NEVADA DEPARTMENT OF WILDLIFE
STATEWIDE FISHERIES MANAGEMENT

FEDERAL AID JOB PROGRESS REPORTS

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2014

Third and Incline Creeks
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: *Third and Incline Creek*
Period Covered: *January 1, 2014 through December 31, 2014*

SUMMARY

US Geological Service (USGS) data was used to assess water discharge (cfs) in Third and Incline creeks throughout the year. As expected, flow rates dipped below historic averages for most of the year in both creeks.

Beginning in late April and continuing through December, NDOW fisheries crews conducted single pass electrofishing surveys at three transects on both Third and Incline creeks twice a month. Species sampled were identified, measured, and released unharmed at each transect. Brook trout, rainbow trout, and kokanee salmon made up the sportfish species that were sampled, while speckled dace, Tahoe sucker, and Lahontan redsides made up nongame species. All species sampled were found at times that correlated with their expected spawning runs. Young of the year rainbow trout were also sampled in both creeks, with Third Creek having a larger number.

BACKGROUND

Lake Tahoe is situated in the eastern portion of the Sierra Nevada Mountains. Approximately 30 percent of the lake lies within Nevada. It is 22 miles long and 12 miles wide; has 123,300 surface acres; holds 122,160,280 acre-feet; has a maximum depth of 1,645 feet; and an average depth of 989 feet. A natural rim occurs at 6,223.0 feet above mean sea level (MSL), but a permanent concrete dam built in 1913 extends the lake elevation to 6,229.1 feet above MSL.

Many species of fish have been introduced into Lake Tahoe since its discovery in the 1880's for expanding angling opportunities. Rainbow trout *Oncorhynchus mykiss* was first stocked in 1885. Lake trout (mackinaw) *Salvelinus namaycush* was presumed to be stocked as early as 1888. Brook trout *Salvelinus fontinalis* was introduced in 1891, as were Atlantic salmon *Salmo salar*. Chinook salmon *Oncorhynchus tshawytscha* was first stocked in 1910 and silver salmon *O. kisutch* in 1913. The introduction of kokanee salmon, landlocked sockeye salmon *Oncorhynchus nerka,* was in 1949. Bonneville cisco *Prosopium gemmiferum* was stocked in 1964 to expand the food base of lake trout. Other introduced fishes include brown trout *Salmo trutta*, largemouth bass *Micropterus salmoides*, brown bullhead *Ictalurus nebulosus*, mosquito fish *Gambusia affinis*, and golden shiner *Notemigonus crysoleucas*. However, many of these introductions quickly failed and today lake trout, rainbow trout, brown trout, and kokanee salmon represent the bulk of the sport fish community in Lake Tahoe. Increased sightings of largemouth bass from around the lake, on the other hand, suggest it is expanding into new habitats.

Native fish communities in Lake Tahoe consist of mountain whitefish *Prosopium williamsoni,* although it was also stocked abundantly in the early 1900's, Tahoe sucker *Catostomus tahoensis*, Lahontan mountain sucker *C. platyrhynchus*, speckled dace *Rhinichthys osculus robustus*, Lahontan redside *Richardsonius egregius*, Lahontan tui chub *Gila bicolor obesus*, and Paiute sculpin *Cottus beldingii*. Lahontan cutthroat trout *Oncorhynchus clarkii henshawi* was native to Lake Tahoe. This fish once was very abundant and grew to 30 pounds. However, the natural population was extirpated by the 1940's. Habitat disturbance, competitive interaction from introduced fishes, lack of spawning habitat resulting from tributary dewatering or impediments, and substantial commercial harvest have been noted to precipitate the extinction of LCT from Lake Tahoe.

Sixty-three tributary creeks enter Lake Tahoe including Third and Incline creeks, which are situated in Crystal Bay near Incline Village, Nevada. These tributaries are important for resident sport fishes (e.g., brook and rainbow trout), spawning of lacustrine fishes including native non-game fish, and rearing of juvenile fishes. These streams also play an increasing role in transporting nutrients into the lake. Within the Nevada portion of Lake Tahoe, Third and Incline creeks have been noted for the possibility of Lahontan cutthroat trout reintroduction and a study is ongoing to assess the feasibility of this. The Truckee River is the only natural outlet from Lake Tahoe.

OBJECTIVES

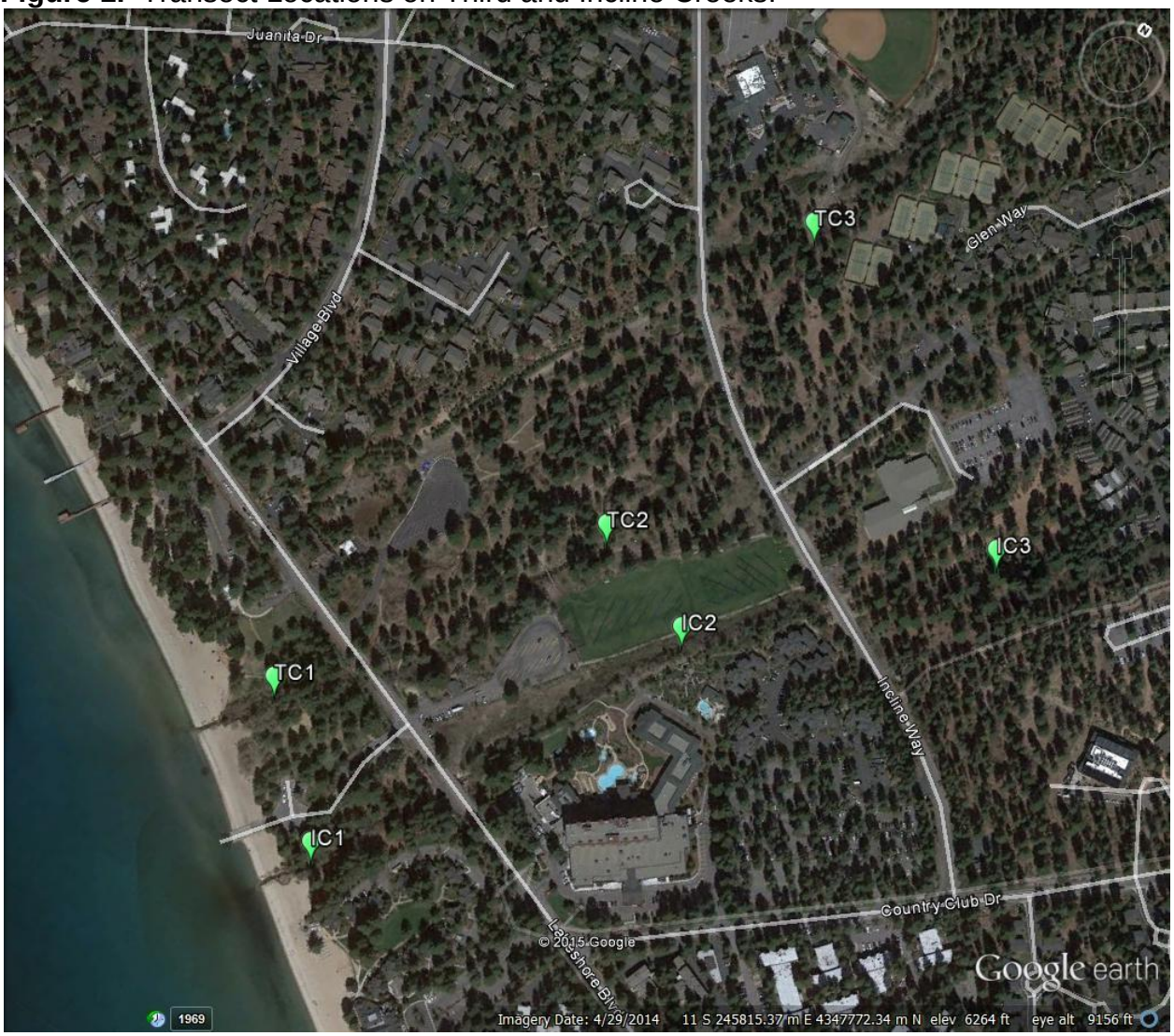
- Monitor water quantity (discharge) through USGS stream flow data.
- Conduct electrofishing transects twice monthly between April and November to determine presence and relative density of native and non-native fish populations.

PROCEDURES

Monitor water quantity (discharge) through USGS stream flow data. US Geological Service (USGS) data was used to assess water discharge (cfs) in Third and Incline creeks throughout the year.

Conduct electrofishing transects twice monthly between April and November to determine presence and relative density of native and non-native fish populations. Beginning in late April and continuing through December, NDOW fisheries crews conducted single pass electrofishing surveys at three transects on both Third and Incline creeks twice a month. Transects on each creek were placed approximately 0.25 miles apart, with the most downstream transect being located just upstream of Lake Tahoe (Figure 1). All six transects were 200 feet in length and were shocked in an upstream direction. All species captured were identified, measured, and released back into the creek unharmed. Flow rate and water temperatures were also recorded on each visit.

Figure 1. Transect Locations on Third and Incline Creeks.



FINDINGS

Monitor water quantity (discharge) through USGS stream flow data. Analyzing the data gathered by the USGS gage located on Third Creek reveals that average discharge throughout 2014 was lower than the 40-year average (Figure 2). This was expected based on lower than average snowpack and precipitation levels since 2012. While flows were lower than average, it was believed that spawning activity and utilization of the stream habitat by both lacustrine and fluvial fish species were not hindered as sufficient habitat remained available throughout the year.

Flow rates at the USGS gage on Incline Creek (Figure 3) were quite similar to those on Third Creek with the exception of one large precipitation event in late July that altered flows from around 1.0 cfs to over 100.0 cfs in a matter of hours. Overall flows were lower than the 30-year average but, as with Third Creek, it is not believed that there were negative impacts to the fishery.

Figure 2. USGS Gage – Third Creek – 2014 Discharge Summary.

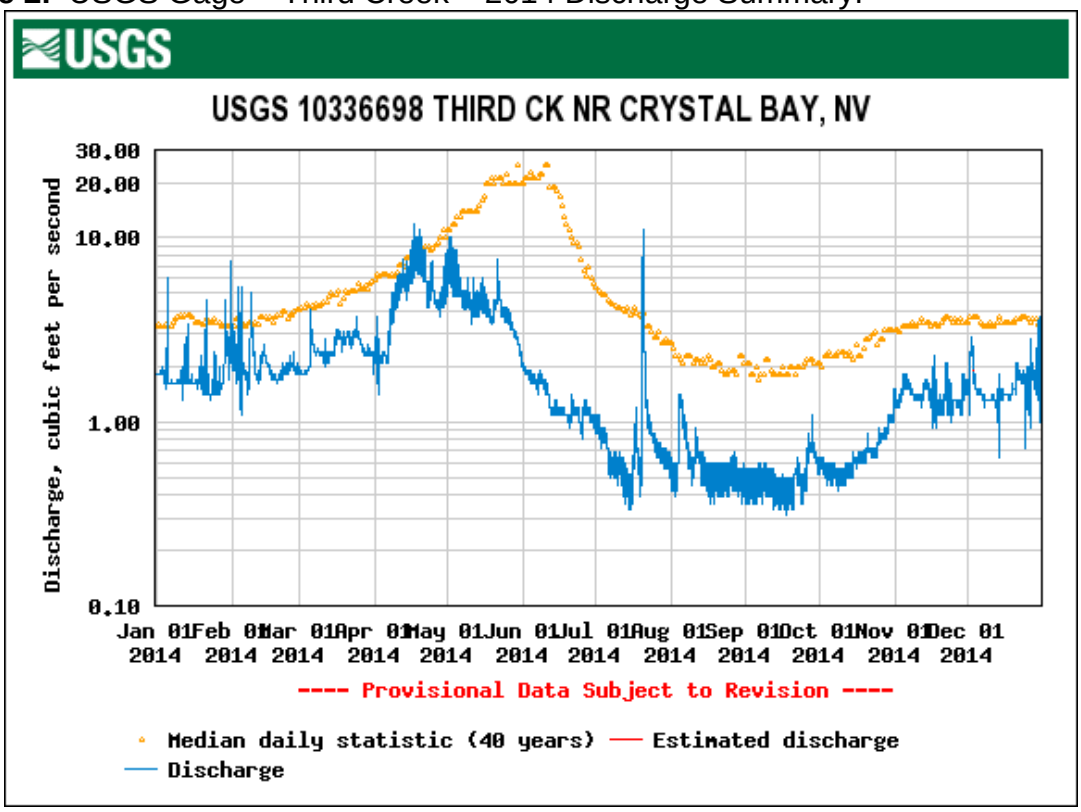
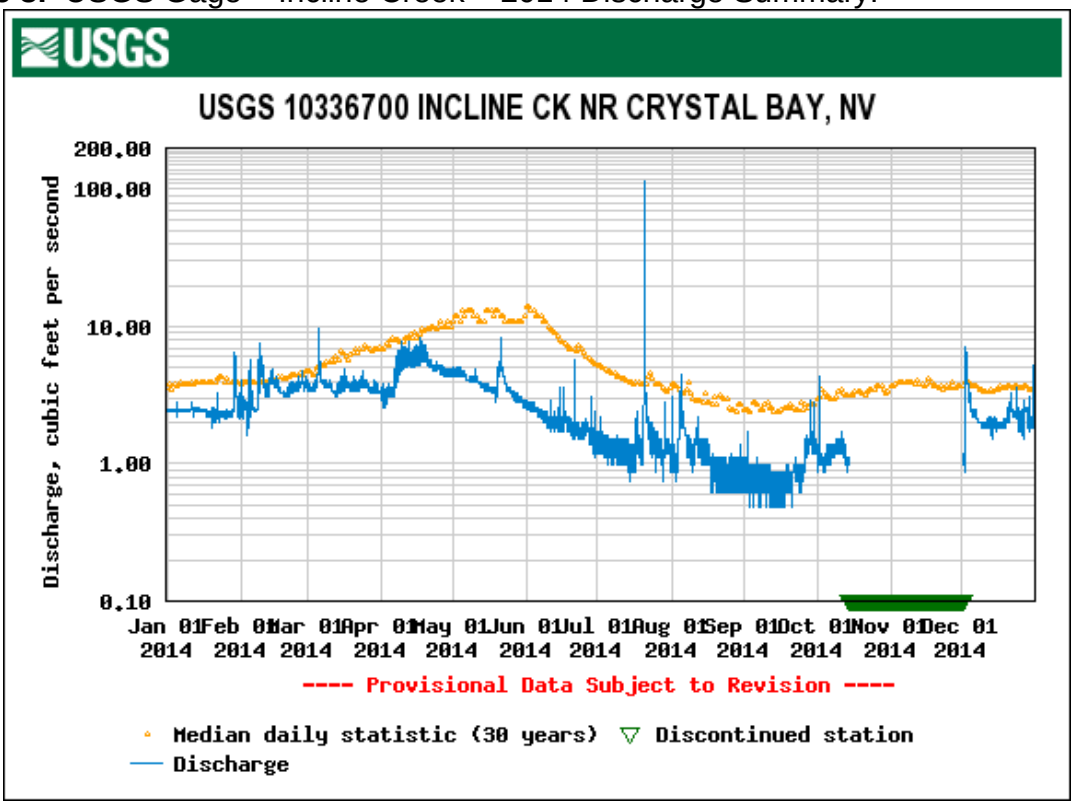


Figure 3. USGS Gage – Incline Creek – 2014 Discharge Summary.



Although the Lake Tahoe Basin has been suffering from an extended drought (2012 to present), both Third and Incline Creeks have not been as affected as some of the lower elevation waters in the area. Being at the top of the system and void of anthropomorphic diversions allows for a more natural flow regime in both streams.

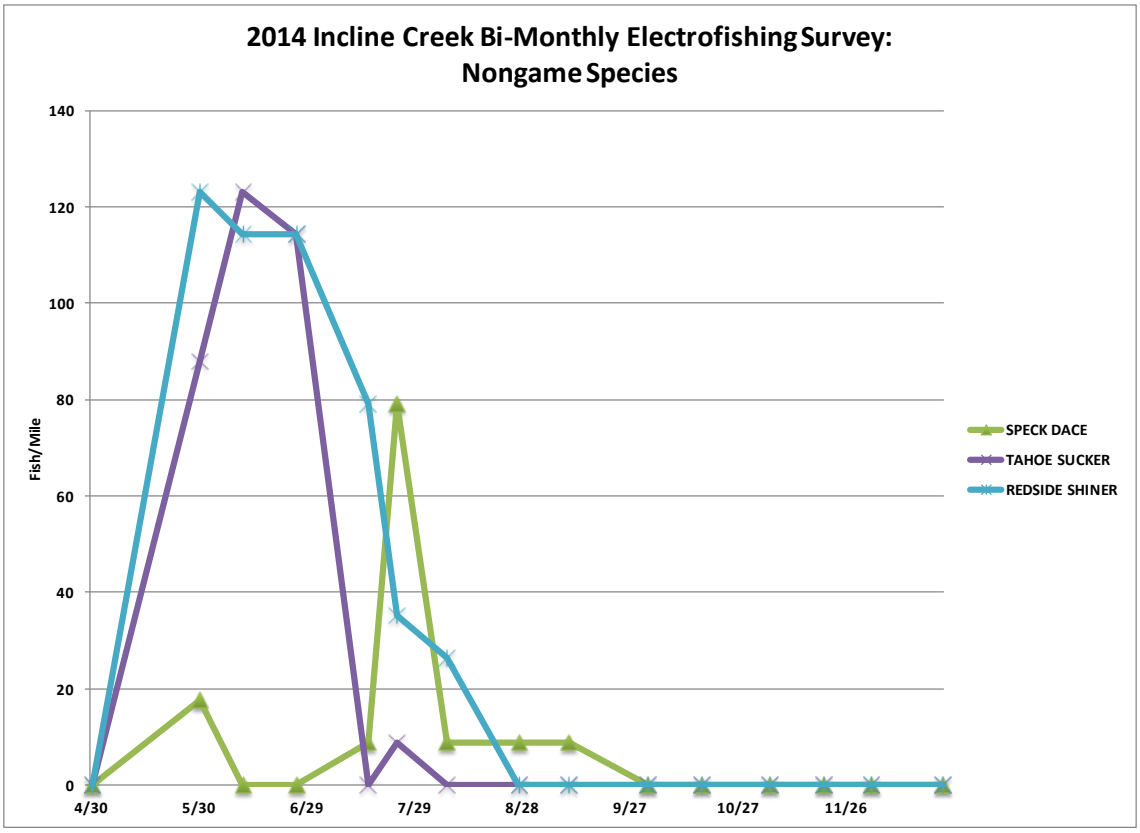
Conduct electrofishing transects twice monthly between April and November to determine presence and relative density of native and non-native fish populations. Bi-monthly electrofishing surveys were conducted at three transects on both Third and Incline creeks. All species sampled were identified, measured, and released unharmed.

Incline Creek

Brook trout and rainbow trout that were less than 300 mm were consistently the most prevalent species in the system, while numerous other species showed density spikes throughout the year. These influxes corresponded with expected spawning runs of each species.

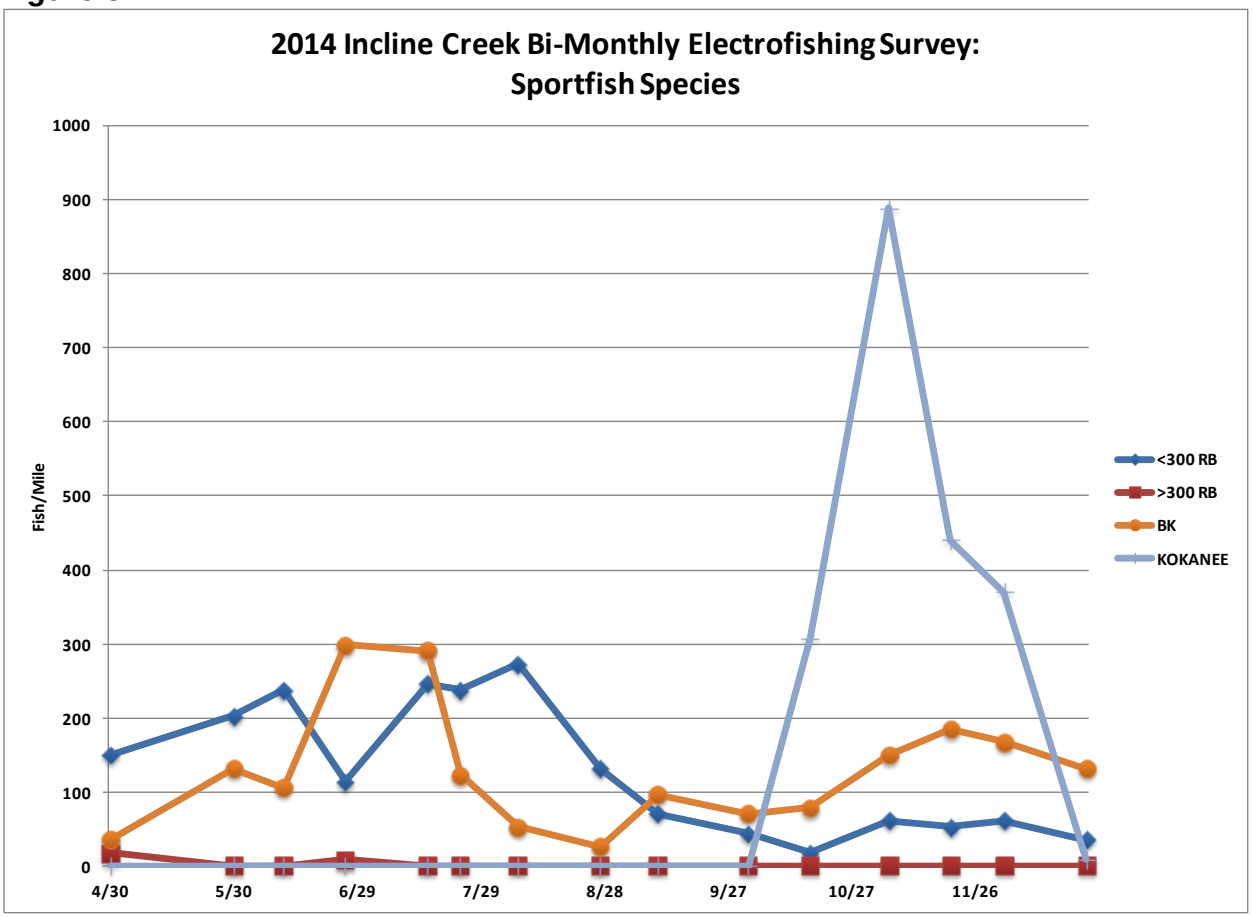
Nongame species (speckled dace, Tahoe sucker, Lahontan redside) were first detected in the lowest transect of Incline Creek (T1) in late May and remained in the system until early August (Figure 4). Nongame species were never sampled upstream of T1 on Incline Creek.

Figure 4.



Rainbow trout larger than 300 mm (ad-fluvial spawners) were sampled on the initial trip to Incline Creek and again during late June (Figure 5). The single fish sampled in late June had previously spawned and was found at the midlevel transect. Kokanee salmon was first sampled on October 17 and remained in the system until the middle of December in substantial numbers (Figure 5). Kokanee salmon was the most prevalent species at the lowest transect, but was never sampled higher than T1.

Figure 5.

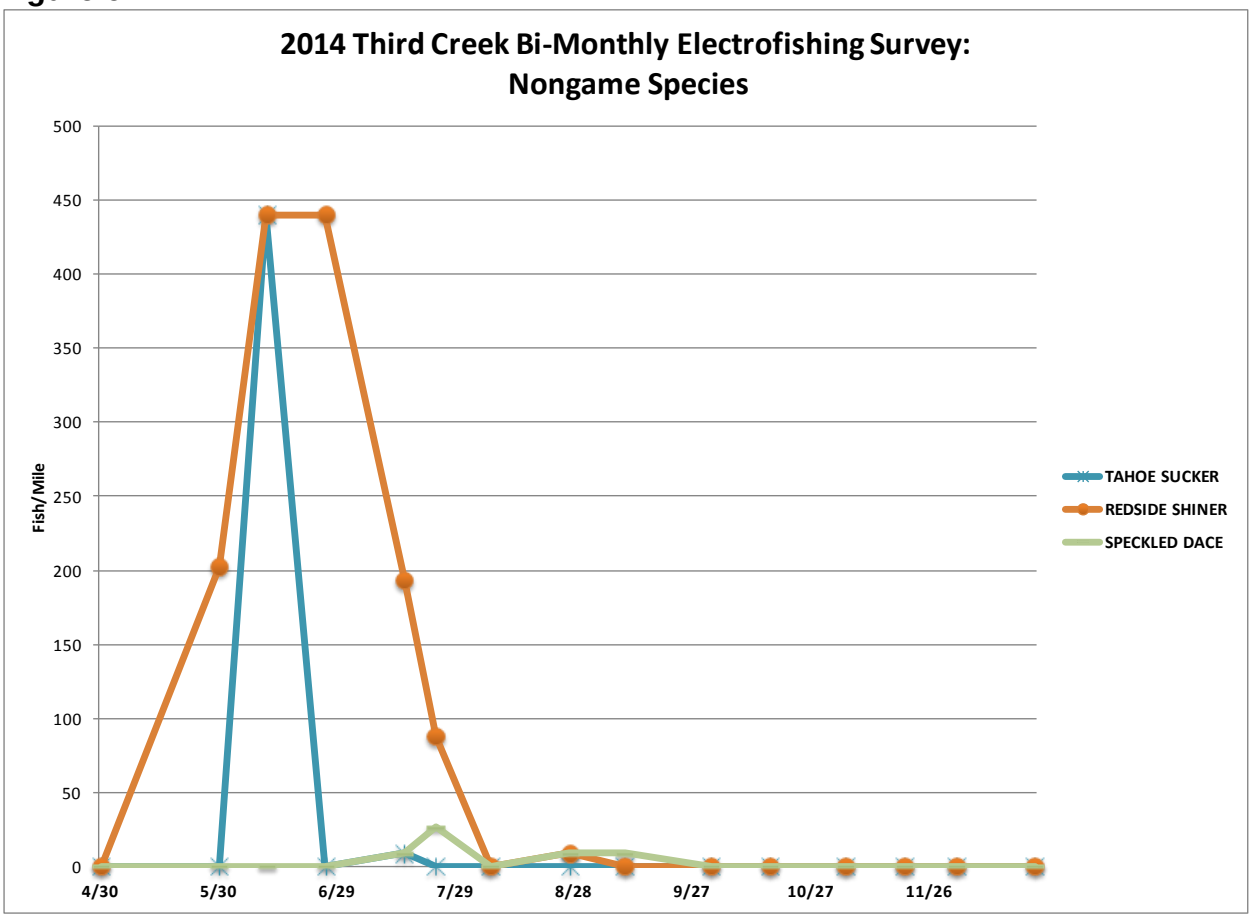


Third Creek:

As with Incline Creek, brook trout and rainbow trout that were less than 300 mm were consistently the most prevalent species in the system, while numerous other species showed estimated density spikes throughout the year. These influxes corresponded with expected spawning runs of each species.

Nongame species were first detected in Third Creek in late May and remained in the system at T1 until early September (Figure 6). Third Creek appears to have habitat that is more conducive to spawning by these nongame species than Incline Creek as higher numbers were observed and remained in the system for a longer period.

Figure 6.



Sportfish population trends in Third Creek were similar to Incline Creek in the timing of influxes and the relative consistency of both brook trout and fluvial rainbow trout (less than 300 mm). Ad-fluvial rainbow trout in Third Creek were sampled at the highest point of either stream (T3). This is encouraging as it shows the ability for ad-fluvial salmonids to ascend the creek to elevations that were previously thought unreachable. Kokanee salmon were found to ascend Third Creek later than they did in Incline Creek and were present in lower numbers (Figure 7). As with Incline Creek, the kokanee in Third Creek were never sampled above T1.

Juvenile rainbow trout numbers in both creeks fluctuated similarly throughout the year. Both creeks had a spike in the number of sampled fish in July followed by a decline and then a smaller spike in late August. The reason for these spikes and subsequent declines is unknown at this point. Third Creek appears to be more conducive to rainbow trout spawning as it consistently held higher numbers of juveniles (Figure 8). This data will be useful for developing a plan to reintroduce Lahontan cutthroat trout to the area.

Figure 7.

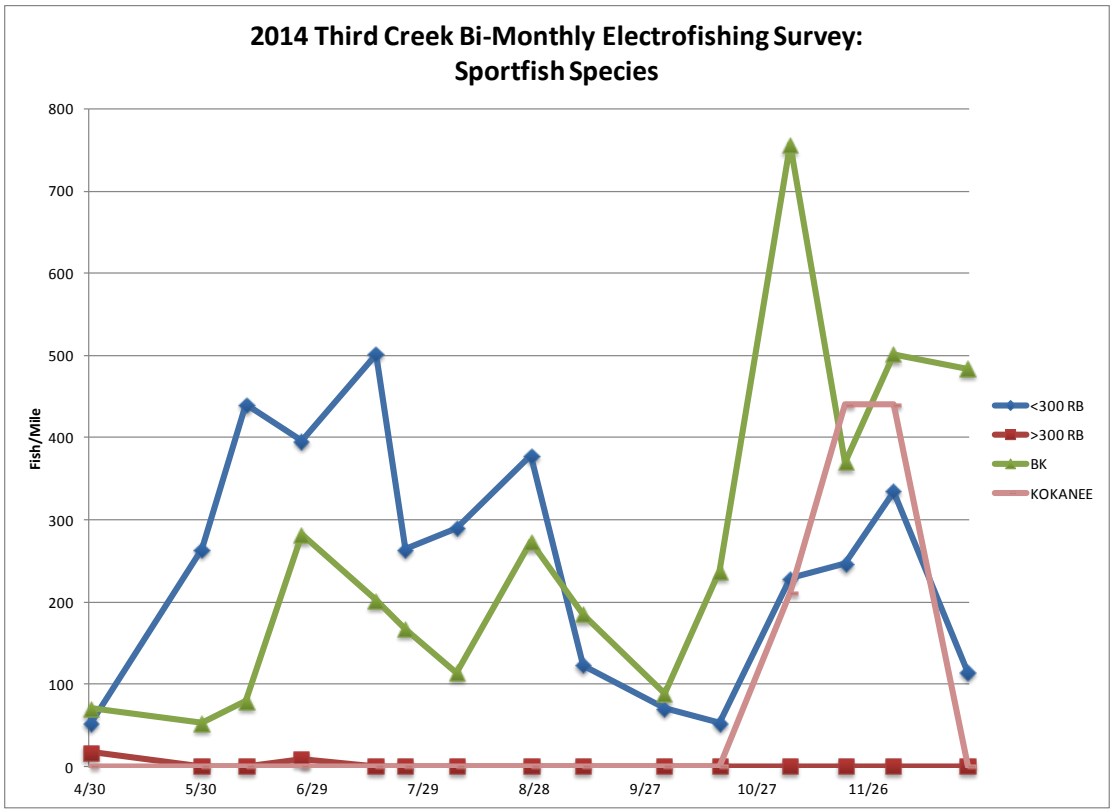
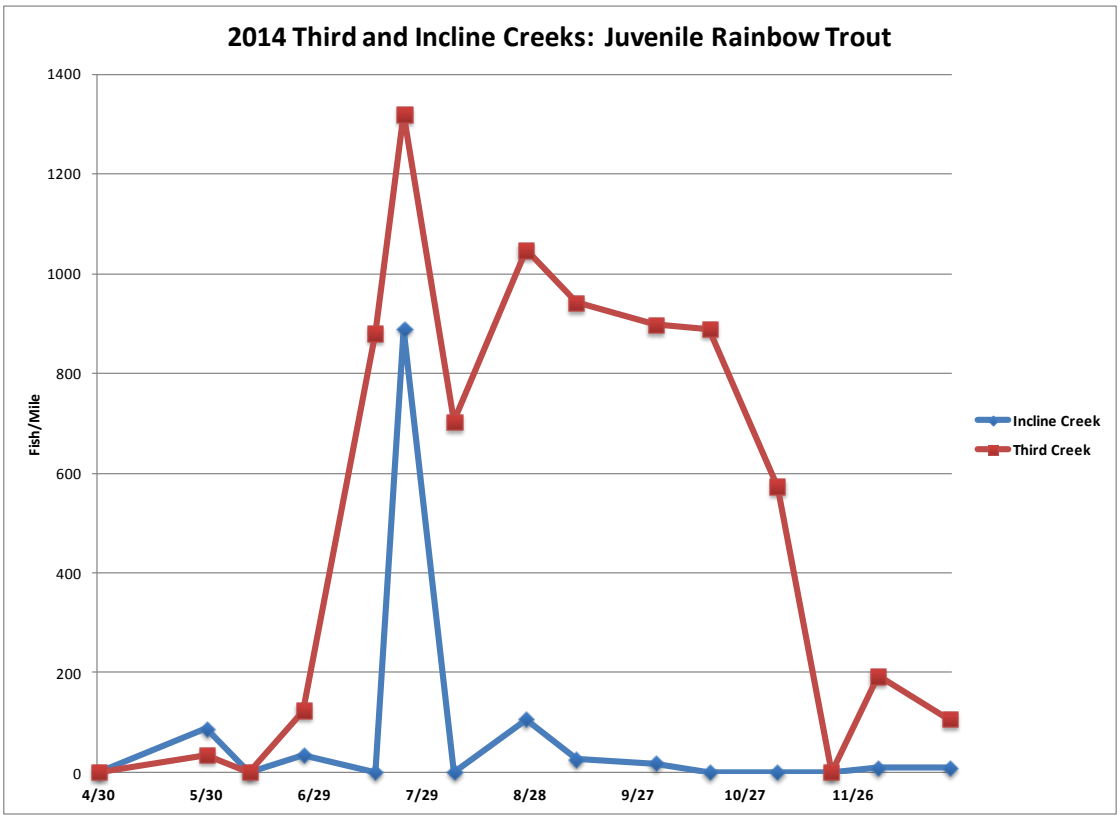


Figure 8.



MANAGEMENT REVIEW

Third and Incline creeks have suffered from lower than average precipitation over the last three years, but the effects on the creeks themselves are not as drastic as some of the other waters in the area have realized. Being at the top of a complex system benefits both creeks as water is not diverted and is generally able to flow uninterrupted from inception to its respective confluence with Lake Tahoe. Because of the water conditions in Third and Incline creeks, they both serve as important habitat for both resident fluvial and ad-fluvial fish that ascend the creeks during spawning. The Creeks have also shown to be important nursery habitat for juvenile salmonids throughout the year. Continued monthly composition surveys combined with a new study to assess the possibility of reintroducing Lahontan cutthroat trout to the system will offer more information in the near future.

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