



Callippe Silverspot (*Speyeria callippe*)

June 10, 2010

To: Chris Lee
Richard Marovich

Subject: Activity Report - May 2010

REPORT

Solano Habitat Conservation Plan (HCP) Brochure and Poster.

Callippe Silverspot:

The Callippe Silverspot butterflies have finally emerged on the King Ranch. I've observed and photographed two of the Callippe morphs on the north end of the King Ranch Property.

Sue Wickham of the Solano Land Trust has been gracious enough to allow unmitigated access to the property.

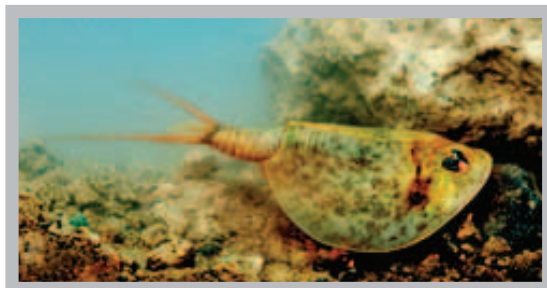


Callippe Silverspot (*Speyeria callippe callippe*) a federally endangered butterfly.

Vernal Pool Crustaceans:

With the permission of the USFWS, I was able to catch one tadpole shrimp (image left) from Olcott Lake, photograph it on site and release the listed crustacean. The Service added me to their sub-permit for a limited time to capture images of the Tadpole shrimp and the Conservation fairy shrimp, *Branchinecta conservatio*.

Photographs of both were secured and the animals released successfully into Olcott Lake.



Tadpole shrimp (*Lepidurus packardii*), a federally threatened crustacean.



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LSA botanist Chris Terry at Director's Guild looking at Contra Costa Goldfields (*Lasthenia conjugens*), a federally endangered plant.

LSA Botanist at Director's Guild:

With the assistance of Steve Foreman and Tim Milliken, I was granted permission to accompany the LSA botanical crew on the Director's Guild. The purpose was to photograph the Contra Costa Goldfields, a federally listed vernal pool plant in full bloom.



Contra Costa Goldfields (*Lasthenia conjugens*) at Director's Guild.

Director's Guild Mitigation Bank:

Contra Costa Goldfields, a federally listed vernal pool plant in full bloom. Image shows *Downingia* growing among the prevalent Contra Costa Goldfields.



Goldfields at Jepson Prairie (Olcott Lake)

Olcott Lake:

Fremont's Goldfields on the banks of Olcott lake, Jepson Prairie.



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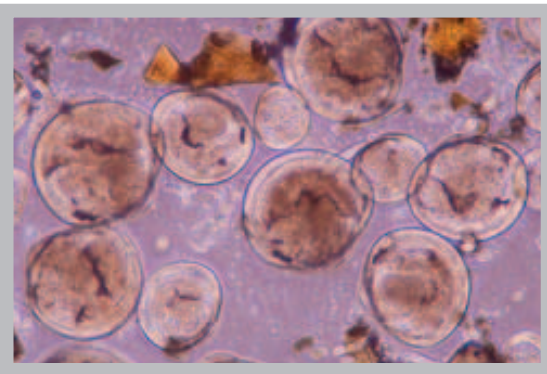
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Jepson Prairie. Fremont's Goldfields

Olcott Lake - Jepson Prairie:

Image shows the lake in late season with Fremont's Goldfields in flower.



Veligers - Quagga Mussels (USBR ETOH voucher)

Dreissena Mussel Plankton Surveys

Mussel Veligers:

To avoid "false positive" plankton surveys, I am continuing the development of a digital veliger image library using voucher specimens from the USBR and the DWR. Image left shows a collection of Quagga Mussel veligers from Lake Mead preserved in ETOH. The voucher specimens were provided by the USBR laboratory in Denver. Sample photographed using a tri-ocular phase-contrast compound microscope at 100X total magnification.



Plankton sample from Lake Berryessa (Daphnia)

Plankton Samples:

Plankton collections taken from Lake Berryessa and the Solano System are always photographed to document the general structure of the plankton community. Image shows a Cladoceran (*Daphnia sp.*) among a variety of algal species.



Western Pearlyshell from Lake Berryessa

Western Pearlyshell:

I continue to get questions about the native mussel shells found in the Solano System. The "native mussel" shells occasional found in Lake Berryessa and Lower Putah Creek have caused some confusion. The Western Pearlyshell (*Margaritifera falcata*) is classified scientifically as a mussel; however, according to available literature the adult lives in the mud much like a clam and does not attach to aquatic substrates. While the shells are commonly found, I have never seen a live adult.



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Steele Park Resort (Lake Berryessa) Pensus temporary docks

Pensus Group Docks:

Per an agreement with the USBR the Pensus Group has contracted to develop and manage six resort marinas on Lake Berryessa. To accommodate recreational boaters during the Memorial Day Holiday, Pensus brought it several simple boat docks at the former Putah Creek and at the Steele Park resorts.



USBR staff at the Capell Cove Public launch ramp

Watercraft Inspectors Trained:

On May 26th, I trained and certified (mussel inspections) three Watercraft Inspectors hired by the Solano Resource Conservation District who were scheduled to talk with boaters about bilge pads at Lake Berryessa. On May 27th I certified seven Level One watercraft Inspectors at the USBR office at Lake Berryessa. Under the auspices of the Pacific States Marine Fisheries Commission's Watercraft Inspection Program, I am a certified Level II Watercraft Inspection trainer and "Mussel Incident Responder."



Monticello Dam Buoy line

Mussel Colonization Plates:

On May 4, 2010, with the assistance of the USBR, I checked the Mussel colonization "tree" suspended at the buoy line just above Monticello Dam. The colonization tree is designed to check for "settled" or attached adult mussels. The colonization devices are suspended on a rope at 25, 50, 75 and 100 feet below the surface of the water. The goal is early detection of a mussel invasion which will allow watershed managers to effectively implement a predetermined strategy to prevent veliger entry into the Putah South Canal.



Lake Berryessa Patrol Boat Docks

Lake Berryessa Patrol Boat Dock:

Site of adult colonization tree and plankton collection. The colonization tree was inspected on May 4, 2010. Dock infrastructure was checked visually for adults and plankton was collected on May 18, 2010.



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Markley Cove plankton collection site

Markley Cove Marina, Lake Berryessa:

The marina is visually checked, and plankton is collected every 30 - 45 days. Selected sites on the docks are checked using the "bloody hand inspection" on a regular basis. The process is conducted by running your hand under the dock to feel for adult mussels. Because mussel shells are sharp, they will effectively cut the inspector's hands.

Checked on 5/27/10.



Markley Cove Boat lift

Boat Lift at Markley Cove Marina:

Boat lifts are especially good spots for visual inspection for adult mussels.

Checked on 5/27/10.



Markley Cove Boat docks plankton collection site.

Covered Boat Dock at Markley Cove:

I believe that collecting plankton from the docks (as opposed to collecting from a boat moving by the dock) is more effective. The stationary dock allows me to collect samples in a true vertical dimension without concern for boat drift. The on-dock collection process also allows me to engage boaters about how to effectively prevent the introduction of mussels into Solano System. Checked on 5/27/10.



Pleasure Cove Houseboat docks plankton collection site

Pleasure Cove Houseboat Dock and Gas Station:

Infrastructure checked and plankton collected on 5/27/10



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Pleasure Cove Boat dock plankton collection site.

Pleasure Cove Marina: Pleasure Cove boat dock and launch ramp (on right out of picture.)
Inspected on 5/27/10



Pleasure Cove Boat dock plankton collection site.

Boat Dock at Pleasure Cove: Effective protocol for the dock inspection dictates a hand inspection of the underwater section of the dock.

Thirty sites (one-meter long) on the dock were inspected on 5/27/10



Monticello Dam plankton collection site

Monticello Dam:

Checked existing structure and collected plankton on 5/24/10. All surveys negative for adult mussels and veligers.



Monticello Dam plankton collection site

Putah Creek - Interdam Reach:

New Zealand mudsnail density has increased dramatically. At the nearby confluence with Cold Creek, the mudsnail population is 99% of the invertebrate community in Putah Creek.



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Putah Diversion Dam

Putah Diversion Dam:

Site is used to check infrastructure and materials removed from Lake Solano via the weed racks. I also examine plankton samples from this site every two months.



Putah South Canal - Trash rack at Weyand Canal

Putah South Canal:

The Putah South Canal is routinely checked for Dreissena Mussels, New Zealand Mudsnaills and other invasive species. Infrastructure is visually checked, colonization plates are inspected, and "net drags" are used to drag the bottom of the canal. The lower limit for NZMS remains near Mile 24.25.



Sweeny Creek at I-505

Sweeny Creek near I-505:

Sweeny Creek and the other creeks that cross the canal are checked for new Zealand Mudsnaills on a monthly basis. To date New Zealand Mudsnaills have not been detected in any of the cross or conveyance waterways. Other snail species found in the Putah South Canal are common in the Sweeny, Suisun, and Green Valley creeks.



Terminal Reservoir (North end)

Terminal Reservoir:

Terminal Reservoir is approximately 100 miles due north of San Justo Reservoir. San Justo Reservoir is the only known infestation of Zebra Mussels in California. We know that migratory birds carry mussel veligers and adults: however, the distance mussels are carried and their survivability is not fully understood.

Terminal Reservoir is checked every month visually and plankton is collected and examined using the standard microscopic protocols.



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Lower Putah Creek



Putah Creek - Pickerel weir

Lower Putah Creek - Pickerel Weir:

In the past, I have witnessed trout caught in the general area of the Pickerel Weir but we do not know if trout are actually using the weir for holding, feeding, reproduction, etc. Information for **Rosquin** that anglers like the weirs and recent reports of anglers caching trout from the area immediately below the weir sparked our interest to determine if trout were indeed using the weir for their benefit. I am writing an article for an international angling periodical that would hopefully assist other watershed managers in the construction of similar facilities.



New Zealand Mudsnails on submerged leaf

New Zealand Mudsnails:

In general, the NZMS density is consistent with summer months in previous years. The common caddisfly, *Hydropsyche sp.*, continues to disappear in areas with high densities of mudsnails. The large caddisfly that is considered highly important prey for fish and other wildlife is now difficult to find at Fishing Access No 3. The correlation continues to be documented.



Epeorus albertae adult captured on Putah Creek,

Epeorus Mayflies:

The "clean-water" mayfly, *Epeorus albertae*, and other invertebrates that are considered intolerant of pollution are showing increasing densities especially at Fishing Access Number 5. This trend is being surveyed and documented throughout the Putah Creek drainage.



Thompson Creek - Access Road

Thompson Creek Access Road:

On 5/13/10, Rick Fowler and I walked approximately one mile into the Thompson Creek drainage examining the invertebrate community and the erosion along the access road. We have almost unlimited access along the initial mile of the road.

With direction from Mr. Marovich, I will attempt to set up a meeting with the landowner (initial one mile) to address the potential for a restoration partnership.



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Alder tree / leaves - Miller Creek

Alder Collection and Invertebrates from Miller Creek:
Miller Creek is highly important for the recruitment of aquatic invertebrates, and potentially wild trout, into Lower Putah Creek.

We have ongoing permission to enter Miller Creek with notification to the property owners.

Recommendations / Plans

1. Dreissena Mussel Surveys: Recommend that we install simple mussel colonization plates on the docks at Markley and Pleasure Cove. Plates are deployed at Monticello Dam, Capell Cove, and Headquarter's Cove. Action covered in existing budget - NO additional cost to SCWA.
2. Mussel Presentations Available: Due to numerous requests for presentations about the ongoing Zebra and Quagga Mussel surveys, I will be offering short presentations about the established mussel survey program in the Solano System to civic and governmental organizations. NO additional cost to SCWA.

Submitted via e-mail 6/22/10:

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