

February 9, 2014

To: Rich Marovich, LPCCC
Chris Lee, SCWA

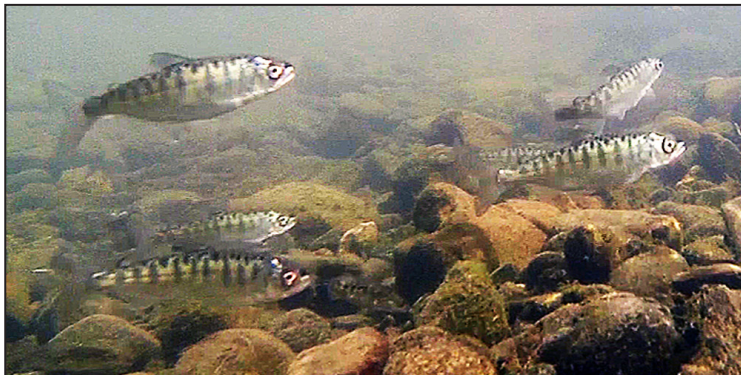
Report:

Discover of juvenile salmon in Lower Putah Creek (May 2013) prompted the use of subsurface video to document fish populations, invertebrate populations, fish behavior, and other species using the waterway. Various subsurface video recording techniques and equipment remain essentially experimental. Numerous groups including Yolo Water Association, Winters City Council, Winters Rotary, U.C. Davis, and several fly fishing clubs have requested presentations to see the Putah Creek fish videos. Still images extracted from the video are available for promotions, reports, documentation, and funding requests. Images below are basically chronological.

Some lessons learned / documented from the initial (6 months) of the Putah Fish Video Project:

1. Species can be documented using subsurface video
2. Species behavior can be documented using subsurface video
3. Fish are comfortable with video cameras deployed and left for several hours
4. Several species of fish use the constructed weirs for safety and foraging
5. Rainbow trout utilize constructed weirs for harbor and foraging.
6. Several species of fish colonized the Winters Parkway Restoration Project Area
7. Rainbow trout use the weir area(s) for spawning
8. Significant numbers of trout are using Research Weir 6A (Two miles downstream from Winters)
9. Juvenile salmon use the reconstructed runs for foraging (Pickerel)
10. Juvenile salmon use Research Weir 1A for harbor and foraging
11. Adult Chinook salmon appeared to prefer upstream restored areas for spawning
12. Adult Chinook salmon readily used Research Weir for harbor and spawning
13. Landowners and surrounding community enjoy video documentation of fish populations.
14. Video documentation can be helpful for reporting and fund raising

Images / Brief Report



Juv. Chinook Salmon - *Oncorhynchus tshawytscha*

Juvenile Chinook Salmon:

Juvenile Chinook salmon were filmed in the Pickerel Restoration Area in May 2013. Video footage documented that the juveniles remained in the area immediately downstream of Research Weir 1A until late August. Although they were not seen during routine video monitoring after late August, it's certainly possible that they remained in the area. *Video and still images are available.*



Tule Perch - *Hysterocarpus traski*



Rainbow Trout - *Oncorhynchus mykiss*



Western Pond Turtle - Research Weir 6A



Juv. Chinook Salmon - *Oncorhynchus tshawytscha*

Tule Perch:

Tule Perch and several other species including Sacramento Pikeminnow and Sacramento Suckers were routinely filmed in all areas of the Winters Parkway Project. *Video and still images are available.*

Rainbow Trout:

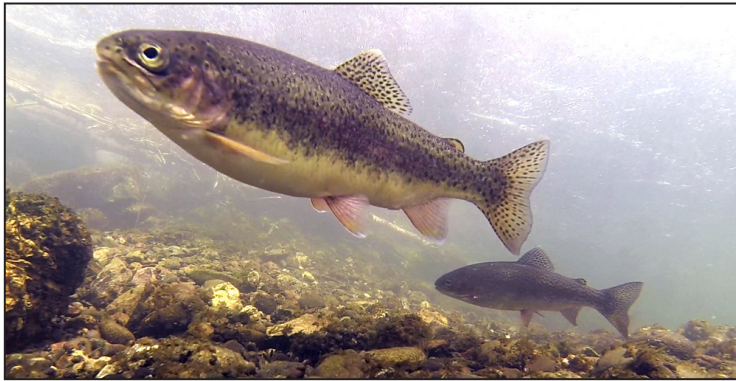
A group of at least 10 Rainbow Trout were documented using the plunge pools immediately below Research Weir 6A. The fish shown on the left routinely moved several yards to pick up leaves, chew on them and in every occasion, spit them out. *Video and still images available.*

Western Pond Turtles:

Other species, including Western Pond Turtles, red-eared sliders, and River Otters were occasionally filmed. Western Pond Turtle was caught on video when it moved through Research Weir 6A. Note the layer of algae on the turtle's carapace. *Video and still images are available.*

Juvenile Chinook Salmon:

Late summer image of the juvenile salmon that remained in the vicinity of Research Weir 1A until late August 2013. *Video and still images are available.*



Rainbow Trout - *Oncorhynchus mykiss*



Courting Rainbow Trout - InterDam Reach



Algae-eating Trout - Winters Parkway Weir



Algae-eating Trout - Winters Parkway Weir

Rainbow Trout:

Large trout using Research Weir 1A. At least eight large rainbow trout were using the plunge pools below the weir in early Fall 2013. *Video and still images are available.*

Rainbow Trout in IDR:

Large rainbow trout began arriving in the IDR spawning areas in mid-November.

Rainbow Trout in Parkway Restoration Area:

Large rainbow trout (15 inch +) were documented using the Winters Parkway Restoration Area weirs. Trout were observed using three weirs in the restoration section. Fish on left was videotaped using the weir at the downstream end (outflow) of the project.

Trout on left (same as above) routinely pulled algae off the rocks, chewed same, and appeared to swallow the filamentous algae.



Sacramento Pikeminnow - *Ptychocheilus grandis*

Sacramento Pikeminnow:

Schools of Pikeminnow are common in most areas of the Winters Parkway Restoration Area.



Courting Rainbow Trout - Interdam Reach

Pre-spawn trout:

Redd-building female rainbow trout captured on film with two males in background. Filmed at Fishing Access # 3, the trout were approximately 18 inches in length.



Chinook Salmon - December 6, 2013

Adult Chinook Salmon:

Documented adult salmon in Putah at Research Weir 1A on December 6, 2013 when the fish tipped over a camera. The salmon arrived at the Putah Creek Diversion Dam area within 24 hours after the removal of the Los Rios board dam. The dam was removed on December 5, 2013.



Female Chinook Salmon - December 7, 2013

Adult Female Chinook Salmon:

The female shown in the image on left was videotaped at several sites in the vicinity of Research Weir 1A on December 7, 2014. She was identified by the scar on her nose. She was observed moving freely between the two plunge pools and remaining for long periods of time by the large rock in the center of the image on the left.



Adult Female Chinook Salmon - Weir 1A

Adult Female Chinook Salmon:

Using video markers (scars or other marks) we identified at least seven salmon in the vicinity of Research Weir 1A. Image left showed a female that remained in the bubble curtain for hours.



Chinook Salmon - Research Weir 1A

Spawning Chinook Salmon:

Male and female salmon on redd immediately below Research Weir 1A. They spawned at 11:00AM on the morning of December 8, 2013. All of the salmon caught on video were remarkably free of the scars, fungus and other markings.



Sacramento Pikeminnow - Winters Parkway

Pikeminnow using Boulder Group:

Several species commonly used the boulder groups in the Winters Parkway Restoration Section. The Pikeminnow video also shows Tule Perch and Sacramento Suckers.



Sacramento Suckers - Winters Parkway

Sacramento Suckers:

Schools of young Sacramento Suckers are common in the Parkway Restoration Section.



Male Chinook Salmon



Female trout - Interdam Reach



Rainbow trout - Interdam Reach

Report submitted February 10, 2014 via E-mail:

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Male Chinook Salmon:

Image of a beautiful male Chinook that was initially documented in the spawning area on December 9, 2013. He was the second male observed at the site. Male # 2 was highly aggressive with the male that had already spawned on site. They fought for several hours in the section immediately below the weir. The two large salmon frequently came out of the water locked by the teeth.

Female Rainbow Trout on redd:

Image shows female rainbow trout beginning to lay eggs in the Interdam Reach. The accompanying video shows several males rushing in to fertilize the eggs. Similar footage captured at the site shows many small trout feeding on the eggs.

Large Male Rainbow Trout:

Large male trout that was in certain areas of the Interdam Reach for a couple months from late November through the middle of January.