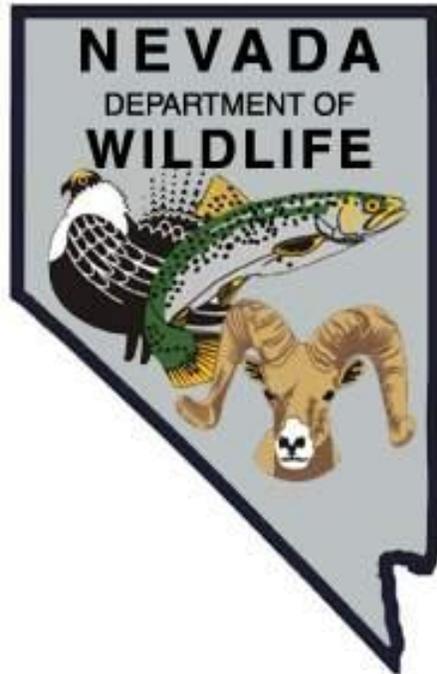


NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORT
F-20-49
2013

EAST & WEST WALKER RIVERS
WESTERN REGION



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

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ANNUAL PROGRESS REPORT**

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

State: *Nevada*
Project Title: *Statewide Fisheries Program*
Job Title: *East and West Walker Rivers*
Period Covered: *January 1, 2013 through December 31, 2013*

SUMMARY

This was the second year of drought for the East Walker River and discharge was 39,413 acre-ft, which was the lowest in at least the last 15 years. The peak flow was recorded in mid-June at 156 cfs, but during 2012, peak flow was in late July at 216 ft³/s and during 2011 peak flow was recorded in late June at 922 cfs.

Based on the 2012 Mail-in, Angler Questionnaire Survey, anglers fished 9,150 days with a success of 4.28 fish per angler day. During 2012, angler numbers were estimated at 2,488, which was slightly above the 7 yr average of 2,127. Fish per day, number of fish caught, and days spent fishing were all near the 7 yr average.

The “general fishery” area (Elbow, Raccoon Beach, and Zanis) continued to produce angler success rates in compliance with the angling objective, anglers yielded catch rates of 0.86 fish per hour and fish averaged 11.6 in (based on roving creel data). Rosaschi Ranch angler success was higher at 2.36 fish per hour; however, anglers fished longer at Rosaschi Ranch and, based on drop box data, reported 8.0 fish per angler day (which is above the 8 yr average of 6.76.) Anglers also caught larger fish at Rosaschi Ranch, greater than 21 in, and based on roving creel data had an average of 14.1 in for rainbow and 14.4 in for brown trout.

East Walker River electrofishing survey results were consistent with previous data of an increasing trout population from downstream to upstream, however, abundance below Rosaschi Ranch was estimated to be well below average. Trout per mile estimates ranged from 148 at Zanis to 2,192 at Rosaschi Ranch.

In 2013, the East Walker River was stocked with 12,026 rainbow trout averaging 10.0 in, and 14,756 fingerling brown trout, averaging 2.4 in; the majority of trout were stocked at the Elbow. The West Walker River was stocked with 21,229 rainbow trout averaging 9.8 in and 7,845 fingerling brown averaging 3.0 in.

A brown trout reproduction study was initiated in 2012 to monitor of reproductive activity as well as wild and hatchery raised fish. During 2013 brown trout reproductive activity was confirmed by observations of egg deposition on redds, however, it is not known how successful this activity was for recruiting fish into the wild population. Results of the study will be used to evaluate future stocking needs.

BACKGROUND

The East Walker River originates along the eastern slope of the Sierra-Nevada in California. Bridgeport Reservoir, CA, located 11.3 km (7 mi) upstream from the NV-CA border, supplies irrigation water to farmland in Nevada, and has a maximum volume of $4.993 \times 10^7 \text{ m}^3$ (40,494 acre-ft), of which the Walker River Irrigation District (WRID) can divert to storage $4.895 \times 10^7 \text{ m}^3$ per annum (39,700 acre-ft per annum, afa). However, WRID only can withdraw $4.439 \times 10^7 \text{ m}^3$ per annum (36,000 afa). The irrigation season generally begins April 1 and ends November 1, and summertime flow typically ranges from 5.66 to $14.16 \text{ m}^3 \times \text{sec}^{-1}$ (200 to 500 cfs) below the reservoir.

The California State Water Board maintains a minimum discharge below Bridgeport Reservoir of $0.57 \text{ m}^3 \times \text{sec}^{-1}$ (20 cfs). When air temperature diminishes below -17.8°C (0°F), the minimum discharge increases to $0.85 \text{ m}^3 \times \text{sec}^{-1}$ (30 cfs). Flows of 30 cfs or above are mandatory from the beginning of November to the end of February in order to reduce anchor ice and to continue providing riffle and pool habitats for trout survival.

Land management status adjacent to the East Walker River varies from U.S. Forest Service, Bureau of Land Management, and private property. In 1995, the American Land Conservancy purchased the Rosaschi Ranch (approximately 3.5 to 13.2 river km, 2.2 to 8.2 mi, below the NV-CA border). This land now is under USFS management, while NDOW manages the fishery as a “quality fishery” having a zero-harvest limit. The Flying-M Ranch allows public access at the Elbow, which is the beginning area of the “general fishery” and anglers can harvest 5 trout and 10 mountain whitefish. The East Walker River flows for about 99.8 km (62 mi) in Nevada before it reaches the confluence with the West Walker River in Mason Valley. Approximately 33.8 river km (21 mi, or 34%) are public; however, through additional cooperation with private landowners, 38 percent of the river is accessible to anglers.

OBJECTIVES

General Management Objectives:

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in, angler questionnaire data.
- Maintain and check for returns of angler drop-box surveys when on site.
- Monitor fish populations along the East Fork during three days of tote-barge electroshocking at four established sites during November.
- Collect five smallmouth bass from the West Fork for mercury analysis.

Study Specific Objectives:

- Monitor brown trout reproduction by visual encounter of redds, marking redds, and returning bi-weekly during the fall to assess egg deposition and fertilization (EF Walker).
- Tag wild and hatchery raised brown trout (if available) with color and number specific Floy tags.

- Monitor juvenile populations prior to spring runoff during fall electrofishing surveys (EF Walker).

PROCEDURES

General Management Objectives:

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Anglers were contacted primarily at four locations: Rosaschi Ranch, the Elbow, Zanis, and Raccoon Beach. Angler creel information was collected throughout the year. Information obtained from anglers includes type of gear used, number and species of fish caught, size of fish caught, location of fish caught, county of residence, and number of hours fished. Angler questionnaires were mailed at the end of 2012 to 30,000 anglers acquiring a Nevada fishing license. Data was received and summarized for estimated number of anglers, fish caught, days spent fishing, and catch rates.

Maintain and check for returns of volunteer, angler drop box surveys when on site. Questionnaires from three streamside drop-boxes located at Rosaschi Ranch not only collected basic creel information, but also collected angler satisfaction ratings (ranked from +2 [highly satisfied] to -2 [dissatisfied]). Data from all drop-boxes was combined.

Monitor fish populations along the East Fork during three days of tote-barge electroshocking at four established sites during November. Historical transects established at Rosaschi Ranch, the Elbow, Raccoon Beach, and Zanis were sampled during 2013. This survey was conducted during the first week in November. An electrofishing tote barge was towed through the transect for one-pass without the use of block nets and in at least 2-pools and 2-riffles per site. The electroshocker was typically adjusted to 60 ms pulsed DC at 600 V.

Collect five smallmouth bass from the west fork for mercury analysis. Several attempts were made to collect fish of a catchable size. A Halltech model 2000B backpack electrofisher was used as well as hook and line sampling. Locations sampled were at the confluence of the West Fork and Topaz Canal, Hoye Canyon, and Wilson Canyon. Smallmouth less than five inches were caught; however, it was determined that these fish were not useful for mercury analysis due to their small size therefore they were not analyzed.

Study Specific Objectives:

Monitor brown trout reproduction by visual encounter of redds, marking redds, and returning bi-weekly during the fall to assess egg deposition and fertilization (EF Walker). Visual surveys to identify spawning activity were conducted on five occasions from October through January. Visual surveys included walking along the riverbank and noting locations of spawning brown trout and redds. A 12" Pyrex glass

baking dish was used to break surface water tension and visually inspect each redd. Egg deposition and fertilization was documented.

Tag wild and hatchery raised brown trout (if available) with color and number specific Floy tags. No fish were tagged during 2013 due to hatchery unavailability of catchable sized brown trout; however, during 2012, fish averaging 7.1 in were tagged at Mason Valley Fish Hatchery and stocked at the Elbow. There were 198 fish given number and color specific Floy tags. Also during 2012, 200 wild brown trout were caught through electrofishing, tagged with color and number specific Floy tags, and released. Wild fish averaged 6.0 in, had a maximum size of 18 in, and were caught and released in the Rosaschi Ranch section from the bridge upstream to approximately 1/2 mi.

Monitor juvenile populations prior to spring runoff during fall electrofishing surveys. Historical transects established at Rosaschi Ranch, the Elbow, Raccoon Beach, and Zanis were sampled during the first week in November 2013. An electrofishing tote barge was towed through a transect for one-pass without the use of block nets and in at least 2-pools and 2-riffles per site. The electroshocker was typically adjusted to 60 ms pulsed DC at 600 V. All juvenile brown trout were counted, measured, and tags were noted.

FINDINGS

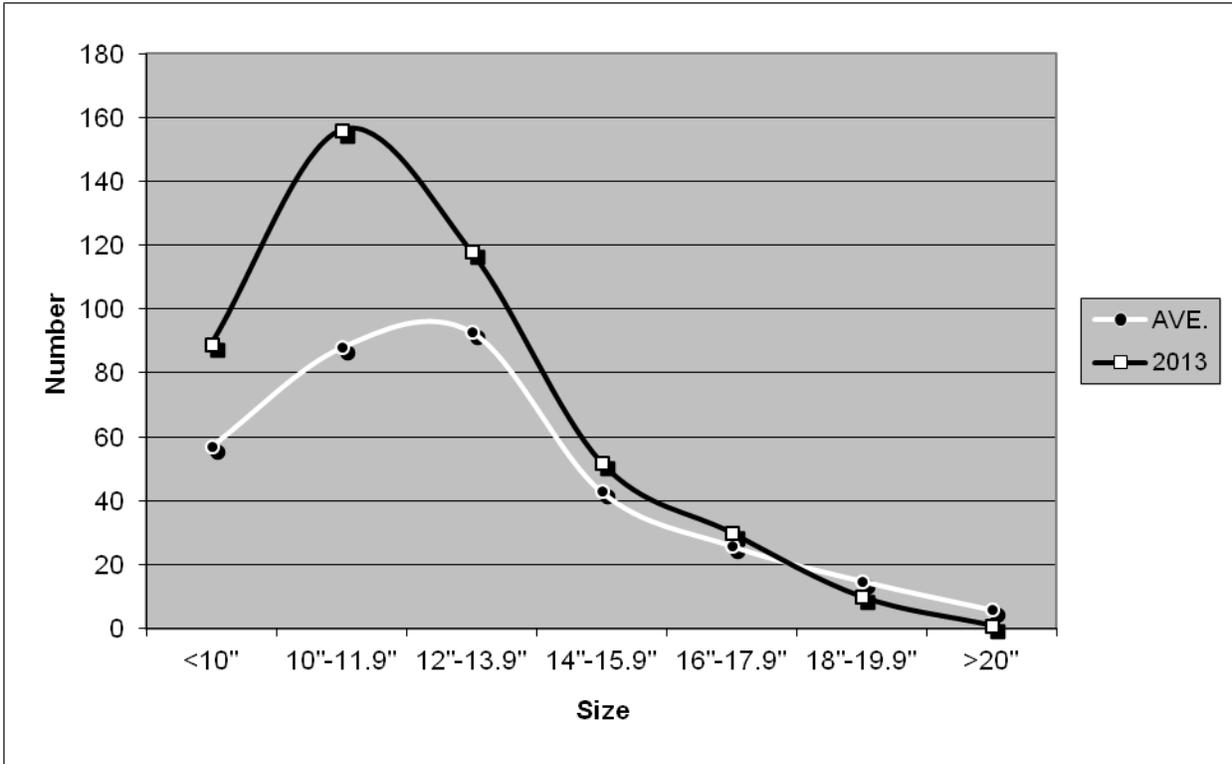
General Management Objectives:

Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data. Angler contacts were made on 10 occasions during 2013 and anglers fishing the Rosaschi Ranch section had a catch rate of 2.36 fish per hour. Four anglers were checked who fished 11 hrs to catch 26 fish. The Rosaschi Ranch section is managed under a Coldwater, Trophy Fishery Management Concept, which states, “a trophy fishery provides a significant portion of the harvest as fish of a size most anglers remember catching, while a trophy fish is one of a size worthy of acknowledgment. Sustained carryover of fish from one season to another for a significant portion of the population and exceptional fish growth potential are generally characteristics of a trophy fishery ... Minimum size for trout (rainbow, brown, and cutthroat) should be 16.0 inches or approximately five pounds in weight. Angler success rates should range between 0.5 and 1.7 fish per hour and 0 and 1.0 fish per angler day.” Catch rates derived from creel survey data collected during 2013, although limited, suggest that the Rosaschi Ranch has met the criteria for a trophy fishery.

Fish sizes reported during angler contacts along the Rosaschi Ranch section averaged 14.1 in for rainbow trout and 14.4 in for brown trout. This average sizes suggests that fish caught are not meeting the criteria of a trophy fishery, however, angler drop-box reports show there is a portion of the trout population being caught that meets the trophy criteria (minimum of 16 in) (Figure 1).

Figure 1

Angler Drop-Box: Size of Fish



The East Walker River downstream of Rosaschi Ranch is managed under a Coldwater, General Fishery Management Concept. The Coldwater, General Fishery Management Concept states, “less than 30% of the annual stocking would be carried through from one fishing season to the next and the fish generally show minimal growth from stocked size. Angler success rates should range between 0.25 and 0.75 fish per angler hour and 1.00 and 2.00 fish per angler day.” Five angler contacts were made downstream of Rosaschi Ranch, who showed a catch rate of 0.82 fish per hour. Most fish measured were rainbow trout caught near the Elbow. The size of fish caught typically averaged 11.6 in, which was expected of a hatchery supported trout fishery. Data collected within the general regulation area indicates the catch rates of a coldwater General Fishery Concept were met.

The annual mail-in, angler questionnaire data for the East Walker River from 2006 through 2012 is summarized in Table 1. Total number of anglers, number of fish caught, number of angler days increased from 2011, however, fish per angler day decreased slightly and all values were near the 7 yr average.

Table 1**Mail-in, Angler Questionnaire Data**

	2006	2007	2008	2009	2010	2011	2012	Ave
Number of Anglers	1,853	1,897	1,618	3,096	2,030	1,905	2,488	2127
No. Angler Days	7,226	7,597	7,060	10,137	8,228	6,118	9,150	7931
Total Fish Caught	32,895	42,722	25,186	54,005	42,889	34,179	39,139	38716
Fish per Angler Day	4.55	5.62	3.57	5.33	5.21	5.59	4.28	4.88

Maintain and check for returns of volunteer, angler drop box surveys when onsite. Volunteer, angler drop-box questionnaires, which were collected at Rosaschi Ranch from 2006 through 2013, are summarized in Table 2. Angler catch rates suggest that Rosaschi Ranch met objectives of a trophy coldwater fishery for each year. Satisfaction results are summarized in Table 3. Angler satisfaction was high for overall fishing experience, size of trout, and number of trout caught for each year.

Table 2**Rosaschi Ranch Drop-Box Survey Results**

	2006	2007	2008	2009	2010	2011	2012	2013
No. Anglers	64	63	60	50	34	26	37	65
Hrs Fished	300.5	270.25	244.5	203	139.5	131	195	289.5
Rainbow	282	249	244	120	142	76	190	319
Brown	155	175	89	80	63	53	164	185
Whitefish	24	43	16	5	7	7	18	16
Fish/Hour	1.53	1.73	1.43	1.01	1.52	1.04	1.91	1.80
Fish/Day	7.20	7.41	5.82	4.10	6.24	5.23	10.05	8.00

Table 3**Rosaschi Ranch Drop-Box Satisfaction Survey**

	Overall Experience	Size of Fish	Number of Fish
2006	1.52	1.16	1.13
2007	1.20	1.02	0.84
2008	1.03	0.61	0.59
2009	0.91	0.81	0.56
2010	1.46	1.20	1.00
2011	1.42	1.12	0.88
2012	1.12	1.19	0.73
2013	1.06	0.75	0.87
AVE	1.22	0.98	0.83

Size of fish caught was also recorded from angler drop-box surveys, the 8 yr average and results from 2013 are represented in Figure 1. More fish in the 10 - 14 in. size class were reported during 2013 than the 8 yr average shows. Fish sizes from 14 - 20 in during 2013 showed similar showed a similar frequency as the 8 yr average. Table

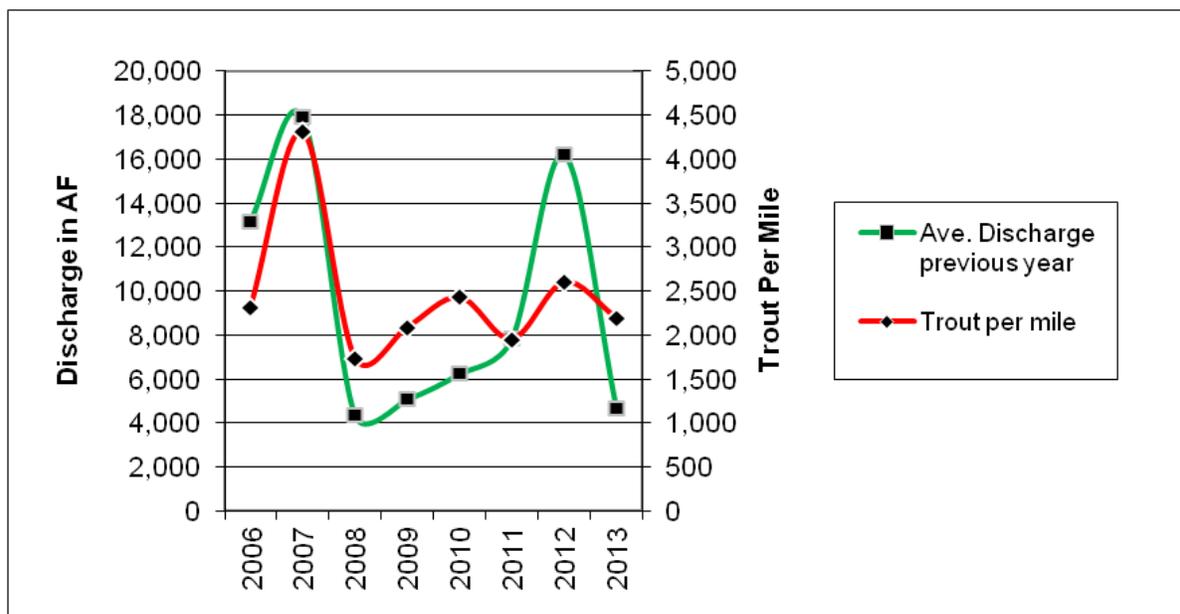
2 shows catch rates during 2013 were slightly down from 2012, however, still above the 8 yr average of 6.76 fish per angler day.

Based on drop-box data, most fish were caught during the fall, with August and September being the highest months accounting for 43%. This was consistent with previous years' data. Catch rates during September were the highest and averaged 3.44 fish per hour. The survey also showed anglers were highly satisfied with catching many large fish. Angler drop-box data and mail in, angler questionnaire data from 2006 through 2013 suggest that Rosaschi Ranch met objectives of a coldwater trophy fishery.

Monitor fish populations along the East Fork during three days of tote-barge electroshocking at four established sites during November. Electroshocking surveys showed fish populations fluctuate annually (Figure 2). Population surveys were not conducted during 2011, but abundance was estimated at 1,952 fish per mile using an equation developed during 2010. During 2013, trout abundance was much lower than found during previous years at lower transects; estimates were 148 fish per mile at Zanis (395 during 2012), 188 at Raccoon Beach (542 during 2012), and 371 at the Elbow (1,725 during 2012). Estimated population abundance at Rosaschi Ranch was down slightly from 2012 (2,600 fish per mile) to 2,192 (Figure 2).

Figure 2

Rosaschi Ranch Population Survey



Stocking continues to provide additional angling opportunity for the lower sections of the East Walker River and West Walker River (Table 4). No stocking occurs in the Rosaschi Ranch trophy fish section. However, fingerling brown trout stocking (Table 5) helps support the population.

Table 4

Walker River Stocking Summary 2013

East Fork	Date	Species	Strain	Number	Size	Water Temp
	3/25/2013	Brown	Sheep Creek	14,756	2.4	42
	2/15/2013	Rainbow	EAGLE LAKE	1,974	9.6	40
	9/15/2013	Rainbow	TAHOE	570	9.9	60
	9/15/2013	Rainbow	JUMPER	958	9.8	60
	6/19/2013	Rainbow	TAHOE	2,999	9.6	63
	6/4/2013	Rainbow	MT. SHASTA	2,214	10.1	67
	5/22/2013	Rainbow	MT. SHASTA	1,811	10.5	54
	4/2/2013	Rainbow	MT. SHASTA	1,500	10.3	45
			Brown Total	14,756	2.4	
			Rainbow Total	12,026	10.0	
West Fork	Date	Species	Strain	Number	Size	Water Temp
	11/14/2013	Rainbow	EAGLE LAKE	915	10.1	40
	11/14/2013	Rainbow	TAHOE	855	10.3	40
	10/22/2013	Rainbow	JUMPER	1,709	10.2	56
	9/30/2013	Rainbow	TAHOE	1,710	9.8	53
	9/24/2013	Rainbow	TAHOE	1,708	10.1	60
	9/24/2013	Rainbow	MT. SHASTA	7,327	4.4	60
	7/1/2013	Rainbow	TAHOE	2,108	9.7	69
	5/4/2013	Rainbow	MT. SHASTA	1,400	10.8	63
	5/14/2013	Rainbow	EAGLE LAKE	422	10	65
	5/14/2013	Rainbow	MT. SHASTA	736	11.1	65
	4/8/2013	Rainbow	EAGLE LAKE	1,334	10.2	46
	3/14/2013	Rainbow	MT. SHASTA	1,005	10.7	47
	4/29/2013	Brown	SHEEP CREEK	7,845	3	62
			Brown Total	7,845	3.0	
			Rainbow Total	21229	9.8	

Collect five smallmouth bass from the West Fork for mercury analysis. Several attempts were made to collect fish of a catchable size, however only small fish were caught and it was determined that these fish were not useful for mercury analysis therefore they were not sent to the lab.

Study Specific Objectives:

Monitor brown trout reproduction by visual encounter of redds, marking redds, and returning bi-weekly during the fall to assess egg deposition and fertilization (EF Walker). Nine brown trout pairs on redds were identified. Redds that were identified but did not have trout in the immediate vicinity were also noted. Only five of the identified redds were confirmed to have egg deposition. Fertilization and subsequent hatching of eggs was not confirmed at any of the marked sites. It is possible that these redds were successful, however, hatching of eggs was not checked .

Table 5

Walker River Stocking History

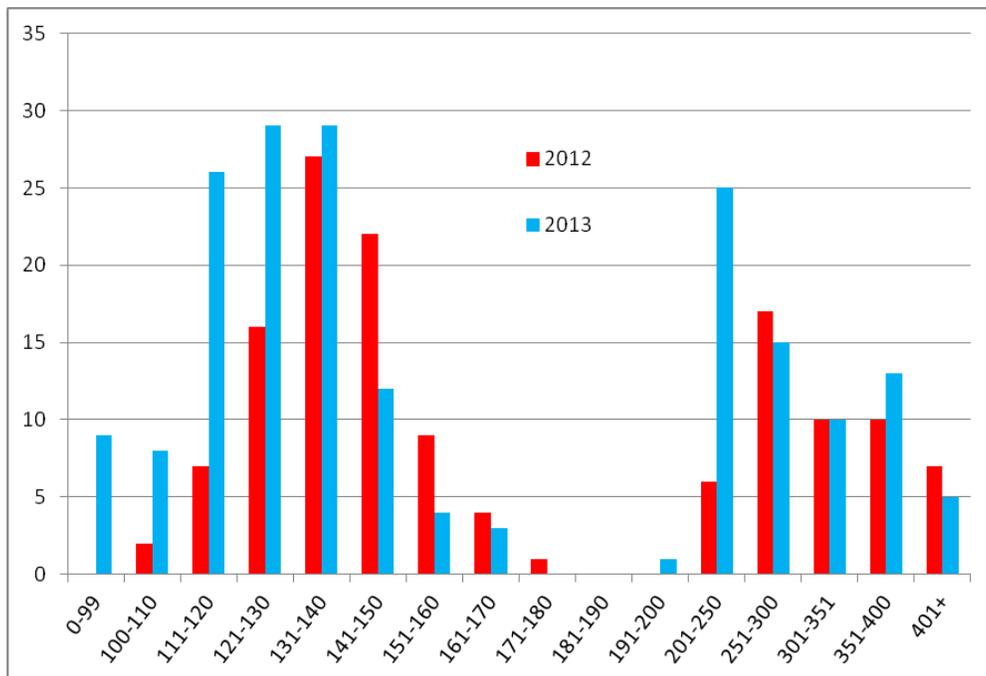
	East Fork			West Fork		
		Number	Size (in)		Number	Size
2012	Brown	11,504	2.4	Brown	10,382	1.9
	Rainbow	11,136	11.5	Rainbow	10,978	10.2
	Brown	200	7.0			
2011	Brown	16,116	3.3	Brown	9,943	2.6
	Rainbow	7,968	10.1	Rainbow	10,484	9.9
2010	Brown	5,139	7.6	Brown	0	
	Rainbow	11,936	9.7	Rainbow	10,484	9.9
	Brown	5,513	2.7			
2009	Brown	9,068	3.0	Brown	9,016	3.1
	Rainbow	14,639	10.0	Rainbow	9,865	9.8
2008	Brown	0		Brown	0	
	Rainbow	8,654	8.9	Rainbow	11,593	9.3
	Rainbow	28,877	1.1	Bowcutt	1,001	10.3
				Tiger	199	8.6
				Tiger	25,751	2.4

Tag wild and hatchery raised brown trout (if available) with color and number specific Floy tags. No fish were tagged during 2013; however, during 2012 fish tagged at Mason Valley Fish Hatchery and stocked at the Elbow were given yellow tags numbered 040-250. Wild brown trout caught during electrofishing at Rosaschi Ranch were tagged with green tags numbered 8001-8200. The office phone number of the name of the primary biologist was also included on all tags. Several angling groups that frequent the river were contacted about this project and advised to keep track of their catch and report any tagged fish caught. Seven tagged fish returns were reported during February through April. Two tagged fish were caught during electrofishing surveys in November. All fish reported were wild fish with green tags. Eight fish were caught within 500 yards of the bridge where they were tagged, the ninth fish had moved approximately 1.5 miles downstream. No hatchery tagged fish has been reported so far. Fish reported by anglers ranged from 16 in to 22 in, the two fish caught during electrofishing were 15.1 in and 15.6 in. Average size of wild fish tagged was 6.0 in (maximum was 18 in) and hatchery fish averaged 7.1 in. No tagged fish were observed on redds.

Monitor juvenile populations prior to spring runoff during fall electrofishing surveys. Brown trout sizes classes were divided into two major groupings, adult and juvenile (Figure 3). The majority of juvenile brown trout were in the 4.5 to 5.5 in class (111-140mm), however, a few reached 6.7 in (170 mm). Total range of juvenile brown trout was 3.5 to 6.7 in, suggesting a long spawning period. A long spawning period may contribute to the overall success given temporal changes in water conditions. During 2012, flows in the river reduced from 75 cfs in early October to 23 cfs in November, a 70% reduction. This was typical since the irrigation season ended, however, during 2013, flow reduction happened much sooner. Flow on August 14 was 101 cfs and on August 27 was 35 cfs.

Figure 3

Rosaschi Brown Trout Size Classes



MANAGEMENT REVIEW

The primary work program objectives for the East Walker River were completed in 2013. The data suggests that the East Walker River is meeting the goals and objectives of providing both a coldwater general fishery and a coldwater trophy fishery. Current regulations for both the general fishery and trophy fishery are adequate and should remain unchanged.

Fall electroshocking results were consistent to previous years. The typical trend of increasing trout abundance from downstream to upstream was observed again in 2013. A drop in estimated trout abundance downstream of Rosaschi Ranch is concerning and several phone calls and angler contacts report lower than normal catch rates. This may have been due to the early reduction in fall flows, which would have

lead to higher than normal temperatures in the lower sections of river. This either forced trout upstream prior to fall or temperatures could have become lethal. Mountain whitefish were not found at the Elbow, however, adults were found at Raccoon Beach and adults as well as juveniles were found at Rosaschi.

The East Walker River continues to be popular among anglers in western Nevada. Angler success rates and size of fish caught were within the boundaries of the management objectives and anglers expressed overall satisfaction with their fishing experience.

Funding for recreational improvement projects has become available for the East Walker River through the East Walker River Trustee Council, which administers the settlement money from an oil spill that occurred in December 2000. The Forest Service started organizing the improvement projects around the Rosaschi Ranch section of river and implementation of the construction phase was tentatively scheduled for summer of 2011, however, no progress has been made on improving the river.

In 2012, a study was initiated to determine the future need of stocking hatchery raised brown trout into the East Walker River. Natural reproduction (in California and Nevada) combined with the “catch and release” area may be enough to support an acceptable brown trout population. The 2014 forecasted drought and expected low flow may impact NDOW’s ability to stock fingerling brown trout, therefore, the study may be suspended until conditions are more representative of typical annual cycles.

RECOMMENDATIONS

General Management Objectives:

- Conduct a general fisheries assessment through opportunistic angler contacts and mail-in, angler questionnaire data
- Maintain and check for returns of angler drop-box surveys at least once per month.
- Monitor fish populations along the East Fork during three days of tote-barge electroshocking at four established sites during November to assist in determining if the objectives of a cold water trophy fishery are being met.

Study Specific Objectives:

- Monitor brown trout reproduction by visual encountering of redds, marking redds, and returning bi-weekly during the fall to assess egg deposition and fertilization (E.F. Walker River).
- Tag 200 wild and 200 hatchery raised brown trout (if available) with color and number specific Floy tags.
- Monitor juvenile populations prior to spring runoff during fall electrofishing surveys

- Determine current and historical status of hatchery stocking by both California and Nevada of Brown trout.
- Evaluate results of angler returns of tagged fish.

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Date: February 2014