

Institute for Conservation Advocacy Research and
Education
ICARE

Suscol Creek Collaborative Partnership and
Restoration Project

Final Report 2008



Prepared by Charley Dewberry for Napa Wine Estates LLC
January 2008



Abstract

This year marks our fifth year of the Suscol Creek project. With each additional year of sampling we increase our understanding of Suscol Creek. Also, with the addition of the upper property we are now able to survey the entire population of steelhead in Suscol Creek. This addition makes the Suscol Creek project a truly unique study within the Napa basin.

The water year 2008 (from October to September) was a dry year when compared with the past 90 years of record from the recording station at the Napa State Hospital. The average precipitation for the water year was 20.77 inches, which is about 16% less than the long-term average.

We conducted our usual June survey beginning above the spray fields of Napa Sanitation. No coho were observed below the highway bridge. In our normal study reach we observed: steelhead 393 age 0 steelhead, 8 age 1+ steelhead , and 15 age 2+ steelhead age. In addition no centrarchids were observed this year. The number of age 0 steelhead was significantly above average for the last five years. The number of age 1 and 2 steelhead was significantly lower than the observed averages over the last five years.

We continued the analysis of the life histories of steelhead in Suscol Creek, which provides the most sensitive tool for tracking the steelhead

population over time. The 2004 cohort (generation) has a survival rate of about 50% each year to age 2. This represents an excellent survival rate. The survival rates have been significantly lower during the last couple of years because of the lower than average stream flows.

Also during the year, we completed a survey of upper Suscol including the 2 forks. There were steelhead throughout the reach. The riparian zone has been impacted by cattle grazing over the years.

During September 2008 we completed the mesh screens around the outlet pipes for the reservoir. This will eliminate centrarchids from moving into the stream channel during storms and competing with the steelhead during the rest of the year.

During the 2009 season we would like to: continue our June snorkel survey including the upper reaches, work on restoration efforts on the upper property, especially Blackberry removal, and continue to collect stream flow and temperature records.

Introduction

The 2007-8 Water Year

The water year from October 2007 to September 2008 was a drier than average year based on the 90 year record from the Napa State Hospital. The average precipitation is normally about 24.8 inches per year. During the current water year only 20.77 inches were observed (Figure 1). This is an annual average of 84%. Only January had a higher than average monthly precipitation (see Table 1 and Figure 1).

This is the second year in a row with less than average annual precipitation. The 2007 water year was a severe drought year: annual precipitation was only 15.2 inches or 61% of average precipitation. Therefore, stream flows were less than average for the second year in a row.

The Suscol Creek Steelhead Population

We conducted our annual June survey beginning above the spray fields of Napa Sanitation. No steelhead were observed below the highway 29 bridge. In our normal study reach we observed: 393 age 0 steelhead, 8 age 1+, and 15 age 2+ steelhead. The number of age 0 steelhead was above average for the last five years (Table 2). The number of age 1 and 2 steelhead was lower than the observed averages over the last five years.

The survival of steelhead during the 2008 water year was less than average because of the lower stream flow during the summer months. Age 0 steelhead (in 2007) declined from over 200 to less than 10 age-1+ during the present year. This is significantly lower survival than we have seen before. Age 1+ steelhead decreased from 25 to 15 age-2+ steelhead. This represents a survival rate of 60%. This is a high survival rate. It is likely that the low numbers of age 1+ steelhead meant that there was sufficient high quality habitat for the available fish.

It appears that the number of age-0 steelhead varies considerably from year to year (Table 3, Figure 2). It is likely that the number of age -0 steelhead depends on the number and size of storms after the steelhead have spawned (most likely in January to March). The survival of age-0+ to age-1+ steelhead during the last two years has been lower than average. In both years it has resulted in less than 30 age-1+ steelhead surviving to the following June. With a large number of age-0 fish and a high water year there were over 100 age 1+ steelhead in water year 2005.

The number of age 2+ steelhead has varied from 15-25 over the last 4 years. It appears that the number of age-2 steelhead is pretty constant and is dependent on the number of high quality pools in the reach. The number of age-2+ fish has remained reasonably constant over the last four years, in

spite of drought conditions the last two years. These findings are consistent for steelhead trout throughout the West.

This was the first year that we surveyed upper Suscol. There were steelhead all the way to the forks and up both forks. Steelhead were found over 750 m up the right fork and 660 m up the left fork. In upper Suscol there were 601- age 0 steelhead, 87- age 1, and 23-age 2 steelhead (Figure 2). The right fork had 234 age-0 steelhead, while the left fork had 75. These are above average for steelhead in the Napa basin, especially on the east side.

The population of steelhead in Suscol Creek is large enough to be sustaining, except during an extended period of drought. A total of 1303 Age-0 steelhead, 111 Age-1+, and 44 Age 2+ were observed in Suscol Creek during the surveys. The long-term storage of water in the Suscol aquifer is not known at this time. With additional dry years of stream flow we can begin to model the storage capacity of the aquifer.

Restoration

During the current year, we screened off the two outflows out of the pond. This should stop the centrarchids from moving into Suscol Creek. We will monitor the screen during any major storms during the winter.

During 2006-7 we identified a section of stream bank on the south side of the stream with an open riparian canopy. The stream in this reach consists mostly of a long shallow pool. We began the process of planting vegetation to shade this pool during the summer months. This will lower the stream temperatures in the pool and downstream. During this year, Jake Ruygt, (restoration botanist) made sure the vegetation was watered and we will continue to check on it through the summer months. As of November 25th, the south bank restoration site had 20 successful plantings and 8 dead plantings. Jake will be replacing the critical plantings.

Also, Himalayan blackberry (HBB) removal continued throughout the lower portion of Suscol Creek on Mike Fennel's property . Over 2,000 linear feet of HBB was removed on both the south and north banks of Suscol Creek. Monitoring of HBB continues at the Fennel site requiring 3 applications of Rodeo per the Department of Fish and Game permit since the mechanical removal in August of this year. Continued spraying of Rodeo is required as sprouts are still occurring. In 6 square feet of riparian area, an

average of 14 sprouts occurred after the mechanical removal and three sprayings of rodeo (this visual survey was done on November 25th).

During this year we surveyed the invasive plants throughout the watershed and developed a database to track invasive species and restoration of native plant communities (see map suscolvegmap)

The upper section of Suscol Creek has been used for cattle grazing for a number of years. The cattle have extensively damaged the riparian zone and stream channel throughout the section of stream inhabited by steelhead trout. There are three areas of major concern:

- 1) One is the cattle crossing about 100 m into the upper section (above the fence). The cattle have broken the banks down and destroyed much of the riparian vegetation. About 200 m of stream were affected adjacent to the crossing. This area needs tree and shrub riparian planting. We also need to survey the herb and grass communities now that the cattle have been removed to determine if additional planting is required.
- 2) About 1/4 mile above the fence, the stream has begun to cut a new channel into the footing of the existing vehicle track along the creek. This situation should be addressed during this year.

3) After the cattle are removed, a major concern is invasive plants, especially blackberries. During the next few years, it is important to remove as many as possible.

Recommendations

- Continue the June snorkel survey. This will enable us to better understand the life history of steelhead in the Suscol Creek basin.
- Continue the basin-wide restoration efforts including blackberry removal.
- Focus on riparian and stream restoration (including invasive plants) on upper Suscol.
- Continue the temperature and stream flow measurements.