual Management Plan (CMP) in cooperation with the KWMA 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.

KWMA Black Bass Evaluation

Objective: Describe the current structure and condition of the KWMA largemouth bass fishery and examine if changes are needed in existing 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, Adams-McGill reservoirs to assess 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 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 bass harvest regulations that would benefit the fishery.

Dacey Reservoir Trophy Fishery Evaluation

Objective: 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 3,000 rainbow trout annually at a minimum size of 9 in during late fall.
- Conduct an electroshocking survey annually in the spring to evaluate age structure and species composition of the sport fishery.
- Collect basic water quality data biannually (April and October) to evaluate the potential effects of waterfowl, water management strategies.
- 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

Creel Surveys

Random creel surveys were conducted in conjunction with other activities on the KWMA.

Electroshocking Surveys

Two nights of spring electroshocking were completed at Dacey, Adams-McGill, Cold Springs, and Haymeadow reservoirs to assess trout overwintering growth and survival, and other warm-water species population structure and recruitment.

Quagga Mussel Monitoring

Early detection monitoring for veliger quagga mussels was conducted using net tows at one site in spring and fall at Haymeadow, Cold Springs, and Adam-McGill reservoirs. Strategies to prevent introduction or reduce spread of quagga mussels through signage, information delivery, and angler/boater contacts were implemented.

FINDINGS

Kirch WMA General Sport Fisheries Management

Adams-McGill Reservoir

Random creel surveys were conducted in conjunction with other activities on the KWMA. Five anglers were contacted at Adams-McGill in 2012. Table 1 summarizes contact creel data from 1996 to present.

Volunteer angler drop-box data forms were completed by 18 anglers, who expended 81 hours to catch 290 fish, of which, 121 were trout and 169 were largemouth bass. The average reported catch was 16 fish per angler with a reported harvest of 4.3 fish per angler. In 2012, 91 rainbow trout were measured and recorded, of those, 24 or 26% were below 12 in, 50 or 55% were between 12 and 16 in, and 17 or 19% were above 16 in. A total of 159 largemouth bass was measured and recorded on Adams-McGill Reservoir, of those, 112 or 70% were less than 12 in, 34 or 21% were between 12 and 14 in, and 13 or 10% were above 14 in. Harvest and catch rates calculated from the volunteer creel data are summarized in Table 2.

A total of 12,160 rainbow trout were stocked into Adams-McGill Reservoir in 2012 and the average size was 9.0 in. Table 3 summarizes trout stocking since 2003.

Table 1. Adams-McGill Reservoir Contact Creel Data Summary, 1996-2012.

Year	Catch rates		Average Length (in)	Comments
	Fish/Ang.	Fish/Hr.		
1996	3.6	0.8	11.7	none
1997	3.6	0.9	11.2	none
1998	3.6	1.4	11.8	none
1999	1.8	0.4	11.9	none
2000	2.2	0.5	10.5	none
2001	No creel data available			
2002	April started dewatering of reservoir for habitat modifications – no creel			
2003	Reservoir dewatered in 2003 – no creel			
2004	2.3	1.3	13.5 RB 12.5 LMB	Creel was conducted twice and contacted 2 parties fishing from shore.
2005	2.3	1.0	14.0 RB 11.8 LMB	Most anglers after trout
2006	2.2	0.9	15.0 RB 11.9 LMB	Most anglers fly fishing for trout
2007	No contact creel census was conducted by KWMA personnel			
2008	No data			
2009	No data			
2010	2.75	2	RB 15 LMB 11	none
2011	No contacts			
2012	6.2	3.54	RB 12.7 LMB 11.0	Most anglers after trout

RB = rainbow trout, LMB = largemouth bass

Table 2. Adams-McGill Reservoir Volunteer Creel Survey Data, 1996-2012.

Year	Total Fish Captured	No. Fish Released	% Fish Released	No. Fish Harvested	% Fish Harvested	Fish/angler		Fish/hour	
						Catch	Harvest	Catch	Harvest
1996	254	208	82	46	18	N/a	N/a	N/a	N/a
1997	376	324	86	52	14	14.5	2.0	3.1	0.4
1998	65	56	86	9	14	10.8	1.5	2.5	0.4
1999	52	36	69	16	31	5.8	1.8	1.3	0.4
2000	97	53	55	44	45	9.7	5.3	1.4	0.8
2001	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
2002	Reservoir draw-down began Reservoir placed off limits								
2003	Reservoir remains off limits during renovation of Reservoir Trout stocked fall 2003								
2004	49	35	71	14	29	8.3	2.3	4.9	1.4
2005	105	75	73	30	28	9.3	2.4	4.5	1.3
2006	235	134	57	101	43	8.5	2.0	3.5	1.0
2007	117	63	53.8	54	46.1	3.0	2.5	0.7	0.6
2008	No data								
2009	327	327	100	0	0	65.4		9.6	0
2010	37	30	81	7	19	12.3	2.33	3.22	1.6

2011	95	42	44	7	1	7.9	1	1.54	0.1
2012	290	213	73	77	27	16	4.3	3.6	1.0

N/D = No Data

Table 3. Adams-McGill Reservoir Rainbow Trout Stocking Summary, 2003-2012.

Year	No. trout	Total weight (lbs.)	Average TL (in)
2003	16,582		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		9.0
2010	8,120	1,400	7.6
2011	8,160	1,700	8.0
2012	12,160	3,500	9.0

Fixed substrate samplers were maintained and visual/tactile transects were completed to detect adult quagga mussel in June and September. No adult mussel presence was noted. Plankton tows to identify mussel veliger occurrence were completed in June and tested negative. KWMA personnel monitored for presence and activity of avian predators (cormorants), but did not identify adult or nesting birds at levels of concern that would require a specific management response.

Cold Springs Reservoir

Random creel surveys were conducted during 2012 in conjunction with other activities on the KWMA. No anglers were contacted on Cold Springs Reservoir in 2012. Table 4 summarizes contact creel data since 1996.

Volunteer angler drop-box data forms were completed by 17 anglers who expended 81 hours to catch 155 fish, of which 137 were rainbow trout. The average reported catch was 9.1 fish per angler with a reported harvest of 2.6 fish per angler. In 2012, 135 rainbow trout were measured and recorded and of those, 37 or 27% were smaller than 12 in, 82 or 61% were between 12 and 16 in, and 16 or 12% were larger than 16 in. Sixteen largemouth bass were measured and recorded on Cold Springs Reservoir and of those, 12 or 67% were smaller than 12 in and 4 or 33% were larger than 12 in. Harvest and catch rates calculated from the volunteer creel data are summarized in Table 5.

Fixed substrate samplers were maintained and visual/tactile transects completed for adult quagga mussel detection in June and September. No adult mussel presence was noted. Plankton tows to identify mussel veliger occurrence were completed in June and came back negative. Wildlife Management Area personnel monitored for presence and activity of avian predators (cormorants), but did not detect adult or nesting birds at levels of concern that would require a specific management response.

Cold Springs Reservoir was stocked with 38,416 rainbow trout in 2012, which averaged 8.9 in. Table 6 summarizes trout stocking since 1996.

Table 4. Cold Springs Reservoir Contact Creel Data Summary, 1996-2012.

Year	Days Creel	# Anglers	Total hours	# Fish		Avg. Length (in)		Fish/Angler	Fish/ Hour
				RB	LMB	RB	LMB		
1996	20	127	471.5	177	2	14.2	11.0	2.2	0.6
1997	22	102	361.5	153	0	14.4		1.5	0.4
1998	7	50	199.5	59	54	13.7	13.0	2.3	0.6
1999	11	143	643.5	171	36	13.1	11.5	1.5	0.2
2000	39	308	1,064	329	109	13.9	11.7	1.2	0.4
2001	No data								
2002	5	17	9.5	7	4	N/D	N/D	0.7	0.4
2003	10	70	94	219	0	N/D	N/D	3.1	2.3
2004	5	15	66	28	5	13.9	12.2	2.2	0.5
2005	10	30	50	50	24	N/D	N/D	2.5	0.9
2006	24	48	144	95	10	N/D	N/D	2.2	0.7
2007	3	2	2.5	9		14	N/D	4.5	3.6
2008	No data								
2009									
2010	-	9	17	23		13.1		2.7	1.4
2011	No contacts made in 2011								
2012	No contacts made in 2012								

RB = rainbow trout, LMB = largemouth bass

Haymeadow Reservoir:

Random creel surveys were conducted in conjunction with other activities on the KWMA. A total of 2 anglers were contacted, fishing for a total of 2.75 hours. These anglers caught 12 fish, all rainbow trout. The catch rate for these two anglers averaged 6 fish per angler and 4.36 fish per hour. Table 7 summarizes contact creel data from 1996 to present.

Volunteer angler data forms were completed by 38 anglers, who expended 153 hours to catch 416 fish, of which 326 were trout and 90 were largemouth bass. The average reported catch was 11 fish per angler with a harvest of 3 fish per angler. In 2012, 304 rainbow trout were caught, of those 107 or 35% were smaller than 12 in, 169 or 56% were between 12 and 16 in, and 28 or 10% were larger than 16 in. Eighty-seven largemouth bass were caught on Haymeadow reservoir, of those 60 or 69% were smaller than 12 in, 18 or 21% were between 12 and 14 in, and 9 or 10% were larger than 14 in. Harvest and catch rates calculated from the volunteer drop-box are summarized in Table 8. A total of 45,394 rainbow trout were stocked into Haymeadow Reservoir in 2012 that averaged 8.8 in. Table 9 summarizes trout stocking since 1996.

Table 5. Cold Springs Reservoir Volunteer Creel Survey Data, 1996-2012.

Year	Total fish caught	No. released	% Released	No. kept	% Kept	Fish per angler		Fish per hour	
						Catch	Harvest	Catch	Harvest
1996	194	79	41	115	59	9.2	5.5	3.0	1.8
1997	575	258	45	317	55	7.3	4.0	1.6	0.9
1998	798	425	53	373	47	9.3	4.3	2.0	0.9
1999	1,192	781	64	431	36	12.2	4.4	245.0	0.9
2000	939	468	50	471	50	11.1	5.5	2.0	1.0
2001					No data				
2002	329	223	68	106	32	6.1	4.1	1.6	0.5
2003	858	381	45	477	55	12.4	5.8	3.2	1.4
2004	386	183	47	203	53	10.2	5.3	2.3	1.3
2005	768	425	55	343	45	10.3	5.6	5.4	3.0
2006	801	415	52	386	48	8.8	4.4	2.8	1.4
2007	806	425	53	381	47	9.7	4.6	2.5	1.2
2008					No data				
2009	360	182	51	178	49	17.1	8.5	3.8	1.9
2010	220	80	36	140	64	12.2	7.8	2.3	1.5
2011	52	11	21	41	79	7.4	1.6	1.7	0.4
2012	155	110	71	45	29	9.1	2.6	1.9	0.6

Table 6. Cold Springs Reservoir Rainbow Trout Stocking Summary, 1996-2012.

Year	No. trout	Total weight (lbs.)	Average TL (in)
1996	39,167	14,384	9.4
1997	30,275	9,188	9.0
1998	26,030	8,398	9.4
1999	29,273	10,910	9.7
2000	28,024	9,069	9.3
2001	28,282	9,390	9.2
2002	29,327	7,795	8.7
2003	31,040	9,935	9.3
2004	31,561	7,477	8.6
2005	26,302	ND	7.6
2006	24,841	5,654	8.3
2007	14,167	17,645	9.6
2008	32,877	6,615	8.0
2009	12,415	6,825	9.4
2010	38,480	9,362	8.5
2011	38,224	12,000	9.2
2012	38,416	10,825	8.9

Table 7. Haymeadow Reservoir Contact Creel Survey Data Summary, 1996-2012.

Year	Days checked	Number anglers	Total Hours	Number Fish		Average Length (in)		Fish/ Angler	Fish/ Hour
				RB	LMB	RB	LMB		
1996	51	888	3436	1,583	46	14.7	11.8	1.8	0.5

1997	32	477	1636	639	78	14.0	11.9	1.6	0.4
1998	9	137	607	265	4	12.3	12.1	2.0	0.5
1999	11	156	684	130	99	12.8	12.2	1.5	0.3
2000	36	356	998.5	319	38	12.7	12.7	1.0	0.4
2001	No data								
2002	13	113	138	222	46			3.3	3.8
2003	10	94	62.5	215	6			2.4	3.5
2004	4	22	82.5	41	29	12.1	6.5	3.2	0.8
2005	40	60	141	70	50	11.5	11.5	2.0	0.8
2006	24	223	618	327	108			2.0	0.7
2007	No contact creel completed								
2008	No data								
2009	No data								
2010	-	17	31.5	90	49	12.6	12.5	8.2	4.4
2011	-	3	9.3	0	10	12.6		3.3	1.1
2012	-	2	2.8	12	0	12.9		6	4.4

RB = rainbow trout, LMB = largemouth bass

Table 8. Haymeadow Reservoir Volunteer Creel Survey Data for All Species, 1996-2012.

Year	Total fish caught	No. Released	% Released	No. kept	% Kept	Fish per angler		Fish per hour	
						Catch	Harvest	Catch	Harvest
1996	744	474	64	270	36	10.3	3.8	2.1	0.8
1997	1,915	1,095	57	820	43	9.5	2.7	1.6	0.7
1998	1,639	1,004	61	635	39	10.0	3.9	2.0	0.8
1999	1,289	796	62	493	38	11.4	4.4	2.5	0.9
2000	1,087	677	62	410	38	11.1	4.2	2.2	0.8
2001	1,335	809	61	526	39	10.5	3.8	2.1	0.8
2002	1,877	1,373	73	504	27	16.5	3.5	4.2	0.9
2003	810	595	73	215	27	12.6	5.8	2.8	0.9
2004	434	245	66	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	329	47.1	12.3	5.8	2.8	1.3
2008	No data								
2009	237	182	77	51	22	19.8	4.3	4.1	0.9
2010	216	147	68	69	32	10.8	3.5	2.4	0.8
2011	113	62	55	51	45	9.4	4.3	1.9	0.8
2012	416	302	73	114	27	11	3	2.7	0.8

Table 9. Haymeadow Reservoir Rainbow Trout Stocking Summary, 1996-2012.

Year	No. trout	Total weight (lbs.)	Average TL (in.)
1996	31,938	10,050	9.3
1997	32,083	9,685	9.0
1998	27,984	8,755	9.5

1999	35,174	13,076	9.8
2000	35,085	11,038	9.3
2001	33,049	9,970	9.0
2002	40,709	11,720	8.9
2003	32,271	9,440	9.0
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	9.2
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

Fixed substrate samplers were maintained and visual/tactile transects completed for adult quagga mussel detection in June and September. No adult mussel presence was noted. Plankton tows to identify mussel veliger occurrence were completed in June and came back negative. Wildlife Management Area personnel monitored for presence and activity of avian predators (cormorants), but did not detect adult or nesting birds at levels of concern that would require a specific management response.

Kirch WMA Black Bass Evaluation

Adams-McGill Reservoir

Population surveys were not conducted on Adams-McGill Reservoir in 2012 due time constraints and availability of the electroshocking boat. Table 10 summarizes population sampling on Adams McGill Reservoir from 1996 to present.

Data on largemouth bass from creel and population surveys was used to calculate relative weight (W_r), an index of condition, and Proportional Stock Density (PSD), an index on the percentage of fish of quality size (12 in 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 from Adams-McGill Reservoir had a mean W_r value of 83.38, which is lower than last year (96.25). It still suggests that fish were in good health and utilized available forage. The PSD value in 2012 was 35%, which was higher than last year at 21%.

Table 10. Adams-McGill Reservoir Population Sampling Data Summary, 1996-2012.

Year	# Fish	Time/Hrs	Fish/hour	Avg. Length	Max length
1996	71	1.50	47.33	9.52	13.20
1997	118	1.50	78.67	6.90	12.75
1998	113	0.51	223.19	7.72	12.25

1999	124	0.67	185.07	7.79	14.25
2000	218	0.69	317.69	8.77	12.50
2001	Position vacant – no data				
2002	Reservoir dewatered no survey				
2003	Reservoir dewatered no survey				
2004*	40	0.50	80.0	7.5	13.1
2005	Broken boat no sampling was done this year				
2006	Broken boat no sampling was done this year				
2007	107	0.44	243.18	8	19
2008	No sampling was completed				
2009	No sampling was completed				
2010	RB 28	0.92	44.6	RB 14.4 in	18.1 in
	LMB 13			LMB 11.3 in	13 in
2011	RB 3	1.16	28.44	RB 9.7	RB 12
	LMB 28			LMB 9.1	LMB 14
2012	No sampling was completed				

Cold Springs Reservoir

Electroshocking surveys were conducted in May with the aid of area personnel for a total effort of 0.62 hours of shocking time and a catch rate of 68 fish per hour. Rainbow trout comprised 45 percent of the sample and showed an average size of 10.8 in, which represented good overwinter growth when compared to the average stocked size of 9.2 in. Largemouth bass averaged 10.3 in, which is down from the 2011 average of 12.1 in. Table 11 summarizes population sampling on Cold Springs Reservoir from 1996 to present.

Data on largemouth bass from angler 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 93.63, which was lower than last year and indicates excellent health. The PSD value in 2012 was 21%.

Haymeadow Reservoir

Electroshocking surveys were conducted in May with the aid of area personnel for a total effort of 0.6 hours of shocking time and a catch rate of 98 fish per hour. Rainbow trout comprised 15 percent of the sample and showed an average size of 12.8 in, which showed good overwinter growth compared to the 9.1 in average when stocked. Largemouth bass averaged 9.3 in, which was down from 2010 (average 10.9 in). Table 12 summarizes population sampling at Haymeadow Reservoir from 1996 to 2012.

Table 11. Cold Springs Reservoir Electroshocking Survey Data, 1996-2012.

Year	#				Fish/hour	Avg. Length (in)				Max. Length			
	LMB	RB	BB	C		LMB	RB	BB	C	LMB	RB	BB	C

1996	No sampling done during 1996												
1997	37	41			5.4	12.6		11.6		16.3			
1998	65	25			170.5	8.4	12.4			13.5	18.0		
1999	47	13	9		269.6	9.3	13.3			12.3	16.0		
2000	66	40	7		185.3	9.2	11.7	11.5		13.0	16.0	13.8	
2001/2002	No data												
2003	46	13	12		145.7	8.9	9.0	11.3		13.4	14.4	15.0	
2004*	34	3	10		141.0	5.2	13.4	11.3		14.5	17.6	13.0	
2005/2006	No sampling – equipment failures												
2007	62	21	1		210	12.5	11.6			15	20		
2008	No sampling was completed												
2009	No sampling was completed												
2010	5	17	2	5	48.3	13.9	11.4	8	13.3	16.2	15.5	8.2	13.5
2011	13	3	2	4	22.4	12.1	12	12.5	9	19	14	13	10
2012	20	19	2	1	68	10.3	10.8	11.4		12.4	14.5	12	8

LMB = largemouth bass, RB = rainbow trout, BB = black bullhead, C = crappie, *2004 survey was conducted in the fall and should not be compared to the spring

Table 12. Haymeadow Reservoir Population Sampling Data Summary, 1996-2012.

Year	#				Sampling time (hours)	Fish/Hour	Avg. length (in)				Max. Length (in)			
	LMB	R	BB	W			LMB	R	BB	W	LMB	RB	BB	W
1996	20	85	1		1.0	106.0	10.3	10.9		11.8	19.5	10.0		
1997	44	23	6		0.9	80.2	10.0	3.0	9.7	13.5	17.8	12.1		
1998	28	43	13		0.5	264.4	10.5	3.1	11.0	18.0	16.0	12.0		
1999	63	10	38		0.4	280.4	13.8	1.0	11.0	14.6	16.0	13.1		
2000	51	33	62		0.8	119.2	11.1	1.1	11.8	15.5	19.5	13.8		
2001	No data													
2002	No data													
2003	3	45	3		1.0	51.0	14.4	0.2	12.0	30.8	11.2	13.5		
2004	15	0	7		0.3	96.0	6.8	0	10.8	14.7	0	12.8		
2005	No sampling – equipment failures													
2006	No sampling – equipment failures													
2007	11	20	2		0.5	254.0	10.9	1.4	11.1	16	17	11.5		
2008	No sampling was completed													
2009	No sampling was completed													
2010	7	34	9		1.8 nn	27.3 f/nn	10.9	1.4	13.2	15.1	15.2	14.4		

2011							No sampling								
2012	42	10	5	2	0.6	98	9.	12.8	12.	6.0	21.5	18.	13.	7.0	
							3		0			0	0		

LMB = largemouth bass, RB = rainbow trout, BB = black bullhead, WC = white crappie, nn = net night, f/nn = fish per net night

Data on largemouth bass from angler 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 94.4, which was lower than the 96.68 from last year. It still indicates excellent population health. The PSD value in 2012 was 27%.

Dacey Reservoir Trophy Fishery Evaluation

Random creel surveys were conducted in conjunction with other activities on the KWMA. A total of 12 anglers were contacted, fishing for a total of 25.5 hours. These anglers caught five largemouth bass and 33 rainbow trout. Anglers did not harvest any fish from Dacey Reservoir in 2012. The average reported angler catch rates were 1.5 fish per hour and 3.2 fish per angler. Table 7 summarizes contact creel data since 1996.

Table 13. Dacey Reservoir Creel Survey Data Summary, 1996-2012.

Year	Catch Rates		Avg. Length		Comments
	Fish/Angler	Fish/Hour	Inches	mm	
1996	0.8	0.4	13.3	337	First creel since 1990
1997	6.3	0.8	11.7	298	Bass tournament
1998	3.5	0.5	12.0		Bass tournament
1999	2.8	0.4	12.4	316	Bass tournament
2000	1.5	0.3	12.5	317	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	4.6	LMB 12.1	307	No trout in the creel
2011	2.4	1.5	RB 15.5	394	Only 4 bass in the creel.
			LMB 13.0	330	
2012	3.2	1.5	RB 17.3	439	Only 5 bass in the creel
			LMB 10.6	269	

LMB = largemouth bass, RB = rainbow trout

Volunteer angler creel forms were completed by 29 anglers, who expended 121.5 hours to catch 257 fish. there were 103 trout and 154 were largemouth bass caught. The average reported angler catch rate was 8.9 fish per angler, with a reported harvest of 2.1 fish per angler. In 2012, 99 rainbow trout were caught, of those 13 or 13% were smaller than 12 in, 41 or 41% were between 12 and 16 in, and 45 or 45% were larger than 16 in. Anglers caught 141 largemouth bass, of those 81 or 57% were smaller

than than 12 in, 49 or 35% were between 12 and 14 in, and 11 or 10% were larger than 14 in. Harvest and catch rates calculated from the volunteer creel data is summarized in Table 14.

Data on largemouth bass from angler creel and population surveys were used to calculate W_r and PSD. Largemouth bass showed had a mean W_r value of 94.57 and a PSD value of 37%.

Table 14. Dacey Reservoir Volunteer Creel Survey Data, 2012.

Year	Total fish caught	No. Released	% Released	No. kept	% Kept	Fish per angler		Fish per hour	
						catch	harvest	catch	harvest
2012	257	195	76	62	24	8.9	2.1	2.1	0.5

Electroshocking surveys were conducted in May with the aid of area personnel for a total effort of 0.95 hours of shocking time for a catch rate of 37 fish per hour. Rainbow trout comprised 11 % of the sample and showed an average size of 15 in, which represented excellent overwinter growth when compared to the average stocked size of 8.3 in. Largemouth bass averaged 11.2 in, which was the highest of all four reservoirs on the KWMA. Trophy harvest regulations for Dacey Reservoir were developed in 2009 and went into effect in March 2010. Table 15 summarizes population sampling on Dacey Reservoir.

In 2012, 5,100 rainbow trout averaging 8.7 in were stocked into Dacey Reservoir. Table 7 summarizes trout stocking since 2004.

Table 15. Dacey Reservoir Population Sampling Data Summary.

Year	#		Sampling hrs.	Fish/hr.	Ave. Length (in)		Max. Length (in)	
	RB	LMB			RB	LMB	RB	LMB
2011	12	38	1.5	33.3	14.0	12.0	21.0	15.4
2012	4	31	1.0	37.0	15.0	11.2	18.0	15.0

MANAGEMENT REVIEW

The sport fishery at the KWMA seems to be doing well. Overall health of largemouth bass population seems to be good, but the size of bass being caught is small. The PSD is only in the 20-30% range for all the reservoirs. A regulation change for the KWMA will be explored in 2013 in attempt to increase that percentage. A concerted effort to contact more anglers to increase sample size in the creel will be done in 2013. The average size of trout stocked into all reservoirs was larger in 2012, particularly in Cold Springs and Haymeadow reservoirs, which received 9 in fish in the spring. A larger average size of stocked fish is recommended in spring when fishing pressure increases. Larger sizes are 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 so stocking a larger average trout is necessary.

Table 16. Dacey Reservoir Trout Stocking Summary, 2004-2012

Year	No. trout	Total weight (lbs.)	Average TL (in.)
2004	3,002	435	7.0
2005	Trout releases not scheduled this year		
2006	10,135	2100	8.05
2007	2,040	600	9
2008	8,815	1,550	6.95
2009	4601	2,000	10.3
2010	5320	1400	8.7
2011	5280	1200	8.3
2012	5100	1500	8.7

RECOMMENDATIONS

- Conduct a general fisheries assessment through opportunistic angler contacts at all four KWMA reservoirs.
- Maintain volunteer angler drop-boxes at Dacey, Adams-McGill, Haymeadow, and Cold Springs reservoirs.
- Coordinate water management and reservoir management needs with the KWMA manager and update the fisheries management sections of the KWMA CMP in cooperation with the KWMA manager as required.
- Continue implementation of bird predation control through management of unoccupied 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 prevent spread of quagga mussels through signage, information delivery, and angler/boater contacts.
- Implement an in-depth evaluation of the black bass fishery in KWMA 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 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.
 - 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 gillnet and electroshocking surveys.
 - Stock up to 5,000 nine in or longer rainbow trout in late fall every year.
 - Conduct an electroshocking survey annually in the spring to evaluate age structure and species composition of the sport fishery.
 - Collect basic water quality data semi-annually to evaluate the potential effects of waterfowl, water management strategies.
 - Collect angler success and satisfaction data through direct contact creel surveys semi-monthly and maintain a volunteer angler drop-box to provide supplemental angler use information.

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