

NEVADA DEPARTMENT OF WILDLIFE  
STATEWIDE FISHERIES MANAGEMENT



FEDERAL AID JOB PROGRESS REPORT  
F-20-50  
2014

EAST & WEST WALKER RIVERS  
WESTERN REGION



**NEVADA DEPARTMENT OF WILDLIFE, FISHERIES DIVISION  
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, 2014 through December 31, 2014*

**SUMMARY**

This was the third year of drought for the East Walker River and discharge was 27,845 acre-ft, which was the lowest in at least the last 15 years. Peak flow was recorded in mid-July at 92 cfs, during 2013, peak flow was observed during June at 156 cfs, during 2012, peak flow was in late July at 216 cfs, and during 2011, peak flow was recorded in late June at 922 cfs.

Based on the 2013 Mail-in Angler Questionnaire Survey for the East Walker River, anglers fished 1,774 days with a success of 1.97 fish per angler day. During 2013, angler numbers were estimated at 526, which was well below the seven-year average of 1,695. Fish per day, number of fish caught, and days spent fishing were all below the seven-year average.

The “general fishery” area of the east fork (Elbow, Raccoon Beach, and Zanis) continued to produce angler success rates in compliance with the angling objective, anglers yielded catch rates of 0.50 fish per hour and fish averaged 11.5 in (based on roving creel data). Rosaschi Ranch angler success was higher at 2.14 fish per hour, however, anglers fished longer at Rosaschi Ranch and, based on drop-box data, reported 4.37 fish per angler day, which was below the eight-year average of 6.49. Anglers also caught larger fish at Rosaschi Ranch (greater than 20 in) and based on roving creel data had an average of 12.5 in for rainbow and 15.0 in for brown trout.

East Walker River electrofishing survey methods were not consistent with previous years, therefore, the results may not be directly comparable with previous data, however, the historical trend of an increasing trout population from downstream to upstream was observed during 2014. Abundance below Rosaschi Ranch was estimated to be well below average for the second year. Trout population numbers at Rosaschi Ranch were also well below average.

In 2014, the East Walker River was stocked with 11,835 rainbow trout averaging 9.3 in; the majority of trout were stocked at the Elbow. The West Walker River was stocked with 10,421 rainbow trout averaging 9.6 in and 6,199 brown trout averaging 8.2 in.

A brown trout reproduction study for the east fork was initiated in 2012 to monitor the reproductive activity and success of brown trout as well as the contribution of hatchery raised fish to the population. 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. The extremely low flows during the fall of 2014 were likely to have negatively impacted brown trout reproductive success. Coordination with the California Department of Fish and Wildlife on stocking fingerling brown trout was initiated during 2014 and 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  $-17.8^\circ\text{C}$  ( $0^\circ\text{F}$ ), 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 five 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 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.

### 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 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 (EF Walker River).
- Determine current and historical status of hatchery stocking by both California and Nevada of brown trout.
- Evaluate results of angler returns of tagged fish.

## 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 2013 to 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 at least once per month.** 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 2014. This survey was conducted during the first week in November. Historically, an electrofishing tote barge was towed through the transect for one-pass without the use of block nets and in at least two pools and two riffles per site. During 2014, extremely low flows observed during the fall did not provide enough water to float the tote barge, therefore, a Halltech backpack shocker was used with one netter and the transects were surveyed from downstream to upstream. Electrofisher settings were typically 350 volts output at 60 Hz.

### 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 during electrofishing efforts. Visual surveys included walking along the riverbank and noting locations of spawning brown trout and redds. No active redds were found, however, evidence of abandoned redds was observed.

**Tag 200 wild and 200 hatchery raised brown trout (if available) with color and number specific Floy tags.** No fish were tagged during 2014 or 2013 due to unavailability of catchable sized hatchery brown trout (the small number of brown trout available during spring 2014 were allocated to the West Walker River), 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 six inches, 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 2014 using a backpack electrofisher. A crew of one shocker and one netter moved upstream through each transect for one-pass without the use of block nets and in at least two pools and two riffles per site. The electroshocker was typically adjusted to 350 volts and 60 Hz. All fish including juvenile brown trout were counted, measured, and tags were noted.

**Determine current and historical status of hatchery stocking by both California and Nevada of brown trout.** Coordination with California Fish and Wildlife was successful. Fish stocking history from 2001 to 2013 for the Walker River (east and west forks) were received upon request. Future stocking plans by both California and Nevada were shared between the respective agencies.

**Evaluate results of angler returns of tagged fish.** All tagged fish reported were evaluated during 2013; no additional tagged fish were reported during 2014.

## **FINDINGS**

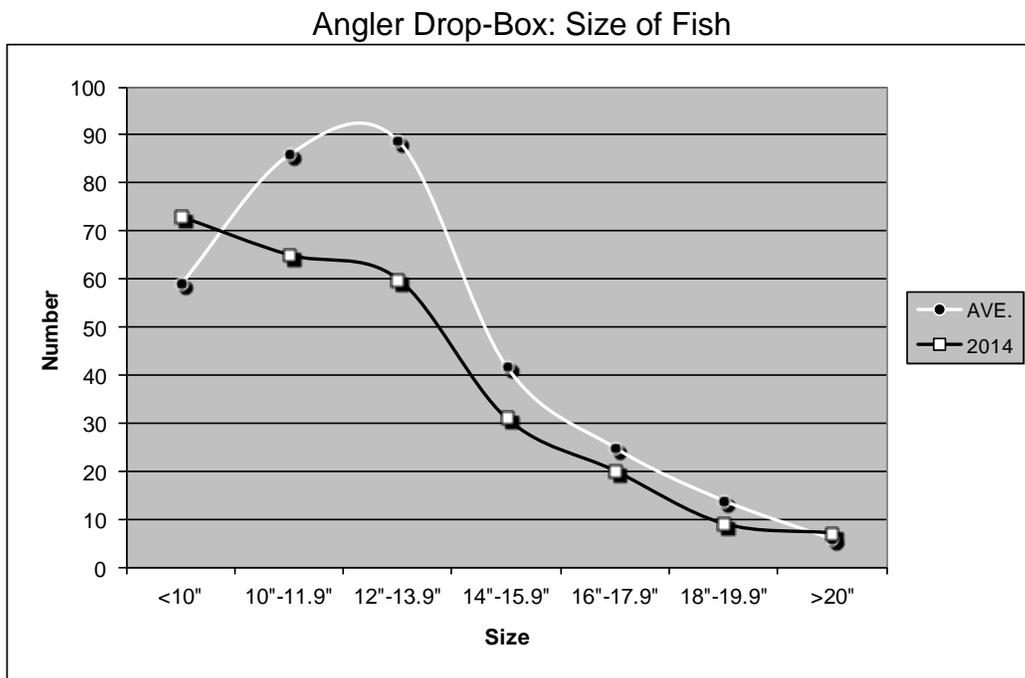
### General Management Objectives:

**Conduct a general fisheries assessment through opportunistic angler contacts and mail-in angler questionnaire data.** Angler contacts were made on 10 occasions during 2014 and anglers fishing the Rosaschi Ranch section had a catch rate of 1.09 fish per hour. Fifteen anglers were checked who fished 55 hrs to catch 60 fish. Size of fish ranged from 10.1 to 19.6 in and averaged 14.0 in. 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 2014 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 12.5 in for rainbow trout and 15.0 in for brown trout. This average size 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**



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.” Seven angler contacts were made downstream of Rosaschi Ranch, showing a catch rate of 0.50 fish per hour and 2.14 fish per angler day. Most fish measured were rainbow trout caught near the Elbow. The size of fish caught typically averaged 11.5 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 Management Concept were met.

The annual mail-in, angler questionnaire data for the East Walker River from 2007 through 2013 is summarized in Table 1. Estimated angler use and success is down from previous years and well below average.

**Table 1**

Mail-in, Angler Questionnaire Data

	2007	2008	2009	2010	2011	2012	2013	Ave
Number of Anglers	1,897	1,618	3,096	2,030	1,905	2,488	526	1695
No. Angler Days	7,597	7,060	10,137	8,228	6,118	9,150	1,774	6258
Total Fish Caught	42,722	25,186	54,005	42,889	34,179	39,139	3,504	30203
Fish per Angler Day	5.62	3.57	5.33	5.21	5.59	4.28	1.97	3.95

**Maintain and check for returns of angler drop box surveys at least once per month.** Volunteer, angler drop-box questionnaires, which were collected at Rosaschi Ranch from 2007 through 2014, 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. During 2014, number of anglers participating in the survey and number of hours fished was above the eight-year average; however, a drop in catch rates (both in fish per hour and fish per day) to below the eight-year average was reported.

**Table 2**

Rosaschi Ranch Drop-Box Survey Results

	2007	2008	2009	2010	2011	2012	2013	2014
No. Anglers	63	60	50	34	26	37	65	62
Hrs Fished	270.25	244.5	203	139.5	131	195	289.5	304
Rainbow	249	244	120	142	76	190	319	113
Brown	175	89	80	63	53	164	185	139
Whitefish	43	16	5	7	7	18	16	19
Fish/Hour	1.73	1.43	1.01	1.52	1.04	1.91	1.80	0.89
Fish/Day	7.41	5.82	4.10	6.24	5.23	10.05	8.00	4.37

Size of fish caught was also recorded from angler drop-box surveys, the nine-year average and results from 2014 are represented in Figure 1. More fish in the “less than 10 in” size class were reported during 2014 than the eight-year average. Fish sizes from 10-14 in during 2014 showed a notable drop in frequency from the eight-year average, however, fish larger than 14 in showed similar frequency to the average. Table 2 shows catch rates during 2014 were also well below average.

Based on drop-box data, most fish were caught during June and July 2014 when flows were peaking (Figure 2), which represents a shift from a typical year when most fish are caught during the fall when flows are similar (discharge is 4,000-6,000 AF per month). The survey also showed anglers were highly satisfied with catching many large

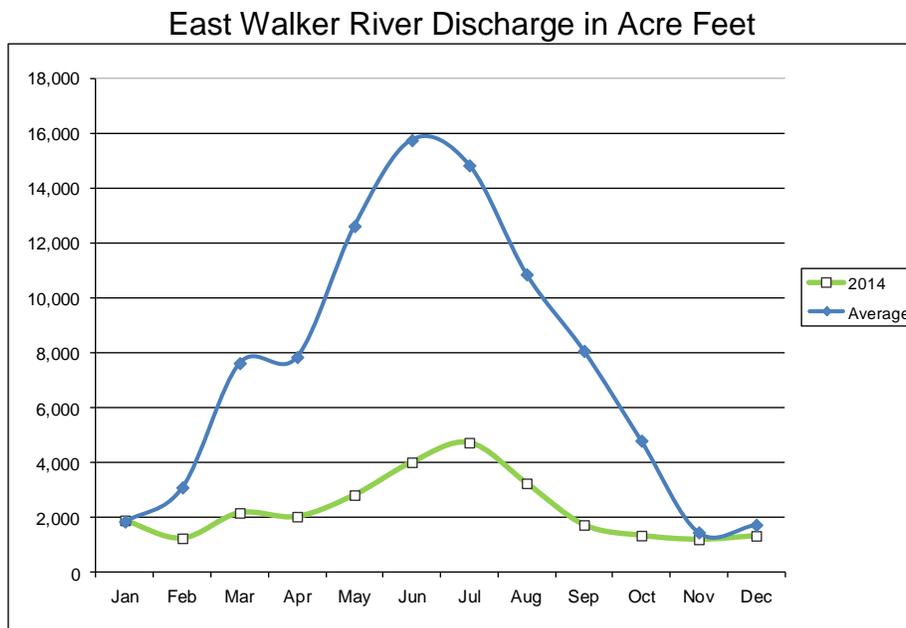
fish. Angler drop-box data and mail in, angler questionnaire data from 2006 through 2014 suggest that Rosaschi Ranch meet objectives of a coldwater trophy fishery.

**Table 3**

Rosaschi Ranch Drop-Box Satisfaction Survey

	Overall Experience	Size of Fish	Number of Fish
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
2014	0.91	0.58	0.40
AVE	1.14	0.91	0.73

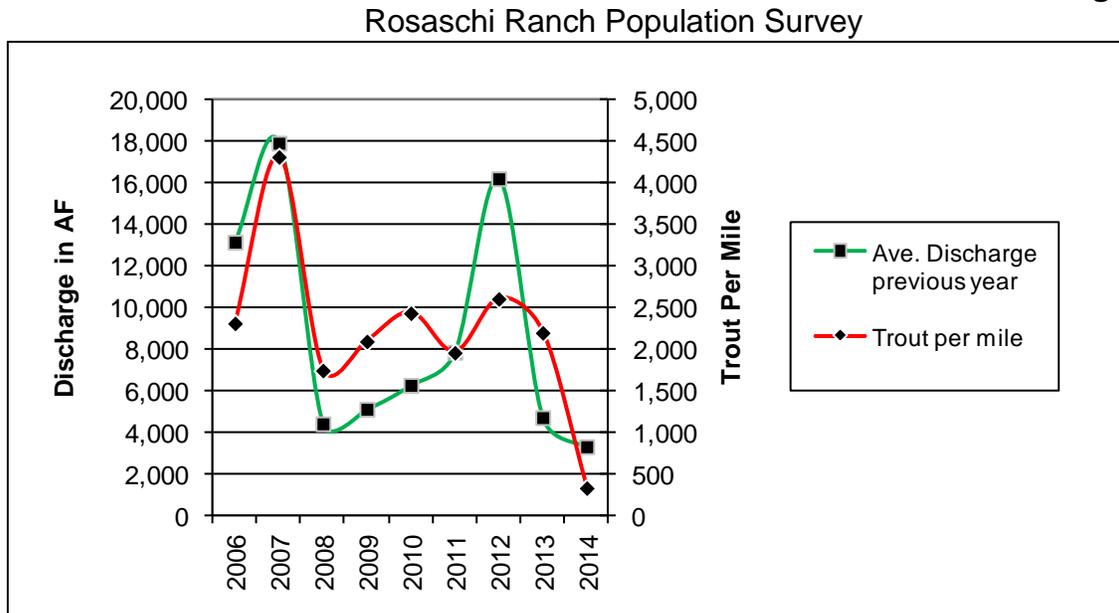
**Figure 2**



**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 fluctuated annually (Figure 3). During 2014, flows were too low to use a tote barge, therefore sampling methods were different and data may not be comparable to the historical trend. Estimated trout populations typically increase from downstream to upstream and, during 2014, it ranged from a low of 25 fish per mile at the Zanis transect to a high of 323 fish per mile at the Rosaschi transect. There was an equipment malfunction at the Raccoon Beach transect and no survey was conducted. The Elbow had an estimated population abundance of 30 fish per mile.

Population surveys were not conducted during 2011, but abundance was estimated at 1,952 fish per mile at Rosaschi using an equation developed during 2010. During 2013, trout abundance was much higher than in 2014. Population estimates during 2013 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 during 2013 was 2,192 fish per mile, which was down slightly from 2012 (2,600 fish per mile).

**Figure 3**



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 for redds were only conducted during electrofishing efforts and no active redds were found.

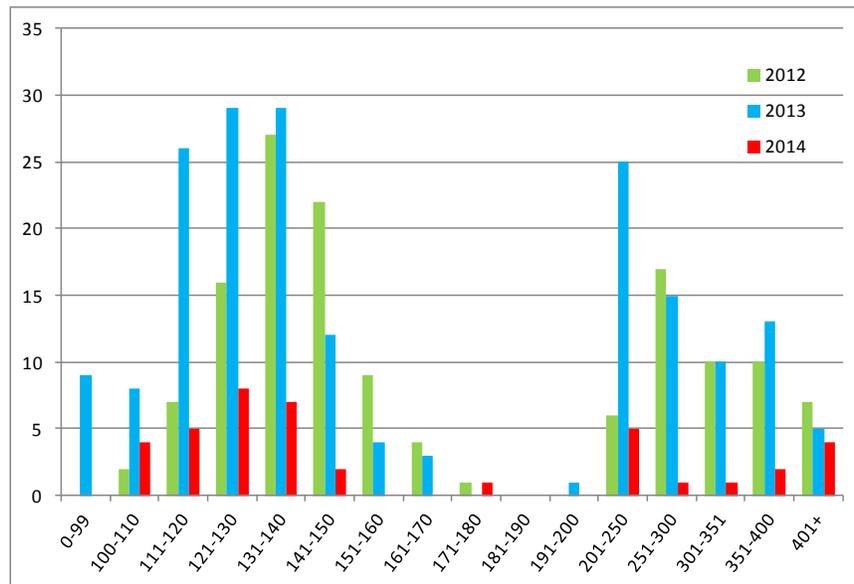
**Tag 200 wild and 200 hatchery raised brown trout (if available) with color and number specific Floy tags.** No fish were tagged during 2013 or 2014 due to hatchery availability of brown trout; however, during 2012, fish tagged at Mason Valley Fish Hatchery and stocked at the Elbow were given yellow 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.

**Monitor juvenile populations prior to spring runoff during fall electrofishing surveys.** Brown trout size classes were divided into two major groupings; adult and juvenile (Figure 4). The majority of juvenile brown trout were in the 4.5 to 5.5 in class

(111-140mm), however, a few reached 7.0 in (180 mm). Total range of juvenile brown trout was 3.9 to 7.1 in, suggesting a long spawning period. A long spawning period may contribute to the overall success given temporal changes in water conditions. During 2012, flow in the river was 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). During 2014, flows peaked at 92 cfs on July 5 and by August 20, flows were reduced to 44 cfs. Flow during the fall spawning period remained fairly consistent (between September 9 and December 30, flows fluctuated between 20 and 26 cfs). Low flow resulted in limited available spawning habitat, however, the stability of the flow was likely to have contributed to the success of any recruitment, whereas typical fall flow regimes are detrimental for brown trout reproduction due to the dramatic drop in flow during egg deposition and fry development.

**Figure 4**

**Rosaschi Brown Trout Size Classes**



**Determine current and historical status of hatchery stocking by both California and Nevada of brown trout.** Coordination with California Fish and Wildlife was successful. Fish stocking history from 2001 to 2013 for the Walker River (east and west forks) was received upon request. Future stocking plans by both California and Nevada were shared between the respective agencies. 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. Fingerling brown trout are stocked (when fish are available) at the Elbow (NDOW) and upstream in California (CDFW, Table 5) to help support the brown trout population. California

Department of Fish and Wildlife also stocks fish into the west fork, however, that information is not included in Table 5.

**Table 4**

**Walker River Stocking Summary 2014**

East Fork	Date	Species	Strain	Number	Size
	2/24/2014	Rainbow	MT. SHASTA	3510	9.3
	3/25/2014	Rainbow	MT. SHASTA	2618	10.0
	5/11/2014	Rainbow	TRIPLOID	2480	9.3
	6/4/2014	Rainbow	TRIPLOID	1619	9.1
	9/11/2014	Rainbow	TAHOE	1608	9.0
			Rainbow Total	11,835	9.3
West Fork	Date	Species	Strain	Number	Size
	2/7/2014	Brown	SHEEP CREEK	3618	7.7
	2/19/2014	Brown	SHEEP CREEK	2581	8.6
	3/5/2014	Rainbow	EAGLE LAKE	369	9.1
	3/5/2014	Rainbow	MT. SHASTA	1863	9.7
	6/4/2014	Rainbow	TRIPLOID	1357	9.1
	9/3/2014	Rainbow	TAHOE	1833	9.6
	9/25/2014	Rainbow	TAHOE	1853	9.9
	7/10/2014	Rainbow	TAHOE	1590	10
	10/16/2014	Rainbow	TAHOE	1556	9.8
			Brown Total	6,199	8.2
			Rainbow Total	10,421	9.6

**Evaluate results of angler returns of tagged fish.** All tagged fish reported were evaluated during 2013, no additional tagged fish were reported during 2014. During 2013, seventeen tagged fish returns were reported between February and April. Two tagged fish were caught during electrofishing surveys in November. All fish reported were fish with green tags (wild caught). Twelve fish were caught within 500 yards of the bridge where they were tagged, four fish had moved approximately 1.5 miles downstream. No hatchery tagged fish has been reported so far. Fish reported by anglers ranged from 16 to 22 in and the two fish caught during electrofishing were 15.1 in and 15.6 in. Average size of wild fish tagged was six inches (maximum was 18 in) and hatchery fish averaged 7.1 in. No tagged fish have been observed on redds to date.

**MANAGEMENT REVIEW**

The primary work program objectives for the East Walker River were completed in 2014. 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.

Table 5

## Walker River Stocking History

		East Fork			West Fork (NDOW only)		
			Number	Size (in)		Number	Size (in)
2013	NDOW	Brown	14,756	2.4	Brown	7,845	3
		Rainbow	12,026	10	Rainbow	21,229	9.8
	CDFW	Brown	100,188	3.28			
2012	NDOW	Brown	11,504	2.4	Brown	10,382	1.9
		Rainbow	11,136	11.5	Rainbow	10,978	10.2
		Brown	200	7.0			
	CDFW	Brown	100,036	3.4			
2011	NDOW	Brown	16,116	3.3	Brown	9,943	2.6
		Rainbow	7,968	10.1	Rainbow	10,484	9.9
	CDFW	Brown	106,720	2.31			
2010	NDOW	Brown	5,139	7.6	Brown	0	
		Rainbow	11,936	9.7	Rainbow	10,484	9.9
		Brown	5,513	2.7			
	CDFW	Brown	100,000	2.33			
2009	NDOW	Brown	9,068	3.0	Brown	9,016	3.1
		Rainbow	14,639	10.0	Rainbow	9,865	9.8
	CDFW	Brown	99,996	2.37			
		LCT	73,800	4.65			
2008	NDOW	Brown	0		Brown	0	
		Rainbow	8,654	8.9	Rainbow	11,593	9.3
		Rainbow	28,877	1.1	Bowcutt	1,001	10.3
	CDFW	Brown	108,400	2.59	Tiger	199	8.6
		Brown	88,000	2.35	Tiger	25,751	2.4
		LCT	35,000	2.57			

Fall electroshocking results were not consistent to previous years, which is most likely due to severe drought conditions as well as differing survey methods. The typical trend of increasing trout abundance from downstream to upstream was observed again in 2014. A drop in estimated trout abundance throughout the river is concerning and several phone calls and angler contacts report lower than normal catch rates. This is likely due to drought conditions, which result in the reduction of flow and would have led to higher than normal temperatures in the river. This either forced trout upstream prior

to summer/fall or temperatures could have become lethal for juvenile trout as well as adult whitefish and rainbow. Mountain whitefish were only found at Rosaschi Ranch during 2014.

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 even though catch rates and fish population numbers were low.

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, some objectives of 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 five established sites during November.

### Study Specific Objectives:

- Fin clip 10,000 hatchery raised fingerling brown trout.
- 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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