

NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORTS

F-20-53
2017

Mason Valley Wildlife Management Area Ponds

WESTERN REGION



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

Table of Contents

<u>Contents</u>	<u>Page</u>
SUMMARY	1
BACKGROUND	1
OBJECTIVES	2
PROCEDURES	2
FINDINGS	3
MANAGEMENT REVIEW	10
RECOMMENDATIONS	12

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

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

SUMMARY

Hinkson Slough remained near or at full capacity throughout the year. Triploid grass carp have been effective in reducing aquatic vegetation since their introduction. Since summertime water temperatures and turbidity (partly due to common carp) have increased during recent years, survival of stocked rainbow trout has been low. Largemouth bass fishing has improved and several fish have been entered into the trophy fish program during the past three years. Hinkson Slough received most angling pressure within Mason Valley Wildlife Area (MVWMA). During 2014 and 2015, anglers reported dense aquatic vegetation impeding movement of float tubes and pontoon boats during summer; however, during 2016 and 2017 no complaints were received. This suggests grass carp have been effective at reducing the amount of problematic vegetation.

Angler use at North Pond increased from 2012 to 2016 and anglers reported that most largemouth bass were from 11 to 14 inches. In 2015, dense aquatic vegetation began to once again interfere with shore and boat angling; however, since 2016, very little aquatic vegetation has been observed. The drop-box showed largemouth bass catch rate increased to well above the ten-year average and satisfaction ratings have increased suggesting more anglers are satisfied. Channel catfish angling has also increased and many have been reported larger than 18 inches.

Fort Churchill Cooling Pond (FCCP) has shown above average angler use and catch rates since 2015. The power plant that historically warmed the pond in winter shut down causing ice coverage to be significant (>50%) over the past three winters. Rainbow trout were stocked, but only a few were caught this year. Largemouth bass catch rates and sizes from the drop-box survey during 2016 to 2017 exceeded that observed before the power plant shutdown. It is unknown whether this reflected an increasing largemouth bass population or there was more participation in the survey. Anglers targeting channel catfish continued to be successful during 2017, however, during 2015, catfish accounted for 39% of the fish reported on drop-box surveys, an all-time high.

BACKGROUND

Nevada Department of Wildlife (NDOW) has management responsibilities for Mason Valley Wildlife Management Area (MVWMA), which is located within the Walker River Basin and is owned by Nevada Division of State Lands. There are numerous

ponds throughout the area, and with the completion of Mason Valley Hatchery (MVH) in 1990, all ponds within the first series (i.e., Hinkson Slough and Bass, Crappie, and North ponds) receive hatchery effluent. Many other ponds receive water from the Walker River, via Joggles Ditch. The first series ponds (called the Fishing Series Ponds) are managed primarily for sport fish along with waterfowl. The Eastside Waterfowl Series Ponds are managed primarily for waterfowl; however, some fishing does occur late in the season.

Anglers can possess up to 15 warmwater fishes (e.g., bluegill, crappie, and catfish) with a maximum of two largemouth bass, minimum size of 14 in. Rainbow trout are stocked to provide early season fishing in some waters, while they provide angling throughout the entire season in Hinkson Slough. The harvest limit for trout is five, however, in Hinkson Slough, there is a two trout limit with a minimum total length of 16 in and only artificial lures are allowed. The angling season begins the second Saturday in February and ends September 30 in the Fishing Series Ponds, while the season lasts from August 16 to September 30 in the Eastside Waterfowl Series Ponds.

OBJECTIVES

- Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and mail-in angler questionnaire data.
- Monitor lake level and clarity when on-site.
- Stock 1,000 channel catfish in North Pond and 1,000 in FCCP.
- Monitor the common carp population in Hinkson Slough and North Pond and evaluate the need for a carp eradication project.
- Monitor fish in Hinkson Slough and North Pond through electroshocking at four established transects per water during one night in the fall after the close of the fishing season.
- Evaluate the need for aquatic vegetation management in North Pond and Hinkson Slough.
- Augment Hinkson Slough with 1,000 sterile grass carp.

PROCEDURES

Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and mail-in, angler questionnaire data. Information obtained from anglers included total time fished and number, size, and species of fish caught. Location (pond) of angler, place of residence, and type of bait or lure used was also recorded. Drop-boxes were located at Hinkson Slough, North Pond, and Fort Churchill Cooling Pond (FCCP) and were maintained and checked throughout the year. Mail-in, angler questionnaires were mailed at the end of 2016 to 30,000 anglers purchasing a Nevada fishing license. Data was received and summarized for number of anglers, days spent fishing, and number of fish caught.

Monitor water quantity (lake level) and water quality (clarity) when on-site. Visual observations were made at all fishing series ponds while on-site throughout

2017. Data included estimated depth of pond, estimated percentage of open water, and type of aquatic vegetation. During spring 2016, water level gauges were installed on all fishing series ponds and data was received from management area personnel monthly.

Stock 1,000 channel catfish in North Pond and 1,000 in FCCP. Fish were purchased from Colorado Catch and on June 8, 2017, 1,000 channel catfish were planted each in North Pond and FCCP. Channel catfish averaged 7.0 inches.

Monitor the common carp population in Hinkson Slough and North Pond and evaluate the need for a carp eradication project. The common carp population in Hinkson Slough was assessed concurrent to sport fish monitoring activities. Research was conducted to evaluate historical carp establishment and their effect on the sport fishery, particularly events leading to their eradication in 2001. Planning for their eradication has been postponed due to the results of the population monitoring conducted from 2014 to 2016 and changes in management strategies, which was designed to reduce carp from problematic abundances.

Monitor fish in Hinkson Slough through electroshocking at four established transects per water during one night in the fall after the close of the fishing season. Electroshocking was not completed at Hinkson Slough and North Pond during 2017 due to availability of the Smith-Root electroshocking boat. Generally, the electroshocker is set at 60 V pulsed DC at 20-30% of range and sampling occurs for approximately 10 min at three transects. Total time electroshocking is typically 0.5 hours and data recorded includes species of fish caught, length of fish, number of fish, electroshocker settings, sampling time, and general health of fish.

Evaluate the need for aquatic vegetation management in North Pond and Hinkson Slough. The percentage of rooted aquatic vegetation that covered each pond was estimated once during spring, summer, and fall. Areas typically used by boaters, float tubes, and kayaks were targeted as priority areas. Pond level and general water quality (clarity and temperature) was also monitored.

Augment Hinkson Slough with 1,000 sterile grass carp. No grass carp were planted during 2017. An evaluation of aquatic vegetation during the spring and summer was assessed and determined not to impede anglers or boating access. It appeared that the current grass carp population, combined with high water levels and reduced sunlight reaching the littoral zone (due to turbidity associated with the common carp disturbance), resulted in less rooted aquatic vegetation in deeper channels.

FINDINGS

Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and mail-in, angler questionnaire data. A total of 30 anglers were contacted during 2017 at MVWMA ponds and rainbow trout and largemouth bass comprised the majority of fish caught. Anglers at Hinkson Slough caught 63 rainbow trout at a rate of 1.19 fish per hour and with an average size of 11.64

in. About 9.5% of the trout were carryover from 2016 and showed a maximum size of 17.5 inches. No anglers targeting largemouth bass at Hinkson Slough were contacted during 2017, however, during 2016 they showed a catch rate of 2.84 fish per hour with an average size of 13.2 in. Thirteen anglers at North Pond spent 36 hours and caught 34 largemouth bass for a catch rate of 0.94 fish per hour with an average size of 11.46 in. No anglers were contacted at FCCP.

A total of 83 anglers filled out drop-box surveys during 2017. The catch rate (fish/hr) at Hinkson Slough and North Pond was well below the 10-year average. However, FCCP was slightly above the 10-year average (Table 1).

Table 1. Drop-Box Catch Rate Data.

	Fish/Day	Fish/Hour	No. Anglers
2017 Hinkson	3.00	0.63	22
10 yr average	9.86	1.87	50
2017 North Pond	2.05	0.65	21
10 yr average	4.11	1.1	15
2017 FCCP	5.25	1.31	40
10 yr average	4.17	1.03	27

The size of fish reported through angler drop-box surveys at Hinkson is shown in Figure 1. Most rainbow trout reported were from 8.0 to 11.0 and 16.0 to 18.0 in, comprising 34% and 25%, respectively, of total rainbow trout caught during 2017. Compared to 47% and 3% during 2016 and 34% and 4% during 2015. During 2017, anglers reported a 25% increase in rainbow trout over 14 inches (18% during 2016). During 2014, anglers reported one percent of rainbow trout over 16 in, during 2015 the percentage increased to 5%, and during 2016, the percentage increased to 6% however during 2017 it jumped to 25%. Even though the percentage of trout caught in the larger size classes has increased recently, the total number of trout reported has dropped dramatically (1,079 trout were reported during 2014, 851 during 2015, 165 during 2016 and only 32 during 2017). While these numbers seem to suggest fewer fish are being caught overall, participation in the drop-box survey has steadily declined and fewer anglers having “average days” are reporting their catch. A trend towards anglers catching fewer, but larger, fish may also be occurring.

Eighteen largemouth bass were reported in the drop-box survey during 2017 at Hinkson slough. During 2016, only seven were reported, one of which was greater than 18.0 in, compared to 26 in 2015 (three of which were over 18.0 in). During 2014, only seven largemouth bass were reported by anglers, however, three of those were over 18.0 in. Largemouth bass of all age classes (excluding young of the year) were represented in angler drop-box data for the second year in a row.

Angler surveys for Hinkson Slough showed satisfaction decreased for fishing experience and number of fish, however, satisfaction increased for size of fish (Table 2). Anglers at North Pond and FCCP showed an increase in satisfaction for all categories.

Satisfaction appears to correspond with current fish populations for each water body as well as catch rates observed during angler contacts, drop-box survey data, and mail-in angler questionnaire survey data.

Figure 1. Size of Rainbow Trout at Hinkson Slough; Drop-Box Results.

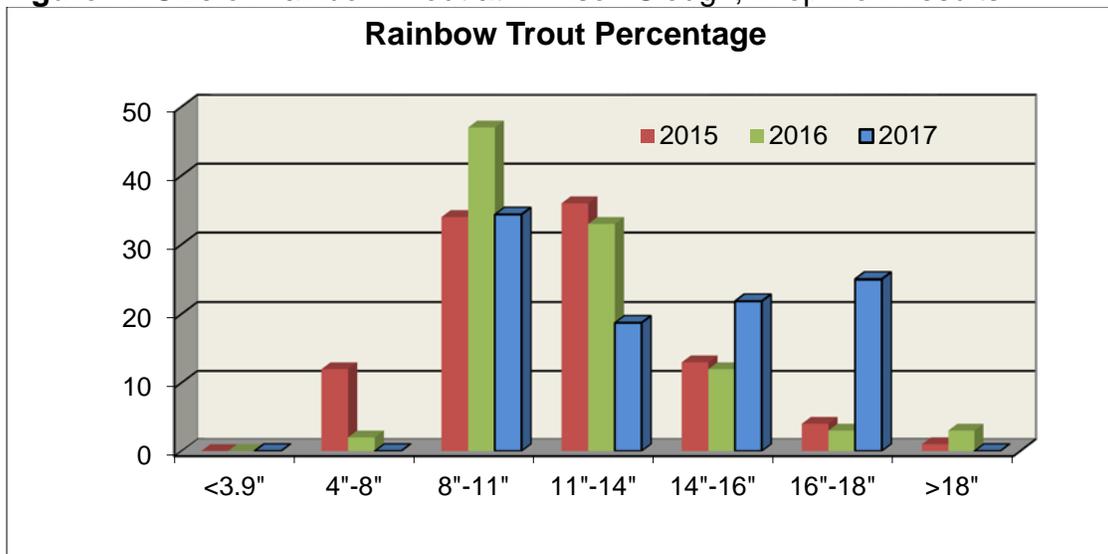


Table 2. MVWMA Ponds Angler Satisfaction Survey.

2016 FCCP							2017 FCCP						
	-2	-1	0	1	2	Total Ave.		-2	-1	0	1	2	Total Ave.
Experience	2	1	3	10	15	1.13	Experience	2		3	15	17	1.22
Size of Fish	2	2	3	11	12	0.97	Size of Fish			9	10	12	1.10
No. of Fish	3		6	10	13	0.94	No. of Fish	2	1	7	14	13	0.95
2016 Hinkson							2017 Hinkson						
	-2	-1	0	1	2	Total Ave.		-2	-1	0	1	2	Total Ave.
Fishing exp.	2	5	8	16	9	0.63	Fishing exp.	4	2	4	6	5	0.29
Size of Fish	4	5	10	15	5	0.31	Size of Fish			5	2	5	1.00
No. of Fish	9	8	7	10	6	-0.10	No. of Fish	7	1	6	2	3	-0.37
2016 North Pond							2017 North Pond						
	-2	-1	0	1	2	Total Ave.		-2	-1	0	1	2	Total Ave.
Fishing exp.	7	3	7	9	3	-0.07	Fishing exp.	4		6	5	6	0.43
Size of Fish	3	2	9	8	1	0.09	Size of Fish			4	2	6	1.17
No. of Fish	4	6	8	6	1	-0.24	No. of Fish	2		9	4	4	0.42

The annual Mail-in Angler Questionnaire Survey for 2016 showed the number of anglers at FCCP, North Pond, and Hinkson Slough were above the nine-year average and showed an increase since 2015. However, the number of days spent fishing were all below average and decreased from 2015 (Table 3). Angler use at Hinkson Slough from 2015 was more than double that observed in 2014, however, catch rates were lower than 2014 and well below average. Catch rates at North Pond were greater than double the seven-year average during 2014, however, during 2015 catch rates fell to slightly below average. For all ponds, more than an average number of people fished during 2015, however, catch rates were below average. This suggests that more anglers fished at Hinkson and North Pond; however, they spent fewer days fishing.

Table 3. Mail-in, Angler Questionnaire Data.

Fort Churchill Cooling Pond										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	9 YRAVE
No. Anglers	152	176	221	93	285	66	222	196	306	191
Days	644	548	1,098	222	1,566	283	498	542	432	648
Days/Angler	4.24	3.13	4.97	2.39	5.49	4.3	2.25	2.76	1.41	3.44
No. Fish	2,769	1,160	2,170	239	19,383	412	1,660	1,148	741	3,298
Fish/Day	4.3	2.12	1.98	1.08	12.38	1.46	3.33	2.11	1.72	3.39
Fish/Angler	18.22	6.59	9.82	2.57	68.01	6.27	7.49	5.84	2.42	14.14
Hinkson Slough										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	9 YRAVE
No. Anglers	181	255	461	61	363	165	128	307	347	252
Days	816	626	2,129	172	1,490	505	439	858	456	832
Days/Angler	4.51	2.45	4.62	2.82	4.1	3.06	3.43	2.79	1.32	3.23
No. Fish	6,153	1,344	9,740	926	7,490	3,027	3,568	1,931	1,941	4,013
Fish/Day	7.54	2.15	4.57	5.38	5.03	5.99	8.12	2.25	4.25	5.03
Fish/Angler	33.99	5.27	21.13	15.18	20.63	18.33	27.88	6.28	5.6	17.14
North Pond										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	9 YRAVE
No. Anglers	62	109	168	28	82	215	111	117	284	131
Days	1,699	303	444	51	324	1005	511	777	376	610
Days/Angler	27.4	2.78	2.64	1.82	3.95	4.67	4.42	6.64	1.32	6.18
No. Fish	4,743	714	465	301	1,137	4,745	7,350	2,254	204	2,435
Fish/Day	2.79	2.36	1.05	5.9	3.51	4.72	14.38	2.9	0.54	4.24
Fish/Angler	76.5	6.55	2.77	10.75	13.87	22.04	65.95	19.23	0.72	24.26

Size of largemouth bass reported for drop-box surveys at Fort Churchill Cooling Pond is shown in Figure 2. The frequency of fish reported in size classes above 14.0 in increased dramatically from 2015 to 2016, but seems to have come back to more normal sizes in 2017.

Figure 2. FCCP Drop-Box Largemouth Size.

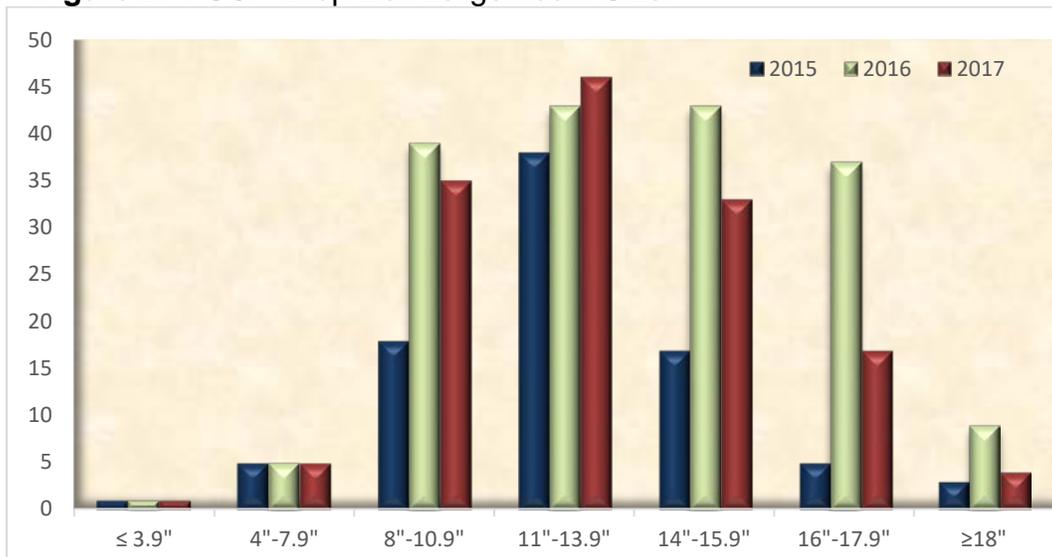


Table 1 shows catch rates at FCCP fell within the range of the Warmwater General Fishery Management Concept, which states “Angler catch rates should range between 0.25 and 0.75 fish per hour and 1.0 and 2.0 fish per angler day.” Available survey information (drop-box, contact creel, and mail-in questionnaire surveys) suggests that FCCP is meeting the management objectives. The Fort Churchill power plant has operated intermittently over the past couple years and water temperatures have subsequently dropped. The largemouth bass population appears to have several age classes and has shown an increase in the number of fish larger than 14.0 in. Trout were first stocked in 2012, however, the 2014 drop-box survey was the first year anglers reported catching trout and only two were reported during 2017.

According to drop-box, mail-in angler questionnaire, and angler contact surveys, North Pond also met the objectives of the Warmwater General Fishery Management Concept. Channel catfish was stocked in 2016 and 2017 (drought conditions led to no stocking during 2015) and, even though only four were reported in the drop-box survey during 2015 and none during 2016, thirteen were reported in 2017, four of which were larger than 18.0 in. Several largemouth bass anglers anecdotally reported catching over 30 fish per day from 2014 through 2017 with catch rates as high as 10 fish per hour. Angler use in North Pond was limited in 2010 and 2011 due to submergent aquatic vegetation that restricted angler access. Vegetation coverage was estimated in excess of 70% over the pond. An herbicide treatment project funded through NDOW’s Habitat Conservation Fee Account was initiated in 2012 through 2013. It resulted in reducing aquatic vegetation in several areas throughout North Pond, which greatly improved angler access. Angler use and success appeared to increase as a result and very little submergent aquatic vegetation was observed during 2016 and 2017.

Angler catch rates and size of fish reported through angler contacts, mail-in questionnaire, and drop-box surveys at Hinkson Slough suggest that the Coldwater Trophy Fishery Concept and the Warmwater Trophy Fishery Concept objectives were met during 2017. Comparing drop-box data and angler satisfaction data from 2017 to previous years have found a drop in angler satisfaction of fishing experience and number of fish caught. During 2017, though, an increase in satisfaction for size of fish was observed (Table 2). Trout numbers were low while largemouth bass numbers were high. Brown and cuttbow trout were stocked again in 2017 and these more aggressive fish may help by foraging on juvenile common carp. Four brown trout (11% of total trout) from 8.0 to 11.0 in were reported in 2017.

Monitor lake level and clarity when on-site. The Habitat Division at Mason Valley Wildlife Management Area manages water movement throughout the area, including the Fishing Series Ponds. Water quality and clarity remained good for the majority of 2017, however, since 2013, water clarity was noticeably reduced in Hinkson Slough and North Pond most likely due to the increasing abundance of common carp. Water levels remained high during most of 2017 at North Pond, FCCP, and Hinkson Slough. Bass and Crappie ponds were drained, excavated, and refilled during 2011, and in 2012, Bass Pond was stocked with 201 largemouth bass from Bilk Creek Reservoir. During 2014, water was diverted around Bass and Crappie ponds for

several months during regular pond maintenance (cattail and bulrush burning and removal), therefore, water levels were low. Since then, water levels have fluctuated, inciting the need for more coordination with MVWMA staff regarding pond level. Water level monitoring was initiated during 2016 and all pond levels increased from January through June (with one exception at Hinkson during February when pond levels dropped due to a hatchery “clean out” and water was not delivered).

Due to high nutrient loading from hatchery effluent, submergent vegetation can become an angling nuisance in many of the Fishing Series Ponds. Triploid grass carp were first introduced into Hinkson Slough during 2006, resulting in the improvement of channels previously choked by weeds. Triploid grass carp were additionally stocked in North Pond along with herbicide treatments to help control vegetation. Monitoring throughout the fishing season indicated these treatments were successful in reducing vegetation, even into 2014. During 2015, anglers reported an increase in submergent vegetation in Hinkson Slough and North Pond. However, during 2016 and 2017, vegetation appeared not be problematic and was even noticeably absent from North Pond. Therefore, no additional treatments occurred in 2017.

Stock 1,000 channel catfish in North Pond and 1,000 in FCCP. Table 4 shows stocking for MVWMA ponds during 2017 and Table 5 shows historical stocking from 2009 to 2016. No channel catfish were stocked in 2015 due to ongoing drought conditions in northern Nevada, but during 2016 and 2017, channel catfish were once again stocked. Both anecdotally and from the angler drop-box survey, fish larger than 18.0 inches were caught. Smaller catfish were also reported suggesting that either there was natural reproduction or anglers are catching bullheads and mistaking them for channel catfish. Bullheads have been observed in the past, but recent survey efforts have not documented them.

Monitor the common carp population in Hinkson Slough and North Pond and evaluate the need for a carp eradication project. No electroshocking survey was conducted in 2017 due availability of equipment. During previous surveys at Hinkson Slough, however, common carp numbers increased from four in 2011 to over 300 in 2012. There was an estimated 2,000 to 4,000 observed in 2013, but the number dropped to 12 during 2014 with no juvenile carp being caught. During 2015 and 2016, electroshocking surveys showed carp numbers remained low with only a few observed, however, the water clarity was poor.

Monitor fish in Hinkson Slough through electroshocking at four established transects per water during one night in the fall after the close of the fishing season. No electroshocking survey was conducted in 2017 due availability of equipment, however, during 2016, results were consistent with previous years from historical transects surveyed during the fall. Table 6 shows CPUE (number of fish caught per 10 min of electroshocking) for largemouth bass. When CPUE was high for fish larger than 18.0 in, it can roughly be traced back to a high abundance of juvenile fish 5- to 6-years prior, suggesting that largemouth bass in Hinkson requires 6- to 7-years of growth to reach 18.0 in. (approximately 4.0 lbs).

Table 4. MVWMA Stocking 2017.

Fort Churchill Cooling Pond				
Date	Species	Strain	Number	Size
6/8/2017	Channel Catfish	Colorado Catch	1,000	7
1/27/217	Rainbow	EAGLE LAKE	4,400	9.7
		Rainbow Total	4,400	9.7
		Catfish Total	1,000	7.0
Hinkson Slough				
Date	Species	Strain	Number	Size
4/21/2017	Brown	Sheep Creek	1002	9.8
6/6/2017	Brown	Sheep Creek	507	9.7
10/17/2017	Cuttbow	Marlette	1492	8.8
1/12/2017	Rainbow	Eagle Lake	1556	8.8
2/10/2017	Rainbow	Eagle Lake	408	9.7
3/10/2017	Rainbow	Eagle Lake	530	9.2
		Rainbow Total	2,494	9.2
		Cuttbow	1,492	8.8
		Brown	1,509	9.8
North Pond				
Date	Species	Strain	Number	Size
1/12/2017	Rainbow	EAGLE LAKE	3020	8.8
6/6/2017	Brown	Sheep Creek	507	9.7
6/8/2017	Channel Catfish	Colorado Catch	1000	7
		Rainbow Total	3,527	8.8
		Catfish Total	1,000	7.0
		Brown	507	9.7

Evaluate the need for aquatic vegetation management in North Pond and Hinkson Slough. Aquatic vegetation was not observed or reported as impeding angler access or creating issues for pond management during 2017. Therefore, no additional treatment to control vegetation was necessary.

Augment Hinkson Slough with 1,000 sterile grass carp. Aquatic vegetation was not observed or reported to be limiting angler access or creating issues for pond management during 2017. No additional grass carp were stocked in 2017.

Table 5. MVWMA Historical Stocking.

	Hinkson				North Pond				FCCP		
2016	Rainbow	2,050	10.0		Rainbow	2,973	10.0		Channel Catfish	1,000	6.0
	Cuttbow	2,061	9.2		Channel Catfish	1,000	6.0		Rainbow	4,566	9.6
	Brown	1,066	9.1								
2015	Species	Number	Size		Species	Number	Size		Species	Number	Size
	Rainbow	4,303	9.4		Rainbow	3,032	9.1		Rainbow	3,509	9.2
	Cuttbow	787	10.1		0	-	0.0		0	-	0.0
2014	Rainbow	6,976	9.7		Rainbow	9,478	9.8		Rainbow	3,180	9.8
2013	Species	Number	Size		Species	Number	Size		Species	Number	Size
	Rainbow	4,552	10.1		Rainbow	19,147	4.9		Rainbow	2,088	9.9
	Rainbow	7,799	4.5		Catfish	2,000	4.0		Catfish	2,000	4.0
2012	Rainbow	2,501	10.1		Rainbow	3,269	10.2		Rainbow	2,088	9.9
2011	Rainbow	5,502	10.0		Bowcutt	20,061	3.4		Channel Catfish	1,630	6.0
					Channel Catfish	1,630	6.0				
					Rainbow	2,046	10.0				
2010	Rainbow	3,592	9.2		Rainbow	1,995	10.3		Channel Catfish	4,288	7.0
	Rainbow	21,828	1.8		Rainbow	74,806	1.8				
					Grass Carp	1,500	10.5				
					Channel Catfish	8,701	7.0				
2009	Rainbow	3,022	10.9		Rainbow	4,000	10.4		No fish stocked		
	Grass Carp	218	12.0		Channel Catfish	373	18.2				
	Rainbow	87,840	0.9								

Table 6. Hinkson Slough CPUE (fish/10 min) Electrofishing Data – Largemouth bass.

Year	<4.9"	5-5.9"	6-7.9"	8-9.9"	10-11.9"	12-13.9"	14-15.9"	16-17.9"	18-19.9"	>20"	Total CPUE
2003	1.52	2.39	0.65								4.57
2004	24.40	4.40	0.00	1.60	0.80	0.80					32.00
2005	25.50	0.25	1.50	3.50	0.50						31.25
2006	10.67	9.00	1.67	0.67		2.33	1.00	0.33			25.67
2007	5.00	0.67	0.67	2.67	2.67	2.33	4.33	2.67			21.00
2009	15.11	0.21	4.04	1.91	0.85	0.64	0.64	0.64	0.21		24.26
2010	0.36	0.00	1.25	0.71	0.89	0.18	0.89			0.18	4.46
2011	0.49	0.49	3.41	0.73	2.93	2.44	1.71	0.98	0.98		14.15
2012	12.38	4.29	1.19	2.86	0.95	0.71	0.24	0.24			22.86
2013	1.76	0.88	17.65	3.82	3.53	1.76	0.29				29.71
2014	4.53	5.85	7.74	11.13	4.91	1.89	0.75	0.57	0.38	0.38	38.11
2015	2.00	2.00	7.67	6.00	6.33	3.00		0.33		0.33	27.67
2016	14.33	3.67	15.00	3.33	3.67	2.67	2.00	0.33	0.33	0.33	45.67

MANAGEMENT REVIEW

Several water management changes were implemented in 2008, which have since been adopted as regular management practices. During 2016, staff gauges were placed in the Fishing Series Ponds, which enabled managers more precise, real-time

input regarding pond levels. The most notable change to be implemented in the previous 10 years has been the management of water through Hinkson Slough. Since 2009, water has been maintained in Hinkson Slough throughout the summer, which has allowed for carryover of rainbow trout. Carryover of trout was similar annually since 2014 and was estimated to be 10% of stocked fish based on angler creel and drop-box data. However, in 2017, 25% of trout reported were greater than 16.0 in. The low percentage of trout carryover was likely a result of increased turbidity and temperature caused by carp. Trout fishing at Hinkson Slough remained popular and even though catch rates for large trout (>16.0 in) were low (10% during creel surveys conducted in 2016 and 9.5% during creel surveys conducted during 2017), anglers reported catching a few larger than 20.0 in. Angler satisfaction for fishing experience and number of fish was low during 2017, however, an increase in satisfaction for size of fish was observed.

Largemouth bass in Hinkson Slough showed limited spawning recruitment in the spring of 2010 and 2011, however, a successful spring spawn during 2012 and 2013 was evident from electroshocking results. CPUE was highest for 6.0 to 8.0 in fish during 2013 and 8.0 to 9.0 in during 2014. The CPUE for 10 to 12 in largemouth bass during 2015 was higher than anytime during the last ten years. There have been five annual surveys completed in which CPUE of juvenile largemouth bass has been greater than 12 fish per 10 min of electroshocking. It appears to take six to seven years for largemouth to reach 18.0 in or greater. During 2016, CPUE of juvenile largemouth bass was higher than the previous five years, which suggests another strong age class of fish was present and will take several years to become catchable size.

Based on available data for catch rates (of all species) and size of fish caught, Hinkson Slough met management objectives for 2017. Anglers participating in the drop-box survey appeared to prefer a stronger trophy trout fishery as opposed to a largemouth bass fishery. More effort should be made in 2018 to verify this preference.

The other notable change in water management was the inactivity of Fort Churchill Power Plant. NV Energy uses FCCP for cooling the natural gas-fired power plant. The power plant experienced periods of inactivity from 2009 through 2017 and, subsequently, the water temperature has fallen considerably. Ice can be observed covering more than 50% of the surface during the winter. This is vastly different from the previous 25 years of operation where winter and spring temperatures range from the mid-50s to the mid-80s at the north end of the pond. This change appears to have a negative impact on the largemouth bass population; however, from 2015 through 2017, the angler drop-box data suggested the population size exceeded the size found before 2009 (120 were reported during 2009, whereas 177 in 2016, and 141 in 2017). It is unclear whether this is attributed to a larger largemouth bass population or is a reflection of more angler participation in the survey. Trout were stocked to provide anglers with opportunity to catch fish during the cooler spring months and anglers reported catching them for the first time in 2014. During the 2015 drop-box survey, only one trout was reported, and two were reported during 2016 and 2017. Anecdotal reports indicated that trout fishing during the spring was moderately successful. The FCCP management objectives should change from a "Quality Warmwater Fisheries

Management Objectives” to a “General Warmwater Fisheries Management Objectives” and harvest regulations should be consistent with the fishing series ponds.

Angling participation at North Pond remained above average this year, which has been consistent since 2013. Even though catch rates and angler satisfaction were below the ten-year average for the third time since 2011, angler satisfaction and catch rates increased from 2016 to 2017. Aquatic vegetation did not appear to be impeding access; however, electroshocking during 2016 was not effective due to the abundance of submerged tree stumps, high conductivity, and low visibility. A new boat-based electroshocking system that utilizes one boom as an anode and one boom as a cathode should be investigated (currently both booms are utilized as anodes and the boat acts as the cathode), this may increase capture efficiency due to conductivity issues.

Common carp have been found in Hinkson Slough since 2011. During 2012, over 300 were observed and over 2,000 were estimated during 2013. Only 12 were found during 2014 and no juvenile carp were observed. During 2015 and 2016, only a few adults were observed, however, visibility was reduced to only few feet. An investigation into the previous carp eradication project in 2001 revealed similar population numbers from the time they were first confirmed. Trout fishing (use and catch rates) dropped off during 2012 and 2013 fishing seasons. Although the 2015 trout-fishing season was well above average, the 2017 fishing season fell once again to low use and catch rates. Due to survey results from 2014 to 2016 showing an increasing largemouth bass abundance (2016 survey showed the highest CPUE for largemouth bass since their reintroduction 14 years ago) and a potentially decreasing carp population, the eradication project was postponed. Fish populations appear to be stabilizing, for example, large largemouth bass (greater than 8.0 lbs) continue to be caught and approximately 10% of rainbow trout generally carryover to the next season.

RECOMMENDATIONS

- Conduct a general fisheries assessment through opportunistic angler contacts, angler drop-box surveys, and mail-in, angler questionnaire data.
- Monitor lake level and water clarity when on site.
- Stock 1,000 channel catfish in North Pond and 1,000 in FCCP.
- Monitor fish in Hinkson Slough and North Pond through electroshocking at four established transects per water during one night in the fall after the close of the fishing season.
- Evaluate the need for aquatic vegetation management in North Pond and Hinkson Slough.

Prepared by: Kris Urquhart
Biologist III, Western Region

Date: February 2018