

## Observations, Fish and Habitat, Spring 2015

SFranson

### Field Monitoring, Spring 2015

Weekly monitoring was done at 5 locations along northshore streams in the Clear Lake basin, checking for presence or absence of fish, especially Clear Lake hitch, *Lavinia exilicauda chi*, and of available habitat for them.

Clear Lake hitch have been listed as threatened by the California Department of Fish and Wildlife and are currently being considered for listing by the US Fish and Wildlife Department. Historically they migrated and spawned in these creeks. Numbers dwindled, few have been seen in recent years, and unfortunately none were seen at locations this year or at locations for 2013 and 2014 monitoring (ref. Observations,... <http://www.rootlets.com/environment/hitch.html>). Spatial and temporal habitat required for their life cycle was minimal at best.

Temperatures were monitored again this year as larval hitch are susceptible to variations in water temperatures, appearing to do well in an environment above 15°C but below 25°C and appearing better able to handle extremes as they develop (ref. "Observations of Larval Development of Clear Lake Hitch, *Lavinia exilicauda chi*, with Regard to Differences in Temperature in Their Environment", <http://www.rootlets.com/environment/study-spring2012.pdf>).

### Method

Monitoring occurred from 19.February.2015 to 18.June.2015. It was discontinued when two locations had dried. Intervals of water reduction occurred although creeks were somewhat refreshed in following weeks, overall steadily diminishing at four locations but not at the Scotts Creek location. By 18.June water was severely reduced at these four locations, when two of four were dry and two others appeared to have lost significant flow within a few weeks.

Observations took place starting mid-mornings on the same day once per week, per location. They included counts, field notes and digital images and usually lasted fifteen minutes at each site, although monitoring was not organized for strictly timed intervals for fish counts. Summaries of wildlife, creek bank exposure, plant and algal growth, and estimated depth and flow from each location suggested a perspective during the current severe drought.

Equipment included an Olympus digital camera, a DeLorme Earthmate PN-60, and a Cooper handheld air/water digital thermometer. Resources consulted were Google Earth 7.1.5.1557 and a Jepson manual, University of California Press, ©1993.

A depth gauge and a flow meter were not used. Depth and flow were estimated, creek banks and instream gravel bars checked, photographed, and compared for changes in levels of exposure, and instream debris timed for one second for an estimate of distance traveled. At four of five locations, depth and flow varied widely along a given vector straight across the width of a stream. As water volume diminished, width of flowing water lessened while water still ran over uneven substrate. The crucial disclaimer is that depth and flow estimates are obviously imprecise, and are included only to suggest trends: increasing or decreasing water volume and increasing or decreasing rate of flow. Averages were used to produce very simple graphs that are merely indicative of change.

### Locations monitored

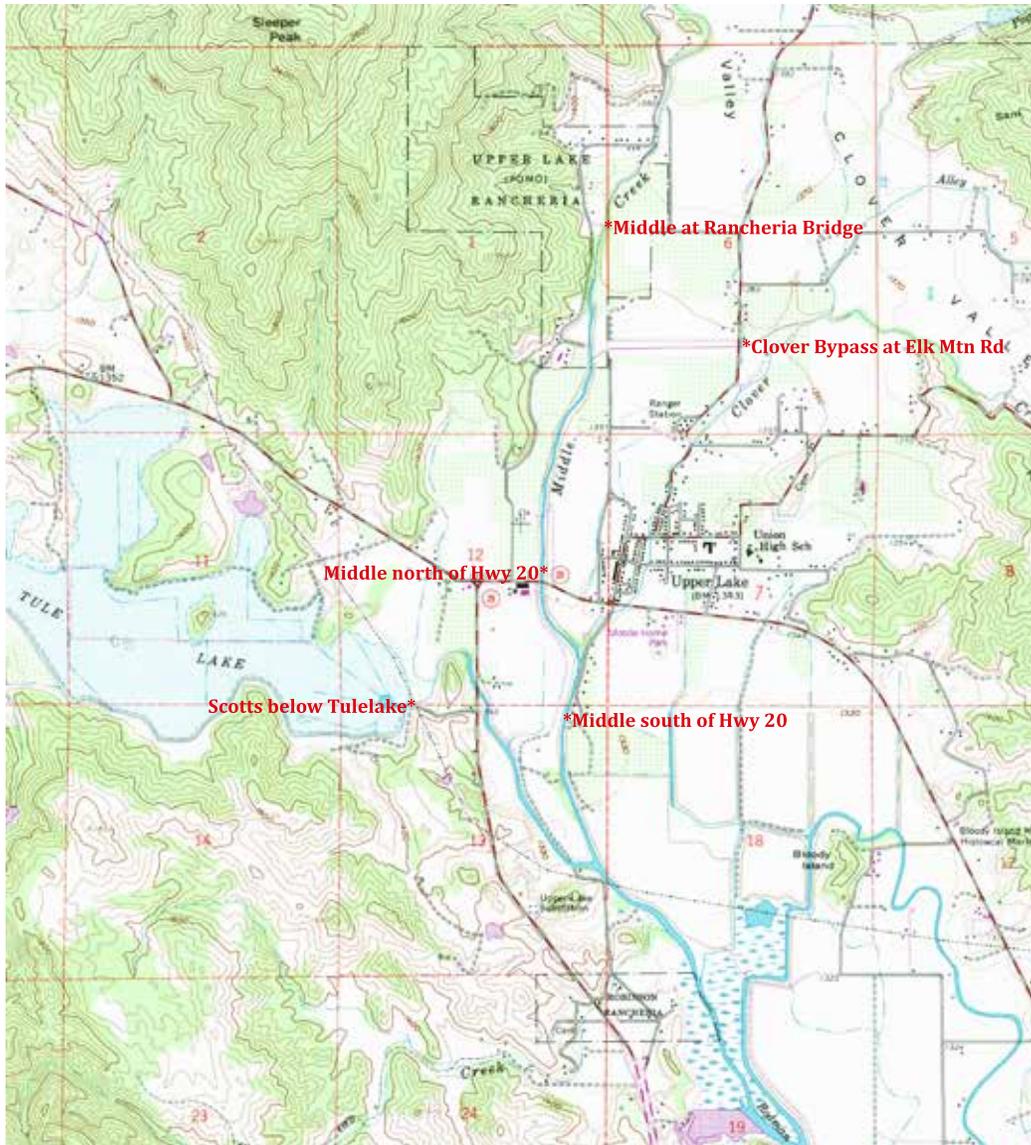
- Scotts Creek below Tulelake Dam
- Clover Bypass at Elk Mountain Road
- Middle Creek south of Highway 20
- Middle Creek north of Highway 20
- Middle Creek at Rancheria Bridge

### Location checked but not monitored

- Middle Creek at the confluence of Clover Bypass: signage this year prevented access
- Clover Creek at Bridge Arbor Drive: dry when checked

## Map of Monitored Locations

Locations were chosen in the northshore area to observe fish and habitat during spring migration.



*Map derived from a portion of quadrangle map, Upper Lake, CA 39122-B8-TF-024, courtesy of United States Geological Survey, in cooperation with California Department of Water Resources; Control by USGS, NOS, NOAA, and USCE, compiled from imagery taken 1957*

From the map one can see that the vast majority of water entering aquifers and the Clear Lake basin to the north and northwest stem from watersheds of Middle Creek and Scotts Creek. The Blue Lakes watershed drains into Scotts Creek which enters Rodman Slough and Clear Lake only via Tulelake.

### Fish observed during monitoring

Initially, adult Sacramento suckers, *Catostomus occidentalis*, were seen in Middle Creek below and above Hwy 20, but not at the Clover Bypass location, in Middle Creek at Rancheria Bridge, and at the Scotts Creek location. Weeks later, juvenile Sacramento suckers were present in the two downstream Middle Creek locations and at the Clover Bypass location but not at the Rancheria Bridge or Scotts Creek locations. One prickly sculpin (*Cottus asper*), roughly 2 cm., was observed on substrate in Middle Creek south of Hwy 20.

Unknown juveniles, possibly catfish (order Siluriformes) or carp (Family Cyprinidae) were sighted during monitoring at the Scotts Creek location, as well as inland silversides, *Menidia beryllina*, one roughly 12 cm. unidentified individual, and juvenile Sacramento suckers.

Juvenile rainbow trout, *Oncorhynchus mykiss*, were observed upstream of Rancheria Bridge.

See counts and temperatures

### Vegetation and wildlife noted

Wildlife seen and heard included white crowned sparrow, *Zonotrichia leucophrys*, golden crowned sparrow, *Zonotrichia atricapilla*, American and lesser goldfinches, *Carduelis tristis* and *Carduelis psaltria*, American cliff swallows, *Petrochelidon pyrrhonota*, red-winged blackbirds, *Agelaius phoeniceus*, Brewer's blackbirds, *Euphagus cyanocephalus*; a female belted kingfisher, *Ceryle alcyon*, ringed turtle-dove, *Streptopelia risoria*, mourning dove, *Zenaida macroura*, quail, *Callipepla californica*, wild turkey, *Meleagris gallopavo*, Northern mockingbird, *Mimus polyglottos*, acorn woodpecker, *Melanerpes formicivorus*, Nuttall's woodpecker, *Picoides nuttallii*, Northern flicker, *Colaptes auratus*, downy woodpecker, *Picoides pubescens*, hairy woodpecker, *Leuconotopicus villosus*, scrub jay, *Aphelocoma coerulescens*, black phoebe, *Sayornis nigricans*, rufous sided towhee, *Pipilo erythrophthalmus*, California towhee, *Meolzone crissalis*, American robin, *Turdus migratorius*, bushtit, *Aegithalos caudatus*, American crow, *Corvus brachyrhynchos*, common raven, *Corvus corax*, turkey vulture *Cathartes aura*; raptors including red-shouldered hawk, *Buteo lineatus*, red-tailed hawk, *Buteo jamaicensis*, Cooper's hawk, *Accipiter cooperii*, sharp-shinned hawk, *Accipiter striatus*, American kestrel, *Falco sparverius*, osprey, *Pandion haliaetus*, golden eagle, *Aquila chrysaetos*; waterfowl and herons including American white pelican, *Pelecanus erythrorhynchos*, common merganser, *Mergus merganser*, mallard, *Anas platyrhynchos*, greater and lesser scaups, *Aythya marila* and *Aythya affinis*, gull, Fam. Laridae, great white egret, *Casmerodius albus*, snowy egret, *Egretta thula*, green-backed heron, *Butorides striatus*, pelagic cormorant, *Phalacrocorax pelagicus*, black crowned night heron, *Nycticorax nycticorax*, and great blue heron, *Ardea herodias*; flying, terrestrial, and aquatic insects, tadpoles, a turtle swimming and mostly underwater, and California toads, *Bufo boreas*.

Ground squirrels, *Otospermophilus beecheyi*, and raccoon, *Procyon lotor*, tracks were seen at all locations except Middle Creek at Rancheria Bridge. Deer, *Odocoileus virginianus*, their tracks, paths, and hollows were ever present in tall grasses and vetch. As in previous years, predatory mammals are reported (pers.comm. and pers.sightings) to frequent several of the locations chosen.

Fishermen were chanced upon twice at Scotts Creek at lower Tulalake. As water levels diminished, ORV enthusiasts used Middle Creek and Clover Bypass channels, leaving tire tracks instream and along banks. Dogs and/or dog tracks were at all locations, horse tracks at three, domestic cats at two, coyote, *Canis latrans*, at two, and gopher and/or mole mounds at four of the five.

Vegetative cover at most sites included willows, *Salix sp.*, oak, *Quercus sp.*, cottonwood, *Populus sp.* primarily *fremonti*, Himalayan blackberries, *Rubus armeniacus*, poison oak, *Toxicodendron diversilobum*, and various ruderal grasses, herbaceous growth indigenous and invasive. Orchards were often within 50 to 60 m. With agricultural easements in place in the Tulalake area, water appeared to generally remain potentially at Clear Lake levels, with fluctuations in level and flow observed.

With warmer temperatures and warming water, various species of algae grew instream in clumps and strands, often forming mats, carpeting substrate and coating the surface.

**Individual Locations:**

**Scotts Creek below Tulelake** N 39°9.3985', W 122°55.54'

Scotts Creek is channeled by means of levees around much of the western edge of Tulelake and flows through a culvert into a pool below a dam at the lake's southeastern end. From there, it is leveed and channeled into the western arm of Rodman Slough. This location is situated at the edge of the pooled area.

Now that there are agricultural easements and water is not pumped from Tulelake in order for it to



Pool, dam, and Tulelake beyond 2.19.2015



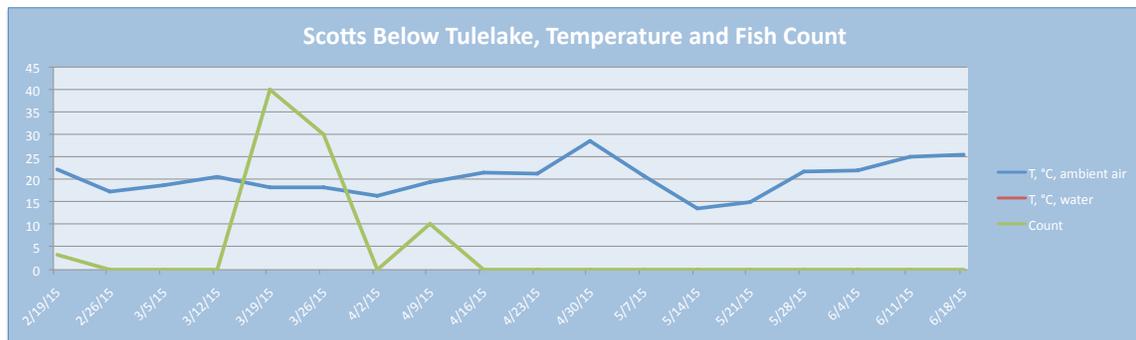
Scotts Creek enters the pooled area through this culvert. 2.19.2015

be farmed, water levels in Tulelake, creek, and pool here remained more stable this year than they have for decades. Fish making their way up Scotts Creek can continue into the Scotts Creek watershed and early on, into Tulelake at its northern end.

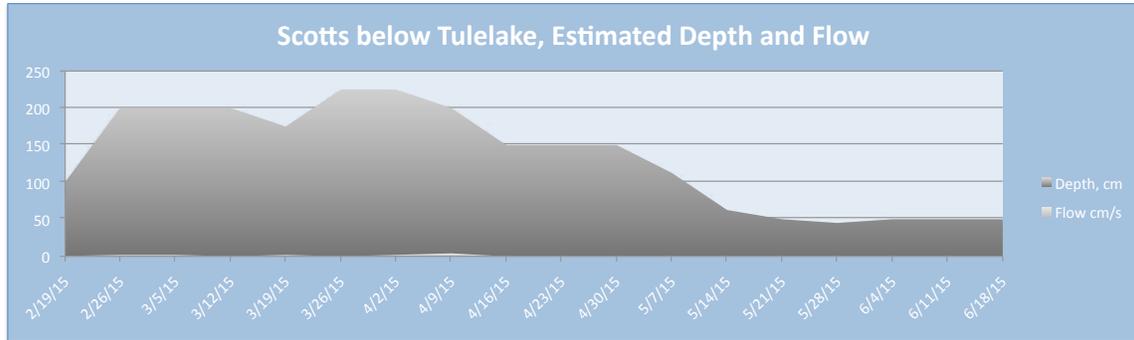
More waterfowl, herons, raptors, and birds of many species were observed at this location than elsewhere. Hillocks for nesting birds were created in Tulelake, and tule beds are developing. In years past, when water was pumped from Tulelake, all manner of predators gathered around the pooled area where fish and fish parts were churned through the pump. This year, the small area was quiet. There is more aquatic habitat to explore.

Fish were difficult to observe in water that was murky throughout monitoring. On three occasions in February and March, inland silversides were observed feeding. On 3.26.2015 schools of unidentified juveniles 3 to 4 cm. were observed fairly close to the surface. One individual about 10 cm. was seen on 4.9.2015.

Water could not be accessed this year for temperatures, but ambient air was noted.



Estimated depth is likely quite inaccurate, however fluctuations in depth were visible on exposed banks especially by means of a landmark log or root structure. Flow was difficult to discern but generally when a slight flow was noted, a change in depth occurred.



Initially no algae appeared on surface water. By 18.June.2015 surface water in the pool was green.



Tulelake, dam, and pool

6.18.2015

**Clover Bypass at Elk Mountain Road** N 39°10.581' W 122°54.16'

Clover Bypass is a wide, leveed channel into which Alley and Clover Creeks flow. At the point at which Alley and Clover join to become Clover Bypass, a small concrete diversion can be opened or closed to allow water into the the Clover Creek channel that flows through Upper Lake and into Middle Creek downstream. Clover Bypass is a flood control system that empties into Middle Creek well above the much smaller Clover Creek channel.



2.20.2015



6.11.2015



6.18.2015

Water decreased steadily. The stream became braided and was dry on the final day. By this time, grasses and vetch on the levee's slope were thick, tall, and blooming or heading out.

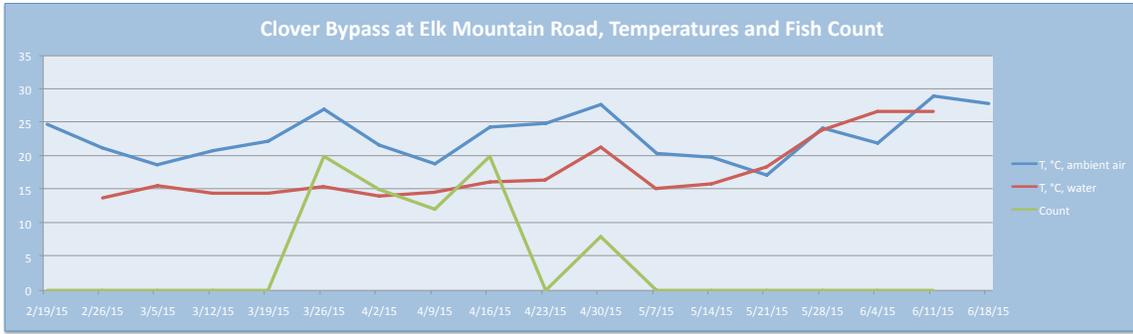
Only juvenile Sacramento suckers from 2 to 4 cm. were observed at this location, none after 20.April.2015. Initially water was clear and cold. Algae grew as water diminished and temperatures climbed.

Few waterfowl were seen at this location but numerous passerines, blackbirds, and other species of small birds were seen, heard, or both.

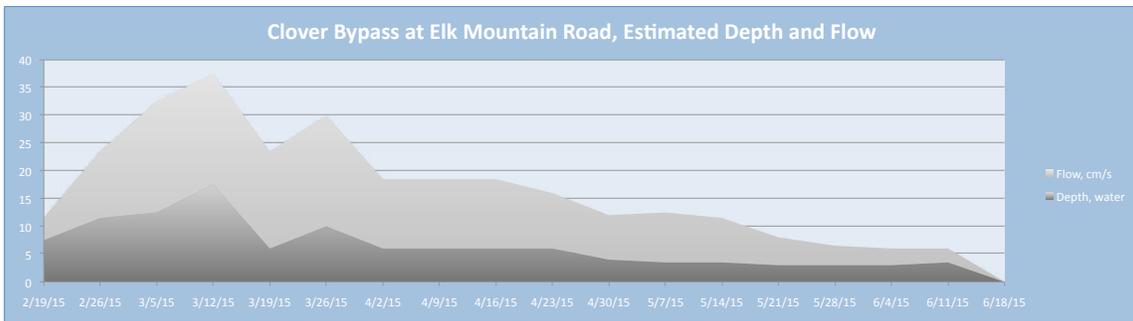
Fish seen here were juvenile Sacramento suckers that ranged from about 2 cm. earlier (3.26.2015) to about 4 cm. later (4.20.2015). A small number of hitch migrated upstream at this location in April 2009. Clover Bypass has little vegetation that might prove to be obstructive when it fills during events with high water runoff. Water warmed and algae grew as temperatures rose.

3.26.2015





Juveniles were seen from 3.19.2015 to 5.7.2015.



Depth and flow varied widely across the channel. Averages from rough estimates are represented.

**Middle Creek at Rancheria Bridge** N 39°10.9547' W 122°54.7086'

This location is upstream of the confluence of Clover Bypass into Middle Creek and upstream of two of three weirs in the channel. The first is immediately downstream of the confluence. Middle Creek at this location flows over a bridge apron, continues a short distance to boulders and then on downstream. The channel here is not as broad as it is in other leveed locations, although it is leveed



Downstream, and upstream, 2.20.2015

on the eastern side. Hitch historically migrated in this channel (pers.comm.), and threadfin shad were seen here in 2004, 2005, and 2006 (pers.obs.).

Access to a creekside location is now blocked. Notes and photos of downstream and upstream were taken from the bridge, but water temperatures could not be monitored. As temperatures warmed, algae grew over substrate and instream, and water and flow decreased, diminishing especially over the last few weeks of monitoring.



6.4.2015

Riparian vegetation including willow, poplar, and white alder provides shade and cover along



6.18.2015

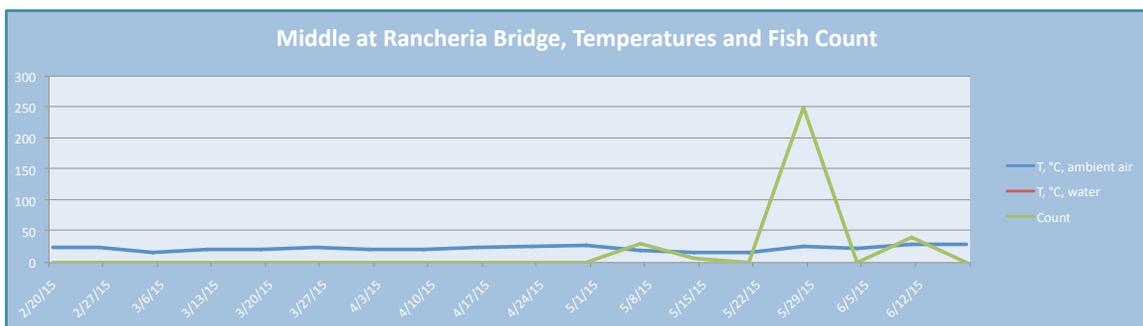
6.11.2015



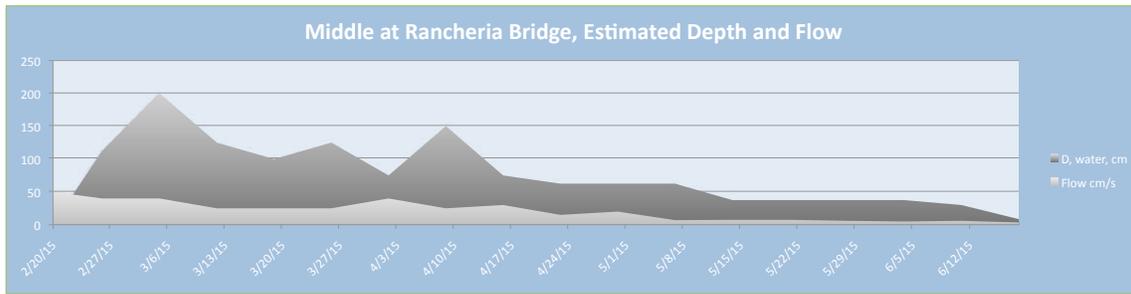
creek banks. Shrubby herbaceous growth, grasses and forbes are understory and grow instream. Passerines and woodpeckers were heard and swallows that nest under bridges in this general area were heard and seen. Various insects were in the area although not plentiful.

Juvenile fish were seen immediately upstream of the bridge, first on 5.7.2015, numerous on 5.28.2015 and 6.11.2015, and one on 6.18.2015. They appeared to range from about 3 to 3.5 cm. and were unidentified from the bridge. In years past in similar calendar time frames, they were identified as rainbow trout that are known to spawn far upstream

(pers.obs. and pers.comm.) Three adult rainbow trout were found upstream in 2006 (pers.obs.). No fish were observed downstream of the bridge.







5.28.2015



**Middle Creek South of Hwy 20** N 39°9.4619', W 122°54.8649'

A small road over which 4 wheel drive and off road vehicles travel leads to Middle Creek at this location. Middle Creek and levees appear to be used as a road. The creek is leveed, broad, and shallow with gravel banks and instream gravel bars that shift during high water runoff. Riparian vegetation with understory lines gravel banks along the eastern side, and similar vegetation is on the western slope of the levee. In general there is little cover or resting stages for migrating fish. The creek here is designed to prevent flooding during high water.

Numerous avian wildlife was observed and heard here during observations, primarily passerines, woodpeckers, raptors, waterfowl, and including more families and species. Along the path



Downstream, 2.26.2015



Across the channel, 2.26.2015



2.19.2015

Upstream, 6.18.2015

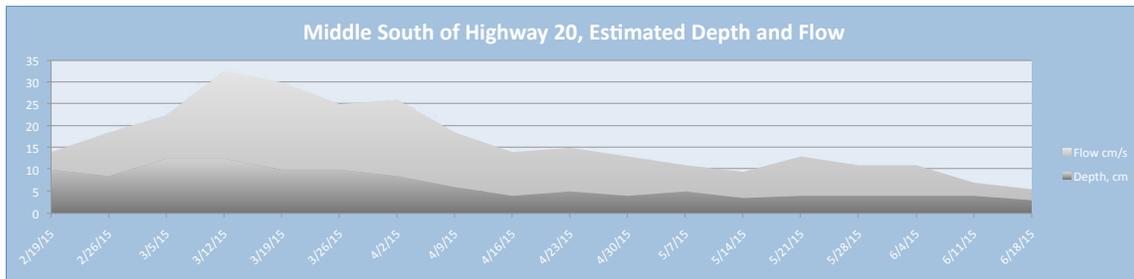
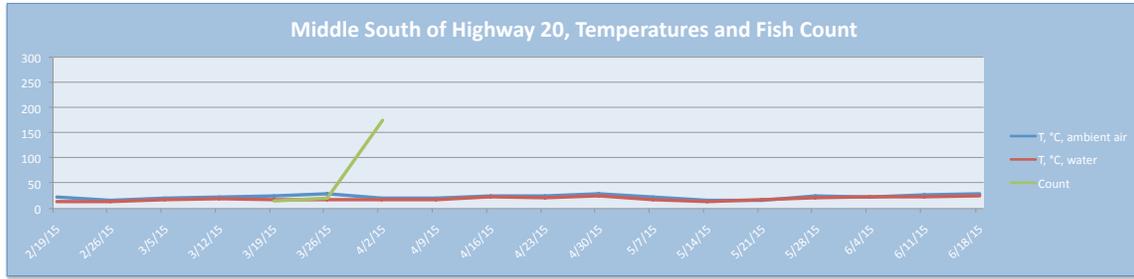


to the location, various mammal tracks and scat were seen especially during early months, along with tire tracks, some of them deep and instream. Domestic dogs and a cat were seen also.

Water at this location was generally clear. Various algae appeared as temperatures began to climb, covering substrate and developing mats instream. With time, as water receded, riffles and gravel bars developed.

Five schools of migrating adult Sacramento suckers, with twenty to thirty individuals in three and about one hundred individuals in each of two, were moving upstream on 2.19.2015. No hitch were noticed among them. Juvenile Sacramento suckers from 1.5 to 2 cm. and later up to 3 to 4 cm. were seen from 3.19.2015 until 4.30.2015. After that, two tadpoles, but no fish, were observed. A juvenile prickly sculpin about 1.5 cm. was observed on 3.26.2015. Few tadpoles were seen this year in the final weeks of observations.

By the final day of observations, there was little water. Water still flowed here above ground. At places upstream it flowed under gravel, and fish passage was lost.



**Middle Creek North of Hwy 20** N 39°9.8393', W 122°54.9686'

A small road straddles the eastern levee. Another small road dips down an expansive two-tiered levee bank, and from there a path crosses an open meadow to a smaller path through a border of trees and understory to the edge of Middle Creek. Here the creek is broad and shallow. It is the continuing passage for fish migrating further upstream in Middle Creek and Clover Bypass, which leads to Alley Creek. As at other locations various algae grew as temperatures rose.

The expanse of meadow along the lower tier was covered with vetch and other herbaceous plants and was clearly used by wildlife. Deer were observed crossing the creek upstream, and tracks were plentiful here. Smaller mammal tracks were closer to the creek bank. Numerous

2.20.2015



small birds, raptors, and occasional waterfowl were heard and seen.

Schools of adult Sacramento suckers were observed migrating upstream on 2.20.2015. Spawning activity occurred roughly 100 m. upstream from this location (pers.comm.). From 3.19.2015 to 4.30.2015 juvenile Sacramento suckers from 1 to 3 cm. were observed migrating downstream. After four weeks with no sightings, on 6.4.2015 about 40 individuals were observed and on 6.11.2015, 34 individuals were seen. Individuals in both groups were about 3 to 3.5 cm.

Hitch were not detected among either



2.26.2015



4.9.2015

6.11.2015

6.18.2015



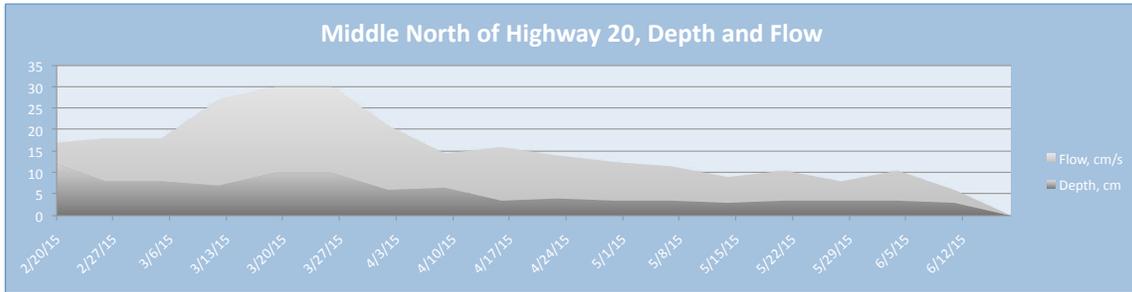
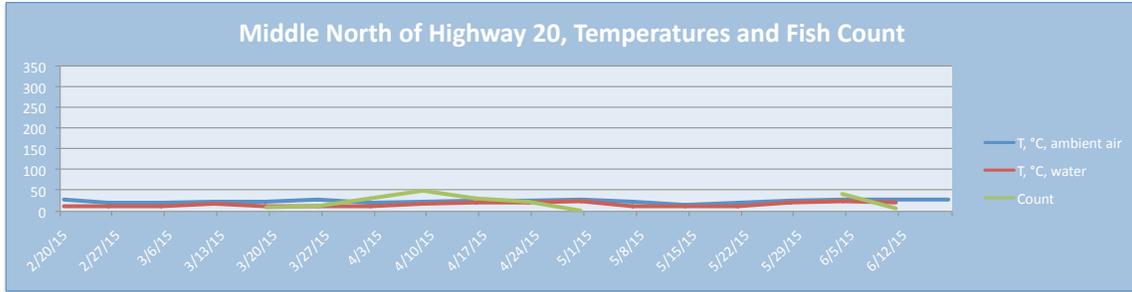
adult or juvenile Sacramento suckers.

Water was clear. Various algae grew as water temperatures rose. This year few tadpoles, aquatic insects, and later, California toads were observed. Water gradually diminished, and on the last day this location was dry. Small pools and narrow, shallow channel flows were visible at places upstream and downstream.



Meadows with herbs, grasses, and vetch teemed with butterflies, bees, and numerous other insects. Paths trailed throughout, and hollows were abundant. The particular path to the creek bank had to be navigated with care during some weeks when vetch was lush and tall, birds suddenly became silent, and paying attention was prudent.

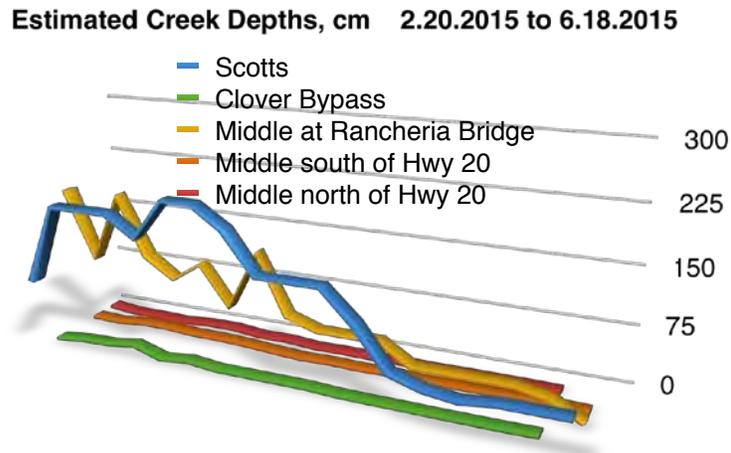
5.9.2015



**Summary**

Both adult and juvenile fish were observed migrating in northshore creeks. They were primarily Sacramento suckers, a juvenile prickly sculpin, inland silversides, an unidentified adult, and an unidentified species that was possibly juvenile carp or catfish. None observed were Clear Lake hitch.

The following chart, again, represents only indications of potential fluctuations in creek depth and flow, because only week-by-week estimates, not measurements, were noted.



Riparian habitat and meadowland support some wildlife during the extended drought. Larger mammals were more frequently seen than in previous years. Not many waterfowl were observed in or along streams, and few raptors were seen. Smaller birds appeared to be more prevalent than others at all locations.

Water at the Scotts Creek location was continually murky and generally remained at a level that was consistent with Clear Lake levels (pers.comm.), with the exception of a few occasions when there was increased exposure on banks in Tulelake and banks along the pooled area below Tulelake and a slight flow was detected. Newly exposed areas on banks became submerged again, and flow was unable to be discerned. Habitat remained available.

Water at other locations was clear. During observations there were also reduced water levels and increased bank exposure with some recovery, until water levels steadily diminished. On 6.18.2015 two locations were dry and water presumably ran under gravel, and water volume was much reduced at two others. Uninterrupted fish passage was no longer available.

Acknowledgement:

Quadrangle map, Upper Lake, CA 39122-B8-TF-024, courtesy of United States Geological survey, in cooperation with California Department of Water Resources; Control by USGS, NOS.NOAA, and USCE, compiled from imagery taken 1957

Referenced and reviewed:

"A Small Fish and Habitat Study, Spring 2012", <http://www.rootlets.com/environment/study-spring2012.pdf>, a "Some Observations from Spring 2013", <http://www.rootlets.com/environment/observations2013.pdf> and "Some Observations from Spring 2014", <http://www.rootlets.com/environment/observations2014.pdf>