NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT

FEDERAL AID JOB PROGRESS REPORTS

F-20-52
2016

Mason Valley Wildlife Management Area Ponds

WESTERN REGION

NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION
ANNUAL PROGRESS REPORT

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ANNUAL PROGRESS REPORT

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *Mason Valley Wildlife Management Area Ponds*
Period Covered: *January 1, 2016 through December 31, 2016*

SUMMARY

Hinkson Slough remained near or at full capacity throughout the year. Triploid grass carp has been effective and aquatic vegetation has been visibly less since their introduction. Since summertime water temperatures and turbidity (partly due to common carp) have increased during recent years, survival of stocked rainbow trout was 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 of the angling pressure of all the main Mason Valley Wildlife Area (MVWMA) ponds. During 2014 and 2015, anglers reported dense aquatic vegetation impeding movement of float tubes and pontoon boats during summer; however, during 2016 no complaints were received. This suggests grass carp have been effective by improving water management that reduces the amount of problematic vegetation.

Angler use at North Pond increased from 2012 to 2016 and most largemouth bass reported by anglers were in the 11 to 14 inch class. In 2015, dense aquatic vegetation began to once again interfere with shore and boat angling; however, during 2016, very little aquatic vegetation was observed. Angler satisfaction survey and drop-box catch rate data showed largemouth bass fishing has slowed, however, 14% of those caught were larger than 16 in.

Fort Churchill Cooling Pond (FCCP) showed above average angler use and catch rates during 2015 and 2016. The power plant that historically warmed the water throughout the winter had shut down and ice coverage was significant (>50%) over the past three winters. Rainbow trout were stocked, but only a few were caught this year. Anglers participating in the drop-box survey reported catching largemouth bass at rates and sizes similar to those observed before the power plant was shut down. It is unknown at this time whether this is reflective of an increasing largemouth bass population or more participation in the survey. Anglers targeting channel catfish continued to be successful during 2016, 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.

A slot limit for largemouth bass went into effect in 2008. The new regulation was intended to protect bass in the 11 to 14 in range and allow harvest of smaller (<11 in) and larger ones (>14 in). The intent was to increase the number of largemouth bass reaching a larger harvestable size of 14 in; however, based on angler contacts, very few anglers chose to harvest fish under 11 in suggesting the slot regulation was not accomplishing its intended purpose. NDOW proposed to reinstate the 14 in minimum size requirement that was in effect prior to changing the regulation in 2008. The proposed change was accepted and effective March 1, 2014. 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 on the management area is five, however, in Hinkson Slough, there is a two trout limit with a minimum total length of 16 inches 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 2015 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 and recorded for all fishing series ponds while on-site throughout 2016. Data recorded included estimated depth of pond, estimated percentage of open water, and type of vegetation. During spring 2016 pond level gauges were installed on the fishing series ponds, data was received from management area personnel bi-monthly.

Stock 1,000 channel catfish in North Pond and 1,000 in FCCP. Fish were purchased from Colorado Catch and 1,000 Channel catfish were planted in North Pond, and 1,000 were planted in FCCP on May 26, 2016. Channel catfish averaged 6 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 evaluated concurrent to sport fish monitoring activities, including electroshocking and angler contact surveys. Research was conducted to evaluate historical carp establishment and their effect on the sport fishery, particularly events leading to their eradication from Hinkson Slough during 2001. The planning process has been postponed due to the results of the population monitoring conducted during 2014-2016 and changes in management strategies, which may help control carp from reaching problematic levels.

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 completed at Hinkson Slough and North Pond using an 18 ft Smith-Root aluminum boat with two 24 in spider anodes. The electroshocker was set at 60 V pulsed DC at 20-30% of range and sampling occurred for approximately 10 min at three transects. Total time electrofishing was approximately 1/2 hour. Data recorded included 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 on three occasions, 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 recorded.

Augment Hinkson Slough with 1,000 sterile grass carp. No grass carp were planted during 2016. An evaluation of aquatic vegetation during the spring and summer was analyzed and determined to be at levels that would not impede anglers or boating access. It appeared that the current grass carp population, combined with high pond levels and reduced sunlight reaching the littoral zone (due to turbidity associated with the common carp disturbance), resulted in less rooted aquatic vegetation in the 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 25 anglers were contacted during 2016 at MVWMA ponds. Rainbow trout and largemouth

bass comprised the majority of the fish caught. Anglers at Hinkson Slough reported catching rainbow trout at a catch rate of 5.80 fish per hour and average size of 12.1 in. Trout were able to carryover from the 2015 season, however, they only accounted for 2% in the overall angler creel data. There were 306 trout reported, with only six identified as carryovers (average 17.6 in). Anglers targeting largemouth bass at Hinkson Slough had a catch rate of 2.84 fish per hour and average size of 13.2 in. Only two anglers were contacted at FCCP (no fish caught) and six were contacted at North Pond who spent 24 hours to catch 23 channel catfish for a catch rate of 0.96 fish per hour and average size 18.0 in.

A total of 103 anglers filled out drop-box surveys during 2016. 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).

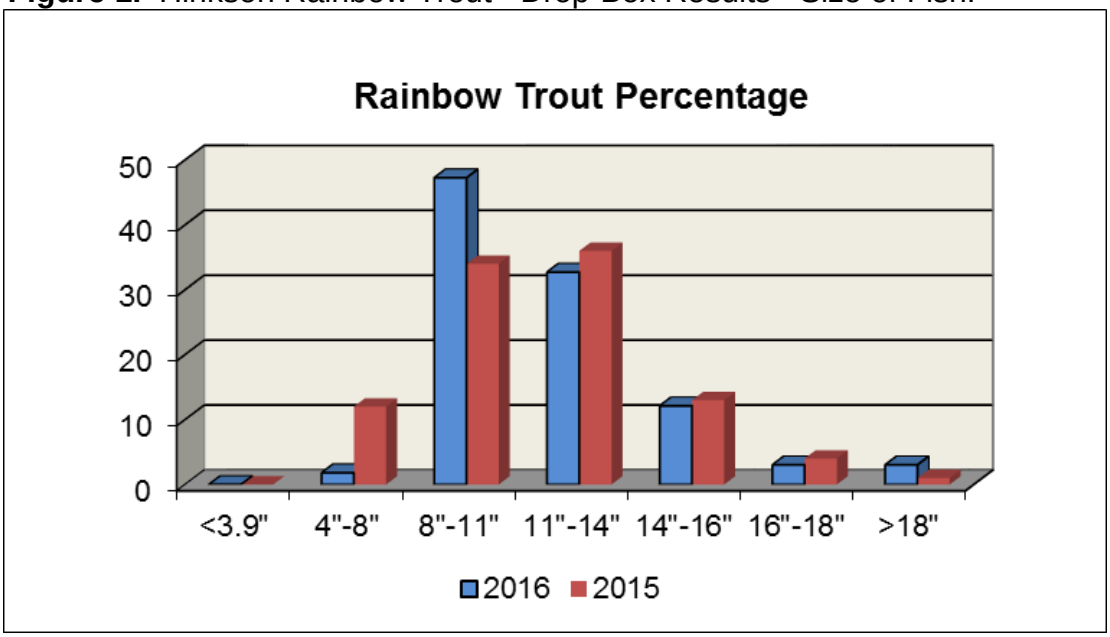
Table 1. Drop-Box Catch Rate Data.

	Fish/Day	Fish/Hour	No. Anglers
2016 Hinkson	4.38	0.91	40
10 yr average	10.82	1.99	52
2016 North Pond	1.10	0.25	30
10 yr average	4.18	1.15	14
2016 FCCP	4.85	1.30	33
10 yr average	4.33	1.03	24

The size of fish reported through angler drop-box surveys at Hinkson is shown in Figure 1. Most rainbow trout reported were in the 8 to 11 and 11 to 14 in size classes, comprising 47% and 33%, respectively, of total rainbow trout caught during 2016. Compare this to 34% and 36% during 2015. Rainbow trout in 2016 greater than 14 in showed a 3% increase over those caught in 2015 (18% during 2015 and 21% during 2016). Comparatively, a 9% increase in rainbow trout over 14 in was reported from 2015 compared to 2014 (9% during 2014 and 18% during 2015). During 2014, anglers reported one percent of rainbow trout over 16 in, during 2015 the percentage increased to five, and during 2016, six percent of trout reported were over 16 in. 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 were reported during 2015, and only 165 were reported during 2016).

Seven largemouth bass were reported by anglers who filled out drop-box surveys during 2016, one of which was greater than 18 in, compared to 26 during 2015 (three of which were reported to be over 18 in). During 2014, only seven largemouth bass were reported by anglers, however, three of those were over 18 in. However, during 2016, largemouth bass of all age classes (excluding young of the year) were represented in angler drop-box data.

Figure 1. Hinkson Rainbow Trout - Drop-Box Results - Size of Fish.



Angler satisfaction surveys for Hinkson Slough and North Pond showed satisfaction decreased for all categories (except overall fishing experience at North Pond) since 2015 (Table 2). However, at FCCP, angler satisfaction increased for all categories (Table 2). The satisfaction surveys appear to correlate with current populations for each water as well as catch rates observed during angler contacts, drop-box data, and mail-in angler questionnaire data.

Table 2. MVWMA Ponds Angler Satisfaction Survey.

2015 FCCP

	-2	-1	0	1	2	Total Ave.
Experience	5	2	6	15	10	0.61
Size of Fish	2	2	10	12	5	0.52
No. of Fish	2	5	8	9	9	0.55

2016 FCCP

	-2	-1	0	1	2	Total Ave.
Experience	2	1	3	10	15	1.13
Size of Fish	2	2	3	11	12	0.97
No. of Fish	3		6	10	13	0.94

2015 Hinkson

	-2	-1	0	1	2	Total Ave.
Fishing exp.	8	1	5	9	26	0.90
Size of Fish	5	2	7	18	11	0.65
No. of Fish	7	2	4	11	19	0.77

2016 Hinkson

	-2	-1	0	1	2	Total Ave.
Fishing exp.	2	5	8	16	9	0.63
Size of Fish	4	5	10	15	5	0.31
No. of Fish	9	8	7	10	6	-0.10

2015 North Pond

	-2	-1	0	1	2	Total Ave.
Fishing exp.	6	5	7	4	4	-0.19
Size of Fish	0	4	14	3	3	0.21
No. of Fish	2	2	14	3	4	0.20

2016 North Pond

	-2	-1	0	1	2	Total Ave.
Fishing exp.	7	3	7	9	3	-0.07
Size of Fish	3	2	9	8	1	0.09
No. of Fish	4	6	8	6	1	-0.24

The annual Mail-in Angler Questionnaire Survey for 2015 showed that angler use at FCCP, North Pond, and Hinkson Slough was near the eight-year average (Table 3). Angler use at Hinkson Slough 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.

Table 3. Mail-in, Angler Questionnaire Data.

Fort Churchill Cooling Pond									
	2008	2009	2010	2011	2012	2013	2014	2015	8 YR AVE
No. Anglers	152	176	221	93	285	66	222	196	176
Days	644	548	1,098	222	1,566	283	498	542	675
Days/Angler	4.24	3.13	4.97	2.39	5.49	4.3	2.25	2.76	3.69
No. Fish	2,769	1,160	2,170	239	19,383	412	1,660	1,148	3,618
Fish/Day	4.3	2.12	1.98	1.08	12.38	1.46	3.33	2.11	3.60
Fish/Angler	18.22	6.59	9.82	2.57	68.01	6.27	7.49	5.84	15.60
Hinkson Slough									
	2008	2009	2010	2011	2012	2013	2014	2015	8 YR AVE
No. Anglers	181	255	461	61	363	165	128	307	240
Days	816	626	2,129	172	1,490	505	439	858	879
Days/Angler	4.51	2.45	4.62	2.82	4.1	3.06	3.43	2.79	3.47
No. Fish	6,153	1,344	9,740	926	7,490	3,027	3,568	1,931	4,272
Fish/Day	7.54	2.15	4.57	5.38	5.03	5.99	8.12	2.25	5.13
Fish/Angler	33.99	5.27	21.13	15.18	20.63	18.33	27.88	6.28	18.59
North Pond									
	2008	2009	2010	2011	2012	2013	2014	2015	8 YR AVE
No. Anglers	62	109	168	28	82	215	111	117	112
Days	1,699	303	444	51	324	1005	511	777	639
Days/Angler	27.4	2.78	2.64	1.82	3.95	4.67	4.42	6.64	6.79
No. Fish	4,743	714	465	301	1,137	4,745	7,350	2,254	2,714
Fish/Day	2.79	2.36	1.05	5.9	3.51	4.72	14.38	2.9	4.70
Fish/Angler	76.5	6.55	2.77	10.75	13.87	22.04	65.95	19.23	27.21

Size of largemouth reported for drop-box surveys at Forth Churchill Cooling Pond is shown in Figure 2. The frequency of fish reported in size classes above 14 in has increased dramatically.

Figure 2. FCCP Drop-Box Size of Fish, Largemouth.

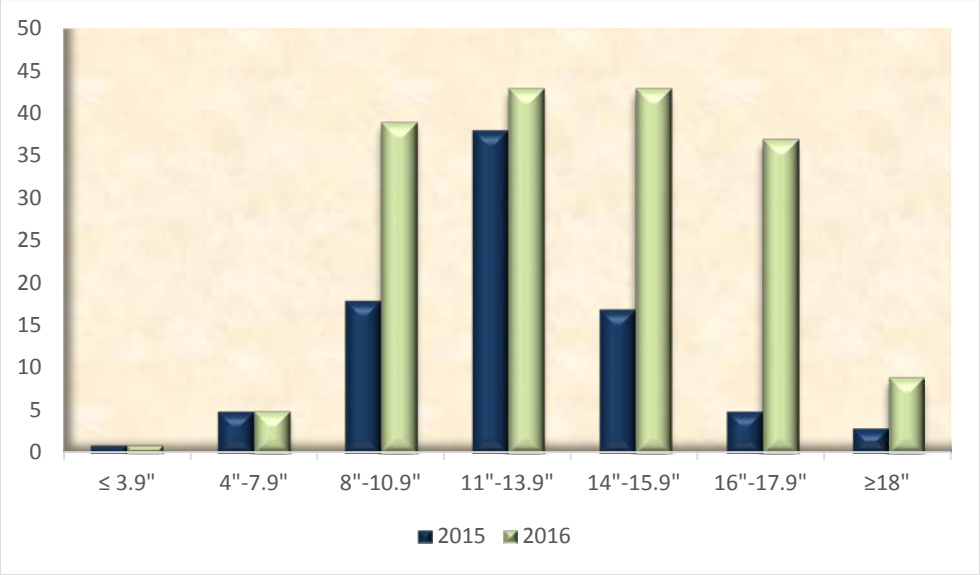


Table 1 shows catch rates at FCCP fell within the range of the Warmwater General Fishery Management Concept, which states “Angler catch rates should range between 0.25 and 0.75 fish per hour and 1.0 and 2.0 fish per angler day.” Available survey

information (drop-box, contact creel, and mail-in questionnaire) 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 in. Trout were first stocked during 2012, however, the 2014 drop-box survey was the first year anglers reported catching trout and only two were reported during 2016.

According to drop-box, mail-in angler questionnaire, and angler contact data, North Pond also met the objectives of the Warmwater General Fishery Management Concept. Channel catfish was again stocked in 2016 (drought conditions led to no stocking during 2015) and, even though only four were reported in the drop-box survey during 2015 and none were reported during 2016, angler creel contacts reported 18 channel catfish ranging from 14 in to 22 in. Several largemouth bass anglers anecdotally reported catching over 50 fish per day during 2014 through 2016 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 the NDOW's Habitat Conservation Fee Account was initiated in 2012 and continued through 2013. It resulted in reducing aquatic vegetation in several areas around 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.

Angler catch rates (fish per hour and fish per day) and size of fish reported through angler contacts, mail-in questionnaire, and drop-box data at Hinkson Slough suggest that the Coldwater Trophy Fishery Concept and the Warmwater Trophy Fishery Concept objectives were met during 2016. Comparing the drop-box data and angler satisfaction data from 2016 to previous years have found a drop in angler satisfaction with their overall fishing experience, size of fish, and number of fish caught (Table 2). Trout numbers were low while largemouth bass numbers were high. Brown and cuttbow trout were stocked again during 2016 and these more aggressive fish may help by foraging on common carp juveniles.

Monitor lake level and clarity when on-site. Staff from 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 2016, 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 2016 at North Pond, FCCP, and Hinkson Slough. Bass and Crappie ponds were drained, excavated, and refilled during 2011. Bass Pond was stocked with 201 largemouth bass from Bilk Creek Reservoir in 2012. 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 and there has been more coordination with MVWMA staff regarding pond level. Water level monitoring was initiated during 2016.

Due to high nutrient loads provided by hatchery effluent, submergent vegetation has become an angling nuisance in many of the Fishing Series Ponds. Triploid grass carp were first introduced into Hinkson Slough during 2006, resulting in improving channels

previously choked by weeds and inaccessible to anglers. Triploid grass carp were stocked and herbicide treatments helped control vegetation in North Pond. Monitoring throughout the fishing season indicated these treatments were successful in reducing vegetation, even into 2014. During 2015, anglers reported an increase in aquatic submerged vegetation in Hinkson Slough and North Pond, however, during 2016 the vegetation was not problematic and even noticeably absent from North pond.

Stock 1,000 channel catfish in North Pond and 1,000 in FCCP. Table 4 shows stocking for all MVWMA ponds during 2016. Table 5 shows historical stocking from 2009 to 2015. No channel catfish were stocked during 2015 due to ongoing drought conditions in northern Nevada.

Table 4. MVWMA Stocking 2016.

Fort Churchill Cooling Pond				
Date	Species	Strain	Number	Size
2/2/2016	Rainbow	SHASTA	3509	9.8
2/3/2016	Rainbow	EAGLE LAKE	479	9.6
3/25/2016	Rainbow	EAGLE LAKE	578	9.5
5/26/2016	Channel Catfish	Colorado Catch	1000	6
		Rainbow Total	4,566	9.6
		Catfish Total	1,000	6.0

Hinkson Slough				
Date	Species	Strain	Number	Size
2/3/2016	Rainbow	EAGLE LAKE	1495	9.6
3/9/2016	Rainbow	SHASTA	555	10.4
10/17/2016	Cuttbow	MARLETTE	2061	9.2
11/28/2016	Brown	SHEEP CREEK	1066	9.1
		Rainbow Total	2,050	10.0
		Cuttbow	2,061	9.2
		Brown	1,066	9.1

North Pond				
Date	Species	Strain	Number	Size
2/3/2016	Rainbow	EAGLE LAKE	1974	9.6
3/9/2016	Rainbow	SHASTA	999	10.4
5/26/2016	Channel Catfish	Colorado Catch	1000	6
		Rainbow Total	2,973	10.0
		Catfish Total	1,000	6.0

Monitor the common carp population in Hinkson Slough and North Pond and evaluate the need for a carp eradication project. During previous electroshocking surveys at Hinkson Slough, 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, carp numbers during electroshocking remained low with only a few observed, however, the water clarity was poor.

Trout numbers declined 90% from 1994 to 1996 and 72% from 2010 to 2012. Historical data suggested that trout would decline to very low numbers (less than ten were observed in 1996 and 1997) within three years after confirmed reintroduction of common carp. Only 16 trout larger than 14 in were caught in 2013, five caught during 2014, six caught during 2015, and one was caught during 2016. All other trout caught were remnants of recent stockings. During 2014, anglers reported catching 16 trout larger than 16 in, however, this represented approximately one percent of all trout caught. During February 2015, anglers (mostly fly club members) reported catch rates at 9.0 fish per hour, with 10 to 15% of the trout were larger than 15 in and during 20, 16 18% of all trout caught were larger than 14 in. The anglers appear to be more efficient at catching large rainbows during the spring than the electrofishing efforts during the fall. Largemouth bass and bluegill populations have continued to increase in size and number.

Table 5. MVWMA Historical Stocking.

	Hinkson				North Pond				FCCP		
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								

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 surveys conducted during 2016 were consistent with previous years (historical transects surveyed during the fall). Table 6 shows Catch Per Unit Effort (CPUE, number of fish caught per 10 min of electroshocking) of largemouth bass captured. During years when CPUE is high for fish larger than 18 in, the CPUE can roughly be traced back to a high CPUE of juvenile fish 5 to 6 years prior, which suggests that a largemouth bass in Hinkson may require 6 to 7 years of growth to reach 18 in. (approximatly 4 lbs).

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

Evaluate the need for aquatic vegetation management in North Pond and Hinkson Slough. Aquatic vegetation was not observed or reported to be limiting angler access or creating issues for pond management during 2016. Therefore, no additional removal was necessary during 2016.

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 2016, therefore, no additional grass carp were necessary during 2016.

MANAGEMENT REVIEW

Several water management changes were implemented in 2008; these changes have since been adopted as regular management practices. During 2016, staff gauges were placed in Fishing Series Ponds, which enable managers more precise, real-time input regarding pond levels. The most notable change in the previous 10 years has been the management of water through Hinkson Slough and since 2009; flow has been maintained in Hinkson Slough throughout most of the summer. This has allowed for carryover of rainbow trout. During 2016, carryover of trout was similar to 2014 and 2015 and was estimated to be 10% of the annually stocked fish based on angler creel and drop-box data. 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 in) were low (10% during creel surveys), anglers reported catching a few larger than 20 in. Angler satisfaction was low during 2016.

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 bass in the 6.0 to 8.0 in range during 2013 and 8.0 to 9.0 in range during 2014. The CPUE for 10 to 12 in largemouth bass during 2015 was higher than anytime during of 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. Generally following those strong age classes, it appears it takes six to seven years for largemouth to reach 18 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.

Based on available data for catch rate (of all species) and size of fish caught, Hinkson Slough met management objectives during 2016. Anglers participating in the drop-box survey appear to prefer a stronger trophy trout fishery as opposed to a largemouth bass fishery, more effort to collect creel data and personal angler contacts should be made during 2016 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 during 2009 through 2016 and, subsequently, 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 past 25 years of operation where winter and spring temperatures ranged from the mid-50s to the mid-80s at the north end of the pond. This change appeared to have a negative impact on the largemouth bass population; however, during 2015 and 2016, angler drop-box data suggest the population may be approaching pre-2009 numbers. It is unclear whether this can be attributed to a higher 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 during 2014. During 2015, only one trout was reported on angler drop-box surveys and only two were reported during 2016, but anecdotal reports indicated that trout fishing during the spring might have been 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 was consistent with 2013, 2014, and 2015. However, catch rates and angler satisfaction were below the ten-year average for the second time since 2011. Aquatic vegetation did not appear to be impeding access; however, electroshocking was not effective due to submerged tree stumps, high conductivity, and low visibility. A new boat-based electroshocking technique which 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 in the cathode capacity), this may increase capture efficiency due to conductivity issues.

Common carp were found in Hinkson Slough during the population survey in October 2011. During 2012, over 300 were observed and over 2,000 were estimated during 2013, however, 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 dropped off during the 2012 and 2013 fishing season. However, the 2015 trout-fishing season was well above average, but 2016 numbers fell once again. Due to the results from 2014 to 2016 showing an increasing bass population (2016 population survey had the highest CPUE for largemouth bass since they were reintroduced 14 years ago) and a potentially decreasing carp population, the eradication project was postponed. Populations may be stabilizing, very large largemouth bass (greater than 7.0 lbs) continued to be caught during 2016, and approximately 10% of rainbow trout appeared to carryover from the last fishing season. This appeared adequate for satisfying

management objectives; however, angler satisfaction was low suggesting that trout anglers prefer more and larger trout and/or largemouth bass anglers are not participating in the survey.

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 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.

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Date: February 2017