

# CREEK CURRENTS

Newsletter of the Urban Creeks Council

July 2006



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Urban Creeks Council's mission is to protect, preserve and restore urban streams and their riparian habitat.

## What's the BIG DEAL about a little fish?



In March 2006, a group of fish appeared in Codornices Creek - and changed the way we think about our urban streams.

*This article originally appeared in the March 28, 2006 Berkeley Daily Planet.*

**By Joe Eaton**

A couple of weeks ago I got an e-mail message from Susan Schwartz, president of Friends of Five Creeks, about a recent sighting: two pairs of steelhead that had followed Codornices Creek in from the Bay, as far upstream as Masonic Avenue, where they appeared to be attempting to spawn.

They were good-sized fish, 24 inches long, with the classic silvery coloration of this ocean-going variety of rainbow trout. The females were trying to dig redds—depressions in the streambed—for their eggs. Unfortunately, concrete rubble, which is all the steelhead had to work with, is not the best substrate for spawning. But you have to give them credit for making the effort.

Emma Gutzler, Restoration Coordinator for the Urban Creeks Council, was there with her videocamera, and you can see a short clip of the event on UCC's web site ([www.urban creeks.org/steelheadCodornicesMar06.mpg](http://www.urban creeks.org/steelheadCodornicesMar06.mpg)), or on Friends of Five Creeks' site ([www.fivecreeks.org](http://www.fivecreeks.org)). Gutzler says this was the first documented sighting of spawning steelhead this far up Codornices. "Everybody knew we had resident rainbow trout there," she says.

But the largest trout recorded in a fish survey last fall were only nine inches long; the two-footers were definitely not there before the winter rains. They hung around for at least three days, after which a new bout of rain increased the turbidity of the creek and discouraged fishwatchers.

What's the difference between a steelhead and a regular rainbow? They belong to the same species, *Oncorhynchus mykiss*, but the taxonomy below the species level is fiendishly complicated. The basic distinction, though, is that steelhead, like their salmon relatives, spawn in freshwater and mature at sea. Fish that divide their time between fresh and salt water are called diadromous. Steelhead and 13 other California species, including sturgeon, striped bass, and some lampreys, are anadromous. Catadromous fish, like the eels of eastern North America and Europe, mature in streams and rivers and breed at sea—in the Sargasso Sea, in the case of the eels.

*continued on page 4*

## Urban Creeks Council Projects, Summer 2006

### Codornices Creek Watershed Restoration Action Plan, Phase II, Albany/Berkeley, CA.

The exciting news for Codornices Creek is that three ocean-run steelhead ranging from 17 to 24" were observed spawning this spring. This is an inspiration for continued efforts throughout not only the watershed but in all of our urban watersheds.

(A short video compilation of these observations can be seen on our website: [www.urbancreeks.org](http://www.urbancreeks.org).)

In other fish news, analyzing electrofishing data collected in September 2005 provided a *Oncorhynchus mykiss* (steelhead/rainbow) population estimate of 504 (95% confidence interval 271-738). An outmigrant trap was operated this spring to observe and measure any fish migrating to the bay. No smolts—fish undergoing the physiological



*UCC staff lead a demonstration project on Codornices Creek in Berkeley. Local homeowners learned how to install soil bioengineering methods to prevent erosion, such as the brush mattress seen here.*

transformation from fresh water to salt water—were observed. However, multiple young rainbows were observed, a good sign for the population's future.

Roughly 30 continuous temperature probes have been installed throughout the watershed. These instruments will record water temperature throughout the summer providing a better understanding of conditions for our coldwater-loving fish. Benthic macroinvertebrate (aquatic insects) surveys were completed this spring. These insects are food for the fish and thus provide information regarding the available food supply. Additionally, benthic macroinvertebrates provide information

on water quality, as certain species are more pollution-tolerant than others.

Volunteers are needed to help monitor water quality of Codornices Creek on a weekly basis. This volunteer program monitored conditions last summer and fall. The good news is that Codornices Creek is a healthy urban stream. Dissolved oxygen, especially in the warmer summer months, is our main concern.

Permits have been submitted to necessary agencies for the planned in-the-ground project for Albina Avenue. This project will install a series of step-pools to allow fish migration above the Albina Avenue Bridge, which currently acts as the upstream barrier to passage. This will open up-stream habitat to the fish as well as improve habitat conditions below Albina. Additionally, this project will manage storm water runoff using ecologically sensitive engineering design to decrease down-slope erosion that is impacting the stream's spawning gravel.

Restoration designs are also being developed for Codornices Creek between 2<sup>nd</sup> Street and the Union Pacific Railroad tracks. This is a collaborative project between UCC, Restoration Design Group, and the Cities of Albany and Berkeley.

We invite you, if you live or work in the Codornices Creek watershed, to join the Codornices Creek Watershed Council. The Council meets on a bi-monthly basis to discuss concerns and activities in the watershed. Pamela Boyle is the Council's Watershed Coordinator. For more information please contact Pamela at [pamboyle@gmail.com](mailto:pamboyle@gmail.com).

A special thanks to students at Cal State East Bay, Cornell Elementary, Kids for the Bay, and Saint Mary's College High School for their help in monitoring, revegetation, and soil bio-engineering efforts. Thank you to the homeowners who allowed us to install temperature probes in your backyards and to the volunteers monitoring water quality. **Good work!** Without your help this project would not be possible.

Project Contact: Emma Gutzler, 510.540.6669

*This project is funded by CALFED and the State Water Resources Control Board through the Codornices Creek watershed Restoration Action Plan, and the National Fish and Wildlife Foundation through the Codornices Creek Salmonid Restoration Fund.*

## Wildcat and San Pablo Creeks Watershed Council, Watershed Restoration Action Plan and Priority Projects, San Pablo, CA.

This winter UCC looks to finish its efforts in managing the Watershed Restoration Action Plan (WRAP) grant awarded to the Wildcat-San Pablo Creeks Watershed Council in 2004. The main goal of the project is to develop a community- and City-supported plan to reduce flood damages in the City of San Pablo while preserving the natural qualities of the creek. Our team of East Bay water experts, including Watershed Sciences, Balance Hydrologics, SPAWNERS, and the Army Corps of Engineers, is completing its assessment of existing physical, hydrologic, and biological conditions along Wildcat Creek. We are now exploring site-specific action alternatives for possible future implementation by the US Army Corps of Engineers. These potential alternatives—including culvert removals, floodwater detention, and in-stream channel modifications—



*Students from Richmond High help UCC plant natives at the newly restored Wildcat Creek site at Church Lane in San Pablo. A native wildflower mix blooms on the banks.*

will be presented to San Pablo residents in a series of community meetings. Final approvals regarding the contents of the Watershed Restoration Action Plan expected in February 2007.


In addition to producing the WRAP document, we hope to break ground this fall on an 1100-foot stream restoration project on Wildcat Creek below Rumrill Boulevard. The surrounding San Pablo neighborhood chronically floods. Our design aims to lower flood hazards through channel reshaping and the reestablishment of a working floodplain. A complicating factor in getting started is the unusual number of other parties planning separate construction projects in the area. We thank the Watershed Council for its constant role as a coordinating body helping to ensure the compatibility of these activities.

Finally, the educational component of WRAP continues. For the third year running, WRAP will fund two weeks of Richmond's Community Youth Center for Leadership and Education's (CYCLE) summer youth program. About twenty Richmond youth will have hand-on experiences learning about their local watershed by taking hikes with naturalists, providing maintenance work on former restoration sites, and even surveying cross-sections! We also thank and say good-bye to Stacie Jagger for her excellence in leading the Richmond High School Environmental Club for the past two years. She has found full-time employment as a professional planner. We have high hopes for her successor—Welcome, Daniel Santos, a Richmond native majoring in Conservation and Resource Studies at UC Berkeley. Project contact: Josh Bradt, 510.540.6669.

*Funding for this project has been provided through an agreement with the State Water Resources Control Board (SWRCB) pursuant to the Costa-Machado Water Act of 2000. The contents of this document do not necessarily reflect the views and policies of the SWRCB.*

## COMPLETED PROJECT

### Wildcat Creek at Church Lane, San Pablo, CA. Construction: Summer 2005.

This reach of Wildcat Creek had a long list of problems, and the solution had to stand up to the unusually high storm flows that roar through the corridor. Using 2 to 3 ton rock, an ecologically sound and fish-friendly cross vane weir was constructed in a "V" shape with the point facing against the flow, so that the force of stormwater would push the rock closer together rather than tearing it apart. Willow stakes were used throughout the lower third of the banks and 40 linear feet of brush layering was installed on the left bank to replace the old poured-concrete wall. Fascines and brush mattresses were also used to prevent localized erosion on the banks. The invasive species were removed from the site, the right bank was graded back to increase flood capacity, and a native riparian palette was planted with the help of a group of students from local Richmond High School. Among the species of plants were big leaf maple, yarrow, a native wildflower/fescue seed mix, sedges, native blackberry, and coyote bush. The riparian corridor supports a diverse array of wildlife including mallards, herons, raptors, and many species of fish, for which habitat will increase with each year. Eventually, the willow will provide a full riparian canopy. The project also includes a mural, a new creekside trail and native plant garden for the senior citizen facility on the left bank. 

**What's the Big Deal?** from page 1

California, as luck would have it, has none of these interesting and tasty fish. But we do have a half-dozen discrete populations of steelhead that are classified as evolutionarily significant units (ESUs, in conservation parlance). They're all in the subspecies *O. m. irideus*, but each group is genetically distinctive enough to be treated separately for management purposes, although there's apparently some gene flow among them.

From north to south, steelhead ESUs have been described for the Klamath Mountains, the North Coast, the Central Valley, the Central Coast, the South/Central Coast, and the South Coast. Some of these populations are further divided into winter and summer runs, based on the timing of spawning. The steelhead in Codornices likely belonged to the Central Coast stock, all winter-spawners with an historic range from the Russian River to Aptos Creek in Santa Cruz County.



*A steelhead trout fry.*

© David Blevins Photography

Unlike Pacific salmon, steelhead may spawn more than once in their lives—up to four times if their luck holds. The mature males that accompany the females upstream meet competition from smaller precocial males called jacks that have spend only a few months at sea, and even smaller parr males that have never left their natal stream.

The little guys, collectively known as sneakers, will try to fertilize the female's eggs while the mature male guarding her is distracted. Schwartz and Gutzler said the steelhead in Codornices attracted smaller trout; they may have been sneakers, or they may have been looking for a snack. One fish's progeny can be another's protein. (The whole steelhead-rainbow business is fraught with irony.)

Thanks to introductions, non-migratory rainbows are now found in previously troutless streams and lakes all over California, and on every continent except Antarctica. You can fish for rainbows in Hawaii, in Tasmania, on the Indian Ocean island of Reunion. But habitat loss—from urbanization, dams, diversions, flood control projects, agriculture—has brought the anadromous steelhead to the brink of extinction.

The Central Coast population declined by 85 percent between 1960 and 1997, when it was finally listed as

threatened by the National Marine Fisheries Service, and UC Davis biologist Peter Moyle says there must have been significant losses even before 1960 due to all the “insults to watersheds” over the previous 150 years. Creek activists have done heroic work in Codornices Creek and elsewhere to help the steelhead recover. As Schwartz says: “Nature will come back if we just open the door.”

Volunteers have been restoring habitat along the creek for 15 years, and CALFED and the State Water Resources Control Board have funded a Codornices Creek Watershed Restoration Action Plan with steelhead in mind. It was something of a shock, then, when NMFS deleted Codornices and most of the Bay's other tributaries from the critical habitat designated for the Central Coast steelhead last September. Only Alameda Creek made the final cut.

UCC Executive Director Steve Donnelly responded to the proposed changes in March: “The conservation biology logic of wiping dozens of watersheds, including those which we have labored to revitalize over the past 20 years, from the scheme for recovering Central California Coast steelhead

escapes us completely. When did ‘putting all your eggs in one basket’ make conservation biology sense?”

The agency was unswayed. Its final rule described Codornices as having “low habitat quantity and quality, low restoration potential, no unique attributes, and small [steelhead] population size.” That also went for other East Bay streams, from Pinole to Suisun Bay, and for Sonoma and Marin watersheds.

Critical habitat may be a moot issue if Richard Pombo's hatchet job on the Endangered Species Act makes it through the Senate, of course. But it's played a vital part in constraining destructive development on federal land, or where federal funding or permitting is involved.

In any case, those steelhead didn't know or care that the feds had written off their creek. It still smelled right to them. The door had been opened, and they came on in. *Ω*

*Joe Eaton is a Berkeley writer whose column appears in the Berkeley Daily Planet every other Tuesday.*

What's going on in our streams—  
and how can we make a difference in the health of our waterways?

# Seeking a Balance

By Mike Vukman

Every day, all over the Bay Area, homeowners watch their backyard creeks, bewildered, trying to imagine what is going on in their stream to cause the dramatic changes occurring on their property. It's difficult to know where to turn for answers to the mysteries of such complicated systems as creeks. UCC has been attempting to bridge the gap between homeowners and sound riparian management practices for many years. Since understanding of creek morphology and processes is essential to correcting problems, and the majority of creeks in the Bay Area are on private property, homeowner education has become one of the most important tools in the protection and restoration of creeks and riparian buffer zones.

UCC's homeowner education program, called **SMPL** (Streamside Management Program for Landowners) is funded by the Contra Costa Clean Water Program and has been available to Contra Costa County residents since 2000. With this funding, UCC provides various services for concerned streamside property owners throughout the County. Upon request, homeowners receive a personal site visit that includes an assessment for creek health and stability- free of charge. We provide specific site recommendations, referrals to professionals who specialize in creek repair, and even facilitate hands-on workshops to teach property owners how to apply various soil bioengineering techniques. In the near future, we hope to expand this type of program to other municipalities within the greater San Francisco Bay Area.

Since most of the problems that we encounter when conducting site visits are very similar in origin, it is important to investigate the primary influences that have contributed to the current state of our urban streams. In urban areas throughout the world, we have been trying to "control" our rivers and streams by using traditional engineering methods. These methods do not match the **pattern, profile, and dimension** that a natural system would characteristically exhibit. A natural system exists in a state of **dynamic equilibrium**—where it is neither excessively eroding its banks nor depositing sediment—and exhibits the proper pattern, profile, and dimension for its relative stream classification. Every river and stream fits into this classification system based on dimensions like **slope, sinuosity** and **width to depth ratio**. This system is used to define how any stream should look and act.

A naturally functioning stream system would have some of the following characteristics:

- exhibits a stable pattern, profile, and dimension that would have nominal amounts of erosion and deposition occurring, depending upon its relative stream classification
- have access to a floodplain that would serve as a "release valve" for large discharges and their associated velocities
- a riparian corridor, complete with native riparian flora and fauna.

The pattern, profile, and dimension of our urban streams have been significantly altered. Most of the changes occurred in the 1800's and early 1900's as humans' land-use pattern changed. Agriculture and livestock had a dramatic effect on the landscape, including creeks. Allowing cattle to graze unimpeded significantly diminished the amount of riparian vegetation, with its deep soil-stabilizing root structures, throughout our watersheds. As the population of the area increased and began to urbanize, more and more people built closer to creeks and began to armor them in an attempt to prevent flooding or erosion. Consequently, our streams began to adjust to their new conditions, either moving horizontally or vertically, trying to increase in sinuosity or gradient because the factors that kept the systems in balance were no longer present. There have been other anthropogenic influences that have further affected our urban streams and their adjustments. As a result of the erosion that occurs as these dynamic systems begin to seek a new pattern, profile, and dimension, more and more people tried to

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## The Berkeley Creeks Ordinance and Task Force Update


*By Josh Bradt*

Many Berkeley residents have been following the progress of the Berkeley Creeks Ordinance with much concern. The ordinance has gained regional attention as a classic case of balancing homeowners' development rights with the need to preserve the ecological integrity of natural areas.

After more than a year of public meetings, expert testimonies, and often high emotions, the Berkeley Creeks Ordinance Task Force (CTF) completed its mission of developing recommendations for improving the City's existing Creek Protection Ordinance. As a member of the CTF, I am generally pleased with our final recommendations which, taken as a whole, would strengthen creek protections across the City.

A super-majority of Task Force Members—many of whom were generally neutral between the property rights and environmental advocates—voted to recommend keeping the existing 30' setback to prevent unmitigated permanent encroachments with open creek corridors. This setback, while not nearly wide enough to restore full natural function of Berkeley's creeks, will help reestablish a narrow, undeveloped buffer zone that not only will protect water quality, but also minimize the predictable hazards often caused by building too close to these dynamic systems (flooding, erosion, and bank failure). The CTF recommendations also supported flexibility, incentives for moving structures away from creeks, and in some instances allow for up to 5' of encroachment into the 30' setback (with conditions). The CTF recommendations preserve the right to rebuild homes near creeks, even non-conforming ones already located with the 30' setback.

On May 30, the City Council voted (7-2) to accept the recommendations while extending the CTF sunset date to mirror the schedule of drafting of the actual ordinance language (due November 22, 2006). Unfortunately at the same meeting, City Council also approved a motion to direct city staff to explore proposals submitted by the Planning Committee that basically soften the CTF's recommended Use Permit requirements for creekside development. So our work continues. We will be guiding the development of a Watershed & Creek Care Guide for city residents, reviewing draft ordinance language, and assisting with the process for prioritizing daylighting opportunities with voluntary incentives.

Berkeley's creeks are natural and community resources that contribute greatly to the quality of life for both present and future generations. Expert testimonies stressed the functional values of undeveloped creek right-of-way and naturally vegetated stream buffers to slow urban stream and watershed degradation. Please come to Task Force meetings and City of Berkeley public hearings to make your voice heard regarding this issue. For background reading and the Task Force's latest meeting schedule, check the City of Berkeley website: [www.cityofberkeley.info/planning/landuse/creeks](http://www.cityofberkeley.info/planning/landuse/creeks). 

*Josh Bradt is the Restoration Director for the Urban Creeks Council.*

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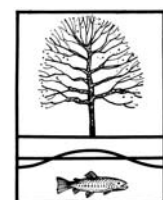
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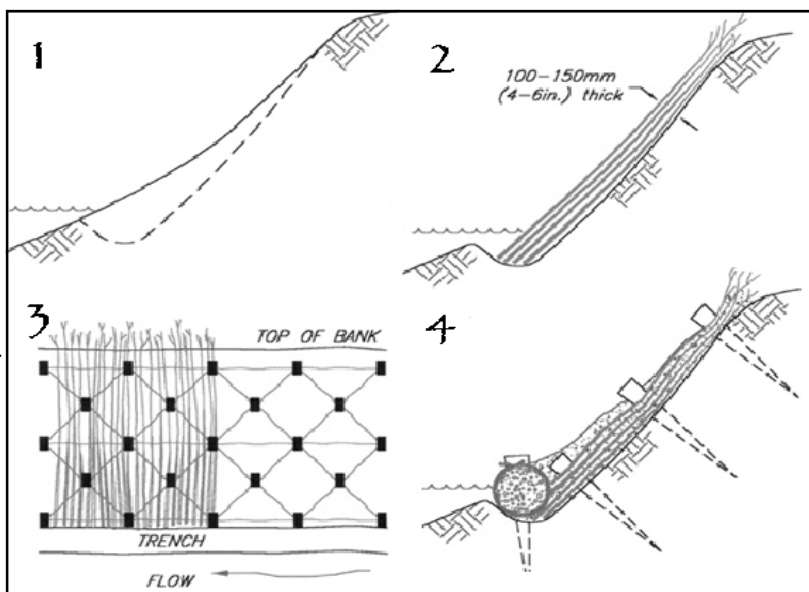
**Beth Stone,**  
Planner and GIS  
Specialist



**Continued from page 5**

protect their properties by armoring their creek banks with the use of various engineered solutions such as concrete, riprap, and different types of retaining walls. As a response to flooding and erosion concerns, different local, state, and federal agencies placed our living streams within concrete lined flood control channels. By straightening our streams, we have decreased their length from many curves to a straight line, thereby increasing gradient. With increased gradient, the erosive energy contained within storm events have dramatically increased. Furthermore, as a result of increased urbanization, we have added significant amounts of impervious surfaces such as roads and roofs throughout our watersheds.

Rainwater that falls in our watersheds now drains a more concentrated volume into creeks in a shorter amount of time, because most of the impervious surfaces— roads and buildings— drain into storm drains, which direct water straight into creeks. (Contrary to popular belief, storm drains do not empty into water treatment facilities—which is why nothing should ever be poured down them and cars should not be washed on the street.) The effect of stormwater entering the creeks is similar to water being sprayed from a hose— the force of the water increases dramatically. As the creeks within our watersheds continue to try to adjust to these new influences, they dissipate the amount of energy inflicted upon them by a given storm event by moving vertically or horizontally. This leads to property being destabilized—either as a function of incision, where a stream cuts down deeper than its natural bottom, or of lateral migration, where a stream will attempt to carve out floodplains in the stream banks.




*Brush-mattressing can be used to prevent erosion.*

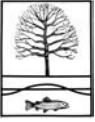
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The good news is that there are many opportunities to minimize and prevent damage such as erosion from occurring. Soil bioengineering techniques simply replicate what nature has been doing for as long as our streams have existed. Soil bioengineering is the use of native streamside plants and woody materials to restore function and stability to the soil on creek banks. Natural channel design, when coupled with soil bioengineering techniques, can recreate healthy riparian corridors. We don't know when our streams will reach equilibrium again. One thing we know for sure is that our streams will continue to adjust, either moving vertically or horizontally, until they find equilibrium again—and unless we stop building into our riparian corridors, stop armoring creek banks, and start replanting native habitat, more homeowners will continue to experience erosion, flooding, and other damaging effects of unstable waterways.

Do you want to help stop the damage that is happening to our streams? If every homeowner with a creek on their property planted trees, took measures to control erosion, and chose soil bioengineering methods over riprap and walls, it would make a huge difference in the health of our streams. Most importantly, this would slow the deterioration of streams by preventing the need for homeowners to armor their banks against each other. If you do have a creek in your yard, one of the most important things you can do is get together with your creek neighbors and discuss the condition of your creek and proper management techniques.

But you can reach farther than your own backyard. Let your city and county know you are concerned about creek management and participate in the local development process so that you can speak out against practices that are harmful to creeks, and support good creek management and restoration. Support your local "Friends of" creek group— participate in volunteer days, attend meetings, and respond to action alerts. Our creeks are important to all of us, and it is up to all of us to protect and preserve them. 

*Mike Vukman is Project Manager for the Urban Creeks Council.*



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“ *We labor long and earnestly for peace, because war threatens the survival of man. It is time we labored with equal passion to defend our environment. A polluted stream can be as lethal as a bullet.* ”

*Senator Alan Bible  
(Nevada)*

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**EVENTS & ANNOUNCEMENTS**

Did you know UCC now has an email newslst? To receive action alerts and updates on creek restoration, events, and Bay Area creek-related goings-on, visit [www.urbancreeks.org](http://www.urbancreeks.org), click on “Contact Us”, and go to “Join Our Newslst”.

**August 25-27: 9th Annual Coho Confab:** A three-day event featuring workshops on native plant propagation, avian response to restoration, even fish rescue/relocation. For more information visit [www.calsalmon.org](http://www.calsalmon.org).

**October 29: UCC-toberfest 2006!**  
**Sunday, October 29, 2 PM to 5 PM**

**Piedmont Veterans Memorial Building, Piedmont, CA**

**Featuring:** A beer and wine-tasting table featuring local breweries and organic/biodynamic wines; a silent auction to benefit Urban Creeks Council; information about restoration and soil bioengineering techniques for your own back yard; lots of good food! Chat with the staff of the Urban Creeks Council about restoration; network with watershed neighbors; and find out how many steelhead it would take to fill a bathtub! Please check our web site, [www.urbancreeks.org](http://www.urbancreeks.org), for information.

**Donations to Urban Creeks Council can now be made online!**

It's simpler than ever to support UCC's work. Please go to [www.urbancreeks.org/give.html](http://www.urbancreeks.org/give.html) to support UCC today!

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