

Abbott Lake Restoration Approved



Aerial view of Abbott Lake Unit, Feather River State Wildlife Area, showing the proposed restoration area (sandy area in background) and remnant riparian areas in the foreground. Photo by River Partners staff.

On Friday, February 26, 2010, the Central Valley Flood Protection Board (CVFPB) approved an encroachment permit to do habitat restoration work on the Abbott Lake Unit of the Feather River Wildlife Area.

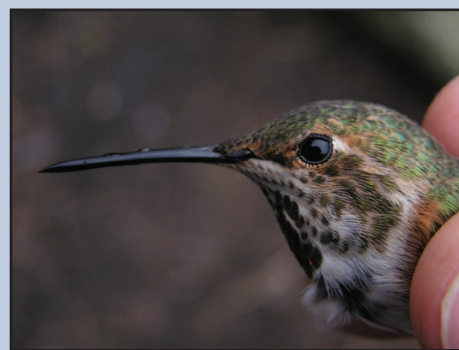
Various agencies and nonprofits attended the meeting to testify to the multiple benefits that will result from the restoration project. They included Ducks Unlimited and the Wildlife Conservation Board, both funders of the project. Additional proponents included the Department of Fish and Game, the Department of Water Resources (Flood Maintenance Office), and MBK Engineers. River Partners, the project developer and implementer, assisted with the permit application process.

“We’ve invested two years in the planning and permitting process,” says John Carlon, River Partners president. “And this time has certainly paid off in terms of bringing together partnerships and producing a well-designed project that will offer numerous benefits. Not only will restoring Abbott Lake contribute to a large block of wildlife habitat, our planting design will help prevent levee erosion and reduce maintenance costs.”

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California rose being pollinated by a native bee on River Partners’ Drumheller Unit project, SRNWR. Photo by River Partners staff.

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Allen’s hummingbird (Selasphorus sasin) captured for monitoring purposes and photographed by River Partners biologist, Michael Rogner. Hummingbird bills are long and slender for the purpose of probing deeply into flowers for nectar (see Pollinators article, pages 4-5).

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Message from the Board Chair

By Irv Schiffman

Restoration's Added Benefits

A growing number of professional studies have been undertaken in recent years to measure the benefits and costs of riparian restoration projects. The near unanimous conclusions are that such projects have proven themselves economically beneficial in a number of ways, including the reduced risk of flooding downstream through the ability of restored floodplains to absorb high waters; the avoidance of pollution by acting as a river buffer against agricultural chemicals; and the recreational opportunities afforded by restoration programs.

In this issue, Michelle Boercker, a River Partners restoration biologist, highlights an additional way in which restoration projects provide an economic as well as an ecological benefit to society, namely, the preservation and restoration of natural pollination systems.

In California, alfalfa, apricots, kiwifruit, and prunes are just a few of the food crops that are pollinated in part by native bees.* River Partners' president and organic farmer, John Carlon, relies solely on native bumble bees to pollinate 8.5 acres of highbush blueberries (about 9,250 plants).

According to John, "Blueberries and bumblebees evolved together and bumblebees are spectacular pollinators. They fly in cold weather, can easily reach into blueberry flowers and effectively vibrate the entire flower cluster at take off and landing, greatly enhancing the transfer of pollen. The biggest problem with bumblebees is that they are not for rent. I must entice them into the fields from the surrounding 50 acres that we've kept as wildlife habitat."

The replacement of abandoned, weed infested land with wildlife habitat could help other growers like John. Our projects consist of a variety of blossoming plants that attract, as one would expect, a variety of birds and insect pollinators. As Michelle points out, various native plant species bloom at different times of the year, increasing the opportunities for pollinators to obtain nectar sources.

We still don't know what effect climate change will have on wild pollinators or plant-pollinator interactions, although stories concerning the global decline of honeybees and other pollinators such as butterflies and birds appear in news stories at an ominous rate. Conserving and sustaining wild pollinators may not be the primary purpose of River Partners' restoration activities, but it is a valuable consequence of our efforts and an essential factor in the protection and enhancement of biodiversity.

In sum, the process of riparian restoration carried out by River Partners has multiple economic and ecological benefits, some of which are obvious while others, of equal importance, are less well known. Indeed, I am still learning many of the beneficial consequences that emanate from the work of this resourceful organization.

* *Wild Pollinators: Agriculture's Forgotten Partners*, WFA Briefing Papers (2007).



Volunteer Planting Day at the San Joaquin River National Wildlife Refuge

By Julie Rentner, Restoration Ecologist

Native Plant Society Lends Assistance

On Saturday January 30, 2010, 30 volunteers from Stanislaus, San Joaquin, Merced, Madera, and Alameda Counties gathered at the Arambel Unit of the San Joaquin River National Wildlife Refuge to plant more than eight hundred native trees and shrubs. Located along the floodplain of the San Joaquin River, one half-mile upstream of its confluence with the Tuolumne River, the plantings were a part of two different River Partners projects at the Refuge, both designed to benefit riparian songbirds, waterfowl, mammals, and endangered species such as the riparian brush rabbit. Several volunteers from the Northern San Joaquin Chapter of the California Native Plant Society provided valuable assistance in instructing volunteers about planting techniques and keeping the pace of the planting fast and fun.

Volunteers finished early (in just three hours!) and had a chance to reflect on their hard work while learning more about riparian forest restoration. Sandhill Cranes and Red Tail Hawks took to the skies above the planting location throughout the day, vocalizing the approval of our efforts. Luckily, the rainy skies cleared and the winter sun was able to warm volunteers up



Field Manager, Stephen Sheppard (by the orange bucket) talks to volunteers at the San Joaquin River NWF Planting Day event. Photo by River Partners staff.

throughout the day. Volunteers ranged in age from 3 to 63, some having never planted a tree before. As these trees and shrubs grow, volunteers may one day be able to revisit their hard work in a hiking or canoe trip to the Refuge, which will open to the public in 2010.

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Abbott Lake Restoration Approved

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River Partners hired MBK Engineers to conduct the hydraulic analysis of the proposed plant design. “Thanks to MBK’s multiple evaluations and feedback, we’ve carefully adjusted the restoration design—including types of plants, their location, and densities—so that there specifically won’t be a ‘clogging’ effect if there is a flood,” says Helen Swagerty, Senior Restoration Biologist. “MBK’s modeling of the project’s impact in a flood event has shown that the restoration will not burden the levee system. Moreover, the models indicated that the project will protect the levee.”

The focus of the Abbott Lake restoration project is creating wildlife habitat, not re-vegetating the nearby levee. **No trees will be planted on the levee nor within 15 feet of the levee. No elderberry bushes will be planted within 100 feet of the tow of the levee.**

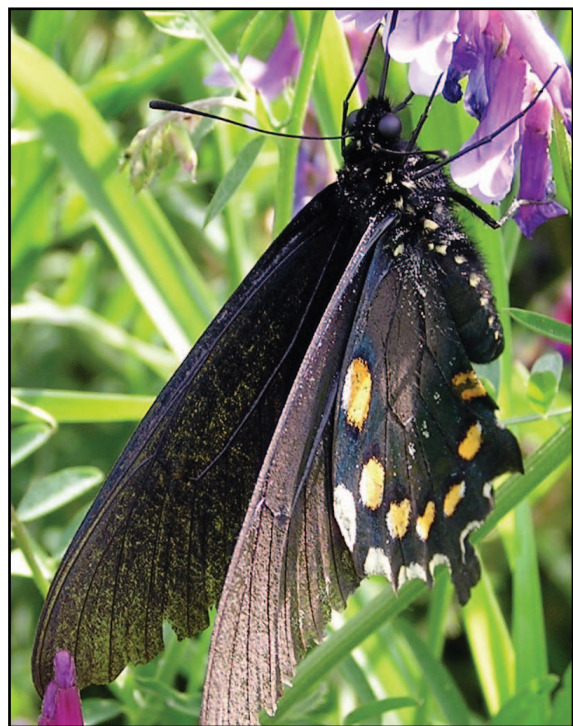
Located approximately seven miles south of Yuba City, the 439-acre Abbott Lake site has been fallow for 25 years. River Partners will actively restore 169 acres and help enhance the remnant habitat by controlling invasive plants. Since this unit belongs to the Department of Fish and Game (DFG), the project will benefit public recreation and access to the Feather River.

The Abbott Lake restoration project is important because it will enhance a substantial portion of the wildlife habitat comprising the 2,522-acre Feather River Wildlife Area, the largest publicly-accessible DFG riparian wildlife area in northern California. The Abbott Lake project also will add to the more than 8,000 acres of wildlife habitat in the region that are held in public and private ownership.

Restoration Projects Support Nature's Pollination Systems

By Michelle Boercker,
Restoration Biologist

Historically, the Great Central Valley of California encompassed nearly one million acres of riparian habitat. Today, this riparian habitat is restricted to 5% of its original range and is highly fragmented. Despite these impairments, riparian habitat supports the most diverse wildlife of any habitat type in California. Many of these wildlife species pollinate plants, and thus play a critical role in plant reproduction. Pollinators include a vast array of extremely diverse animals, including insects (e.g. bees, butterflies and moths), mammals (e.g. bats) and birds (e.g. hummingbirds). Plants and their



Pipevine swallowtail (*Battus philenor*) nectaring on hairy vetch (*Vicia villosa* Roth) on the U.S. Fish and Wildlife Service Ord Bend Unit (2005). Photo taken by River Partners biologist, Michael Rogner.

pollinators make up pollination systems.

By restoring riparian areas, River Partners creates habitat for pollination systems, which worldwide are declining due to habitat loss and fragmentation, climate change, and the introduction of exotic species. In response, restoration efforts are increasingly tailored to foster natural pollination systems (Kremen and Ricketts, 2000).

River Partners plants a diverse assortment of native riparian species, which in many cases flower at different times. As a result, nectar sources are more continuously available throughout the year to sustain pollinators. The chart at right depicts some of the woody species commonly planted by River Partners at our restoration sites. One can see that the wide variety of plants is accompanied by a wide range of flowering times.

While performing routine monitoring activities at the Del Rio Wildland Preserve on October



Honey bee (*Apis mellifera*) visiting a flower in a Chico backyard (2008). Photo taken by River Partners biologist, Michael Rogner.

“ecosystem service.” Crop pollination by native species may become increasingly critical as the number of honey bee colonies continues to decline as a result of introduced pathogens and parasites.

30, 2009, I was able to appreciate the differences in the timing of plant reproduction firsthand. Many of the plants onsite had flowered and subsequently produced fruit months prior to my visit and were now going dormant for the season. California rose (*Rosa californica*) shrubs possessed relatively few leaves and were bright with red berries (see photos at right).

Coyote brush (*Baccharis pilularis*) shrubs, on the other hand retained green foliage, displayed abundant and tiny, white flowers, and were literally buzzing with pollinator activity.

The flowers of gumplant (*Grindelia camporum*), an understory species frequently planted by River Partners, were also receiving a lot of attention from pollinators.

Although impressive, the abundance of bees at the Preserve came as no surprise. Recent work conducted by Dr. Neal Williams (2007) provides strong evidence that restored riparian areas in Northern California support bee communities as diverse as those in remnant riparian areas, and that this finding is consistent among seasons (Golet et al. 2009). Native bee communities can greatly contribute to crop production in Northern California (Kremen et al. 2004), and thereby provide society a supporting

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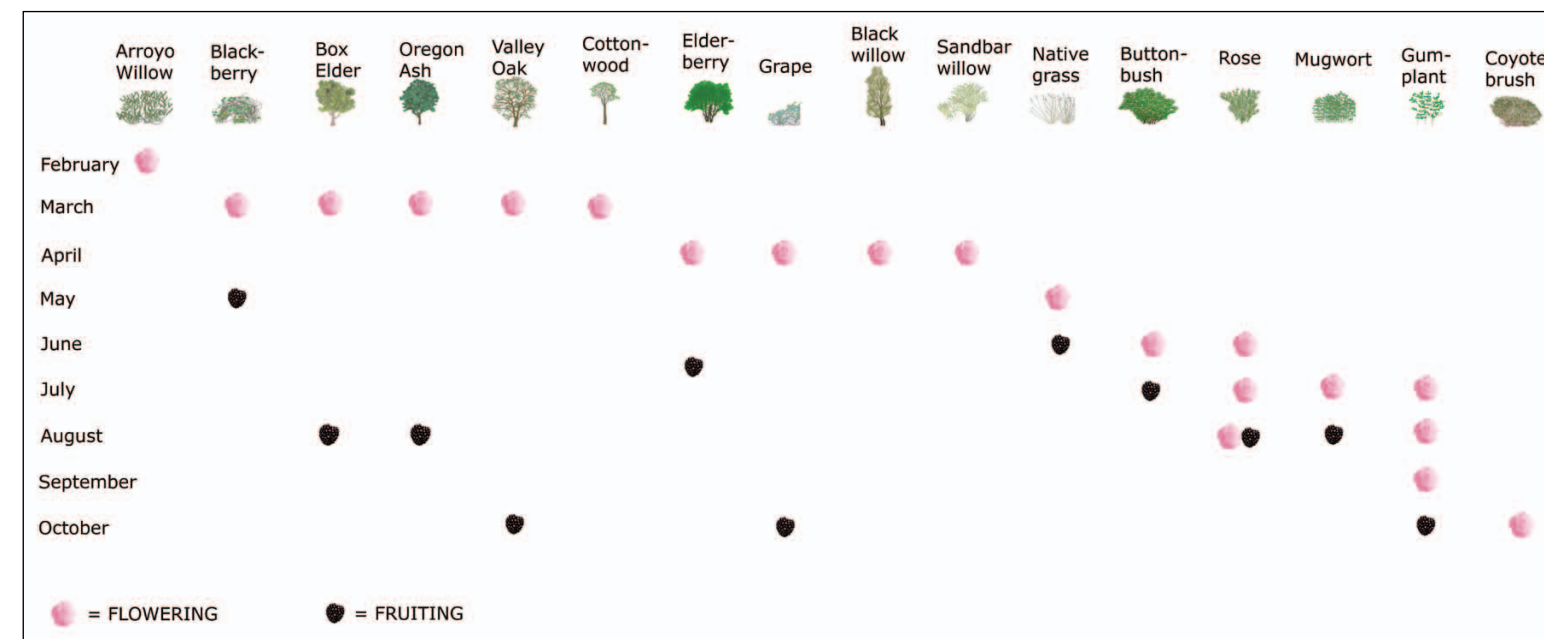


Pollination in Riparian Ecosystems

One important, and direct, type of interaction between riparian species is the interaction between a riparian plant and its pollinators. Many plant species require, or benefit from, cross-pollination (rather than self-fertilization) which is facilitated by animals. To entice pollinators, plants present an impressive array of floral traits, including traits related to form, color, and scent. Some floral traits have evolved to facilitate pollination by single animal species (resulting in very specialized interactions), while others attract a more diverse set of pollinators. Most plant-pollinator interactions are mutually beneficial. The plant uses an animal to transport its pollen (containing the male gamete) to the stigma (the female receptacle) of another individual of the same species. In exchange the animal is typically rewarded with nectar.

(photos at left, top to bottom) Berries and remnant pink flower petals on a California rose shrub. Bees visiting coyote brush flowers. Honey bee (*Apis mellifera ligustica*) visiting a gumplant flower. Photos taken at River Partners' Del Rio Wildland Preserve on October 30th, 2009 by River Partners staff.

Native Plant Flowering Times





12th

Anniversary

**Dinner
&
Silent
Auction**

**Featuring
Latin Jazz Band**

**LOS PAPI
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**Friday,
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6:00 pm

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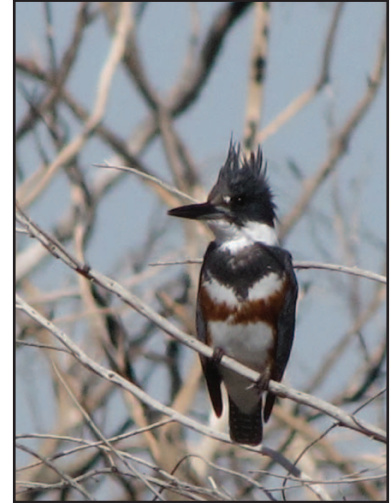
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Lower Colorado River Restoration Underway



Double-crested cormorants in the former channel of the Colorado River. Trigo mountains in background. (above) Belted kingfisher. Photos by River Partners staff.

In November 2009, Regional Director, Greg Treber, began working at the Cibola National Wildlife Refuge (Cibola, AZ), spearheading River Partners' latest restoration effort along the Lower Colorado River. Building on the restoration feasibility plan River Partners developed for fire-ravaged sections of the Refuge, Greg initiated the first steps for a 65-acre site.

"The USFWS has been a great collaborator with the start of this project," says Treber. "They've been doing a lot of tractor work, ripping up stumps of the tamarisk which used to dominate the site. When the 2006 fire came through the refuge, it burned a lot of tamarisk (salt cedar), an invasive plant that overruns native vegetation. The USFWS' post-fire treatment and clearing will allow us to come in and start planting."

While the USFWS assisted with the ground preparation, Greg began collecting seeds from various native species and contracted with a local nursery to grow the plants that will be installed.

River Partners always uses seed sources from the watershed where the

restoration will occur. "The reason we do this is that plants growing near the project site are already adapted to the local climate, soils and hydrology," says Tom Griggs, Senior Restoration Ecologist. "From a practical standpoint, the plantings will have a higher survival rate."

In February 2010, Restoration biologist Jessica Hammond joined Greg in Cibola. Jessica's visit to the refuge allowed her to gather information about the ecology of the site that will help her to develop the overall restoration plan. She and Greg conducted soil studies that will help her decide how to structure the planting design. Also, she spent some time observing the resident wildlife. "This baseline information will help us assess how the site will change over time," says Hammond. "So far, it is clear that the Refuge functions as important wildlife corridor," she adds. "The refuge provides habitat for many species including mule deer, coyote, and many migratory and resident birds including yellow-rumped warbler, say's phoebe, sandhill crane, yellow-headed blackbird, and northern harrier, among others."

San Joaquin River Partnership Launches Website

In the fall of 2008, River Partners and other conservation groups began gathering on a regular basis to share ideas for improving conditions of the San Joaquin River's natural resources and enhancing California's quality of life. They saw a timely opportunity to assist implementing the extensive multi-agency San Joaquin River Restoration Program. By working together, the groups found they more effectively could track an array of programs and policies, as well as engage the many federal, state, and local agencies responsible for river resources. In May 2009, the non-profit organizations officially became the San Joaquin River Partnership (SJRJP). This coalition spans the entire San Joaquin River, from its headwaters in the Sierra to the Delta.

In January 2010, the SJRJP launched its website. To learn more about this coalition and to show your support for a living river and vibrant Central Valley, visit:

www.sanjoaquinriverpartnership.org



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Volunteer Planting Day at the San Joaquin River National Wildlife Refuge

Volunteer Efforts Help Fire Recovery, Endangered Species Program

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Restoration of the five-acre Arambel enhancement field began in 2008 with funding from the Bureau of Reclamation's Central Valley Project Habitat Restoration Program. A late summer fire that year burned the field and killed a percentage of the remnant riparian forest there. River Partners biologists watched closely as the plant communities responded to the fire, coming up with a restoration plan for the field in 2009 that promoted the natural recruitment of native species while discouraging growth of non-native weeds. Our volunteers replaced dense stands of thistles and pepperweed with native blackberry, California rose, buttonbush, coyote brush, and Oregon ash. Volunteers also planted black willow, arroyo willow, sandbar willow, golden currant and cottonwood.

Once the Arambel enhancement field planting was completed, volunteers moved on to the Lara riparian brush rabbit refuge (bunny mound) to complete the planting of sandbar willows around the base of the constructed mound, and golden currant on the slopes and the top of the mound. Riparian brush rabbit refugia or "bunny mounds" provide

refuge to riparian brush rabbits fleeing rising flood waters and evading avian predators. Thirty mounds have been constructed at the Refuge to date, and the Lara mound is one of four funded through USFWS and Bureau of Reclamation endangered species recovery programs.

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