Dos Rios Ranch Acquisition

James Gore, Assistant Chief USDA-NRCS, Kicks off Celebration

On Monday, May 21, 2012, River Partners, along with the Tuolumne River Trust, and more than 212 people, ranging from funders, supporters, and elected official, celebrated the acquisition of Dos Rios Ranch, a 1,603 acre conservation project located where the Tuolumne River joins the San Joaquin.

The ceremony included nine speakers from the region. Yet, the surprise honor came when James Gore, the assistant Chief of the Natural Resources Conservation Service—the top project funder—accepted the invitation to be the keynote speaker.

“It is just amazing and striking to me what you’ve been able to achieve with so many people, with so many entities, with so many interests,” shared Gore at the event.

“The Dos Rios acquisition project is one of the largest and most significant restoration projects in this region, and it provides a true model of what we can do. Today we celebrate this project. But we really celebrate the unique partnerships of public and private organizations and families, to come together to protect and restore this golden piece of land.”

Hailed as a victory for the San Joaquin valley community and river land conservation in California, the size and scope of the Dos Rios acquisition “effort” could set a new precedent in the West. At least, this is what we at River Partners believe.

It took 10 years to bring this land purchase from concept to closing, marshaling the cooperative efforts of two local nonprofit organization and seven major funders: U.S. Department of Agriculture’s Natural Resources

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Ten Years on the San Joaquin River National Wildlife Refuge

This year River Partners celebrates its tenth anniversary carrying out riparian restoration activities on the San Joaquin River National Wildlife Refuge. We are celebrating a relationship that has brought vegetative diversity to flood-prone farmland, that has established and improved needed habitat for a broad array of wildlife, that has helped to restore the essential purpose of a river floodplain, and that has added resources to the local economy.

We began work on the Refuge in 2002, converting 850 acres of flood-prone agricultural land to their original condition as a seasonal floodplain. During these past ten years we restored 2,700 acres through the planting of some 600,000 trees and bushes along with a variety of native grasses. The diversity of habitat has brought back all kinds of wildlife including an increase in the avian community, particularly the recovery of the Yellow Warbler and the return of the Least Bell’s Vireo. In addition, our now famous bunny mounds have helped protect the riparian brush rabbit population along with other terrestrial species threatened by Refuge flooding.

Our work on the Refuge is also designed to minimize flooding impacts. Toward this end, we are working with the Fish and Wildlife Service to breach levees within the Refuge in order to restore flood flows and natural fluvial processes across the floodplain and relieve pressure on downstream levees during times of high flows.

Riparian restoration is a complex conservation activity that is relatively new in its implementation. Accordingly, River Partners has sought to widen interest and learning in the field by including many young people in our Refuge projects. Over twenty student interns have gained restoration experience working summers on the Refuge alongside River Partners employees. In February and March of this year two crews of young adults—ages 18 to 25—from the California Conservation Corps and the San Joaquin Regional Conservation Corps worked on plantings on a 550-acre site on the Refuge. In March, in partnership with the Tuolumne River Trust, we hosted five service learning days with local elementary schools which resulted in 300 4th graders planting trees on the Refuge.

The local economy has also benefitted from our work on the Refuge, particularly through field labor, equipment rental and administration. River Partners is the largest riparian-focused restoration organization in the San Joaquin Valley: the grants and contracts for restoration work on the Refuge received from ten different partners total almost fourteen million dollars. We fully expect our work on the Refuge, particularly in its implementation. Accordingly, River Partners has sought to widen interest and learning in the field by including many young people in our Refuge projects. Over twenty student interns have gained restoration experience working summers on the Refuge alongside River Partners employees. In February and March of this year two crews of young adults—ages 18 to 25—from the California Conservation Corps and the San Joaquin Regional Conservation Corps worked on plantings on a 550-acre site on the Refuge. In March, in partnership with the Tuolumne River Trust, we hosted five service learning days with local elementary schools which resulted in 300 4th graders planting trees on the Refuge.

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The SJRRP was established to restore and maintain fish populations on the San...
Dos Rios Ranch Acquisition

View of the farming operations (wheat in the foreground) and riparian area in the background. Photo by Dawn Davis Photography.

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Conservation Service, the US Bureau of Reclamation, the US Fish and Wildlife Service, the California Department of Water Resources, the California Natural Resources Agency, the California Wildlife Conservation Board, and the San Francisco Public Utilities Commission.

As noted in a Modesto Bee editorial, there is no denying the power of numbers behind this project. They are impressive indicators of a collaborative effort behind an historic conservation achievement: 25 plus letters of support, 10 years in the making, $21.8 million in funding, seven federal, state, and local funders, six miles of river frontage where the Tuolumne and San Joaquin meet.

The Dos Rios Ranch is also a project where agriculture, conservation, and flood management meet. As River Partners plans out the restoration in phases, it will continue to lease the working ranch land to local growers. As it implements the restoration of key areas, it will involve students and community members in planting events, involving the community creating recreational spaces and wildlife habitat. As it considers the historic flood flows of both rivers, it will manage the land in a way so it can hold flood waters and reduce peak flows, providing public safety benefits for the cities of Stockton and Lathrop.

Ten Years on the San Joaquin River National Wildlife Refuge

Continued from previous page

Joaquin River. River Partners serves on several of its technical working groups. The goals of the Program also include minimizing adverse impacts to water users, levee relocation, and “the establishment of appropriate riparian habitat.” We anticipate that River Partners will have much to contribute to these endeavors and further expect that a good part of the effort will take place along the 8.8 miles of levees located within the San Joaquin National Wildlife Refuge.

Missions Accomplished: The Collaborative Purchase of Dos Rios Ranch

By Irv Schiffman, Board Chair

The purchase by River Partners of the 1603 acres Dos Rios Ranch from the family of Bill Lyons Jr. for $21.8 million could not have been accomplished without the generous involvement of many individuals and groups.

Dos Rios Ranch, located at the confluence of the Tuolumne and San Joaquin Rivers in Stanislaus County, lies between the Tuolumne River Regional Park and the San Joaquin River National Wildlife Refuge along a stretch of river proposed for the Lower Tuolumne River Parkway. The Tuolumne River Trust envisioned the ranch as a critical addition to the Parkway and the perfect anchor of its western edge.

River Partners has been engaged in restoration work on the San Joaquin River National Wildlife Refuge since 2002. Sitting directly across the river from the 6,950-acre Refuge, the purchase of Dos Rios Ranch offered the opportunity to combine the two properties and thus create one of the largest contiguous riparian and floodplain conservation areas in the Central Valley. Moreover, both River Partners and the Tuolumne River Trust shared the goals of having Dos Rios become an important habitat resource for wildlife, recreation and non-structural flood control.

Having decided to work together to obtain the funds needed to purchase Dos Rios, the two non-profit organizations sought out state and federal agencies whose various missions would be furthered through the preservation and restoration of the
Celebrating 10 Years

More than a Decade of Collaboration

By Kim Forrest, Wildlife Refuge Manager, San Luis NWR Complex

Kim Forrest has worked for the US Fish and Wildlife Service for more than 35 years. She currently oversees the San Luis National Wildlife Refuge Complex – composed of the San Luis National Wildlife Refuge, Merced National Wildlife Refuge, the Grasslands Wildlife Management Area, and the San Joaquin River National Wildlife Refuge (SJRNWR). [http://www.fws.gov/sanluis/]

Kim Forrest saw first-hand River Partners’ expansion to the San Joaquin River, and shares her observation of those early days in this essay. Thanks to Kim’s support, not only has River Partners restored more than 2,700 acres on the SJRNWR, the organization has continued growing, now working on more than 12 watersheds throughout California.

River Partners actually started working on the Refuge (SJRNWR) in 1999, a few months before I arrived at the San Luis NWR Complex. Dr. Tom Griggs was assessing the restoration potential for the San Joaquin River NWR.

Previously I had worked under Gary Kramer at the Sacramento NWR for 8 years—Gary as the refuge manager and I as the deputy refuge manager. Perhaps the most important lesson I learned from Gary was watching how he gauged and ascertained character – whether it was of individuals or of organizations.

Gary’s whole-hearted endorsement of River Partners – and John Carlon – made it a very easy and logical choice for me to start working with the organization early on in my stint here as the refuge manager. That was the basis of a long and incredibly productive partnership between River Partners and San Luis NWR Complex.

By 2002, we had a multi-million dollar CalFed grant that included the restoration of 800 acres on the San Joaquin NWR by River Partners.

During this first project, River Partners held a Board meeting on SJRNWR. I remember it well – the Board members sitting on bales of hay set under one of our 500-year-old oaks. At that meeting President John Carlon broached the idea of a continued presence in the San Joaquin Valley, opening an office here, and maybe even changing the name from “Sacramento River Partners” to just “River Partners.”

I sensed a deep hesitancy by the Board to such a giant expansion. I think they feared getting spread too thin and diluting the organization’s impact. Since the Board members were very familiar with the Sacramento Valley, establishing the organization in the San Joaquin Valley was venturing into unfamiliar territory.

In the end, River Partners’ board agreed to take that leap. I think the Refuge made it easier by allowing River Partners to use one of the houses on the Refuge as an office and bunkhouse for a couple years.

At the time, I really had no idea at the time how important a step that was for the Refuge. For 12 years River Partners has been the backbone of our work on that new refuge, the SJRNWR, helping it to reach its potential. The restoration work has been essential for achieving each and every goal – migratory songbird habitat, endangered species habitat, floodplain restoration, outreach, and public use.

River Partners has essentially acted as an agent for USFWS where we were too short-handed to take on some gigantic projects. River Partners has done everything from soup to nuts: applying for and administering grants, doing the restoration work, reaching out to the communities and other agencies, designing the most ideal and tailored habitats, and implementing an immense amount of work. River Partners has been the most essential, reliable, trust-worthy, multi-talented, professional partner I have ever experienced in my 35-year career.
In August 1999 River Partners sent me south to the San Joaquin River National Wildlife Refuge west of Modesto in the northern San Joaquin Valley. The Refuge had recently acquired about 3,100 acres on the west side of the river, immediately south of the Hwy 132 bridge. These acres had been farmland and a dairy before the floods of 1997. The three ownerships were severely impacted by the floods of January 1997, as they lie in a natural topographic bowl that rapidly filled with floodwater wherever the levees breached: they broke in 10 places along this reach causing Ed Hagemann’s house to go under water three times! The Natural Resource Conservation Service (NRCS) came forward to purchase a conservation easement over the properties and the Fish & Wildlife Service purchased fee-title. In addition, as a result of the flood damage, the Refuge units were designated a Non-Structural Flood Protection Demonstration Project by the Army Corps Of Engineers (ACOE), meaning that the ACOE levees that protected the properties from flooding would be breached in a strategic, engineered manner as part of the regional flood management program.

My job was to evaluate the restoration potential of the new West Units on The San Joaquin River NWR. The new Refuge lands had been under intensive, irrigated agriculture since the 1960s and some of it (the Vierra parcels) had been in cultivation prior to the 1920s. Intensive weed control over the years had taken its toll of native plants: two examples, the two largest valley oaks remained on either side of Hospital creek as it left the leveed portion of its channel. It was only at the base of these oaks that I could find a remnant patch of basket sedge and a small patch of creeping rye grass. (Creeping rye turned up in large patches in the southwest corner of the Lara property in an area of high water table that was not farmed.) The other example is that in 1999 there were no plants, native or weeds, growing on the sides of the main drainage ditch at field H20 – I remember being impressed by one lone mugwort plant hanging on the side of the canal! Today it is covered by thick weeds.

By contrast, I discovered the relict riparian meadow site. The relict meadow is about one acre in size and was apparently “left behind” when the Lara property was developed for agriculture. (It is against the levee and adjacent to a deep pond that may have been excavated or was eroded by an historical levee break.) The relict meadow is completely covered by several native herbaceous species. Individuals of weedy species are rare. This is the only not-plowed Columbia Loam soil that I know of in the Central Valley.

The West Units were surprisingly free of many common woody invasive species: Only a few salt-cedars were present, Arundo existed only as two patches on Vierra, (and was spreading north after the 1997 flood), Himalayan blackberry was discovered only as small patches at Lara, and Star-thistle was not on the Refuge (but it was at the East Stanislaus Irrigation District gate, as were the only ground squirrels).

I carried out what we term as a site analysis. I reviewed historic photos of former land uses and former flood events; we excavated soil pits across the Refuge to evaluate soil textures and depth to water table, and I interviewed local residents, including Ed Hagemann who toured me around his former holdings and explained... Continued on page six.
how he developed and managed his farm. I compiled a Pre-Restoration Plan for the West units that explained the current ecological conditions on the Refuge and recommended where and how riparian restoration could be implemented, including plant species associations and the placement of wetlands. The Pre-restoration Plan was attached to a funding proposal that was submitted by the Refuge to CalFed for funding.

Meanwhile wildlife targets for the restoration of the west units were established: 1. Recovery of the Endangered Riparian Brush Rabbit (RBR). (The Endangered Species Recovery Program at CSU Stanislaus designated the San Joaquin River NWR as the primary location to establish new populations of the RBR. The RBR is currently the primary driver of restoration designs at the Refuge). 2. Establishing habitat for the Valley Elderberry Longhorn Beetle, and 3. Conservation of Californian riparian bird species and their habitat as identified by the national Partners in Flight Program.

In preparation for the restoration process, Refuge staff collected cottonwood, arroyo willow, and black willow to establish a cuttings nursery for the future work that would require many thousands of stem cuttings of these species. At that time, there was only one arroyo willow on the Refuge (a large old individual at the relic meadow site); there were few cottonwoods on the Refuge likely due to beaver activity.

In 2002 River Partners received funding from CalFed to restore 777 acres to riparian habitat (San Joaquin A&B). Planting of the first half was carried out in the Fall, with the remainder planted in the spring of 2003. Plant associations were designed and located based upon soil texture and depth to water table and with a conscious regard for what the structure of the vegetation (habitat) would be in the future after all plant species had reached mature height and canopy spread. During this time, we planted the first RBR flood-refuge “Bunny Mound” adjacent the field H20 at the first “release site” for captive-bred RBRs onto the Refuge.

Test-plots were established in 2003 to test the feasibility of planting native understory species into the larger restoration project. Mugwort, Gumplant, and Creeping rye grass proved successful in becoming established from seed within the context of the management practices – irrigation timing, weed control mowing – as carried out for the woody species. The test plots proved successful.

Subsequently, in 2004, the three herbaceous species were seeded across the entire 777 acres where they established a dense, weed-proof cover. The seed from the mugwort, gumplant, and Creeping rye grass were all collected from on the Refuge. The discovery of a patch of Creeping rye grass (sw Lara) that was producing abundant seed was an unusual and fortuitous find. This allowed for us to restore the native grass using seeds that we were confident were adapted to the ecological conditions on the Refuge.

However, in July of that year a wildfire (The Pelican Fire) burned from Hwy 132 to Grayson, nearly five and a half miles. The restoration fields did not burn as they were being irrigated at the time. The first black-tailed deer ever spotted on the Refuge was revealed shortly after the fire – it was alive and healthy. Most RBR that were radio-collared also survived. That Fall we used Burn Area Emergency Response (BAER) funds to plant native creeping rye grass on the burned portion of the Christman Island Unit.

In 2005 River Partners received funding for restoration of 560 acres on the Vierra Unit, approximately one-third of which is seasonal wetland. That same year we carried out the first levee planting along H20 for Riparian Brush Rabbit flood refugia. The reference site for the levee plantings was a patch of vegetation growing on the east side of the levee on the Vierra unit (Field V8). This patch of rose, blackberry, and sandbar willow had been present during the 1997 floods and
was a healthy stand of plants, despite growing on a steep slope well above the floodplain surface.

In early June 2005 a bird monitor spotted a pair of nesting Least Bells Vireo (LBVI) on the refuge, a federally endangered species that had not been seen in the San Joaquin valley for 60 years. The same pair was discovered nesting the following year as well.

In 2006 the Refuge experienced a Long Duration Flood (LDF), the type that begins in January, increases in March and drains off the Refuge in July (for a total of 15-17 weeks in many places). The flood demonstrated the need for flood refugia for RBR and all other terrestrial species. We also learned how each species of plant responded to the LDF (see detailed report in RP library): species that could not tolerate the LDF and died out completely included Elderberry and Coyote Brush; species that survived close to 100 percent included Black willow, Sandbar willow, Oregon ash, Fremont cottonwood, Valley oak. Subsequently, the Vierra unit was redesigned and LDF tolerant species were planted.

In 2006 we also began our levee plantings, covering 9,000 feet of levee sides to function as flood refugia for RBR (funding provided by the Regional Water Quality Control Board water quality fines from two local cities and one manufacturer). The levee plant associations are composed of shrub species only, including rose, blackberry, coyote brush, elderberry; sandbar willow was planted along the base of the levee as a wind-wave buffer; understory species - mugwort and gumplant were also included.

The earlier success of the Bunny Mounds (flood refugia) led River Partners to build an additional 27 on Vierra and Christman island in 2007. These were constructed by belly-scrappers and dozers along the edges of the wetland in Vierra and at a few places on Christman Island. They are about ten feet higher than the surrounding floodplain. They are planted with shrub species and the base of each mound is surrounded with “green-rip-rap” – a dense planting of sandbar willow that will not only provide habitat, but will also protect the mound from erosion by waves during flood events.

That year we planted the Hagemann I, the unit that includes the field with the highest elevation on the Refuge -planted with nearly all shrubs (ten percent trees) and with the addition of a new species – quailbrush, Atriplex lentiformis due to its ability to tolerate drought and its reputation as dense cover for wildlife. (Quailbush is native to the Kern River area at the head of the San Joaquin Valley).

Over the subsequent five years we have continued our restoration work on the Refuge, extending our plantings to other units with designs that include additional species trials. We continue to build more Bunny Mounds, and have completed 4.5 miles of plantings on both sides of Refuge levees. In 2011, with funding from ERFA*, we constructed a flood relief weir to manage floodwaters entering the Refuge. And this March, with a grant from ERFA, we began restoration plantings on Hagemann III. Obviously, our work on the Refuge is far from over.

Grants from partners, such as ERFA, Cal Fed, Department of Water Resources and others have enabled River Partners to carry out its riparian restoration work on the San Joaquin River National Wildlife Refuge. Our work on the Refuge has benefitted the state and people of California in many ways, including reducing flood risk on adjacent agricultural properties, enhancing the ecosystem by restoring riparian habitat, increasing groundwater recharge, improving public access to the San Joaquin River and reducing operation and maintenance costs for flood control facilities on the San Joaquin River.

* Ecosystem Restoration & Floodwater Attenuation Project, San Joaquin River
The Collaborative Purchase of Dos Rios Ranch

Missions Accomplished

The California Natural Resource Agency's contribution of $2.6 million constituted an award by the Secretary of Resources under the California River Parkways Program. The Program provides funds to public agencies and non-profits to develop river parkways in their communities. As stated above, Dos Rios Ranch is a critical element of the Lower Tuolumne River Parkway and will contribute greatly to public access to the river, a major goal of the state's River Parkways Program.

The U.S. Fish and Wildlife Service has had a long-standing interest in Dos Rios Ranch and back in 1989 originally sought to buy the Mape's Ranch of which Dos Rios was then a part. The property is on the Pacific Flyway, the aerial route for the migrating birds from Canada and Alaska. It is the way station for 250 or more types of birds, including the endangered Aleutian Canada Goose. At that time there was a fear that the Mape's Ranch would be developed as a new town to house the new campus of the University of California along with residences and commercial structures.

That campus ended up in Merced and the threat to develop the ranch ended. The Fish and Wildlife Service, whose mission is to protect threatened and endangered species, contributed $1 million to the purchase price from the North American Conservation Act – a funding source designated to preserve and enhance wetland habitats for migratory birds across the continent.

The San Francisco Public Utilities Commission's allocated $2 million toward the purchase of the Dos Rios ranch from their Watershed and Environmental Improvement Program. The Commission operates the Hetch Hetchy Project in the Upper Tuolumne watershed and draws water from the river in order to supply water and power to the city of San Francisco and surrounding Bay Area communities. The contribution furthers the Commission's policy of environmental stewardship by operating "its water system in a manner that protects and restores native fish and wildlife downstream of its dams and water diversions," and "maintains the integrity of the natural resources, restores habitats for native species, and enhances ecosystem function."

And so, after close to 10 years of prodigious efforts by both the Tuolumne River Trust and River Partners, the sale of the Dos Rios Ranch was concluded. Restoration efforts on the ranch will begin shortly and over time the many benefits of the acquisition will become apparent.

Already apparent, however, are the many advantages of agency collaboration and the success of two non-profits in finding such willing and able partners.

The largest contribution to the purchase of Dos Rios, $6.9 million, was made by the USDA Natural Resources Conservation Service via its Wetland Reserve Program. The California Wildlife Conservation Board contributed $5.5 million from the natural characteristics of the property.

For the Department of Water Resources (DWR), which contributed $2.9 million to the effort, the acquisition of Dos Rios Ranch represented a nonstructural solution to flood management while enhancing wildlife habitat in a flood corridor. DWR concluded that the transient storage capacity of the Ranch – up to 10,000 feet of floodwater attenuation - provided the opportunity to reduce peak flow flood risk on upstream and downstream reaches of the San Joaquin and Tuolumne Rivers.

This would also reduce potential taxpayer liability as a result of decreased pressure on surrounding levees and riverbanks.

The Bureau of Reclamation's interest in the project stemmed from its control and operation of Friant Dam on the upper San Joaquin River in the Sierra Nevada foothills of Fresno County. The Bureau recognized that such large dam projects have major impacts on riparian habitats by modifying channels, converting wetlands and reducing flows. Its contribution of $806,736 toward the purchase of Dos Rios was part of its statewide effort to "restore and enhance environmental values that were adversely affected by the construction and operation of the CVP [Central Valley Project]." Specifically, mitigation in this instance would be implemented by protecting "the riparian corridor, establish a riparian brush rabbit colony at the site, and protect floodplain values for endangered species such as the Least Bell's vireo and other at-risk species at the ranch."

The California Wildlife Conservation Board contributed $5.5 million from the California Wildlife Conservation Fund toward the purchase of Dos Rios Ranch. In 1990 the citizens of California passed Proposition 117 establishing an annual 30 million-dollar Habitat Conservation Fund for the protection of wildlife habitat of state importance. The Board took notice of the fact that planned restoration activities would benefit a large number of federal and state threatened and endangered species including the Riparian brush rabbit, Riparian woodrat, Least Bell's vireo, Yellow warbler, Valley Elderberry, Longhorn Beetle, Swainson's hawk, Spring-run Chinook Salmon, Fall-run Chinook salmon, and Steelhead trout.

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Due to the construction of dams and levees throughout the Central Valley for agricultural and urban development purposes, current ecological conditions on most of its floodplains do not favor the establishment of native woody or herbaceous species. Dams and levees have altered the natural hydrology (e.g., flood frequency, duration and amplitude) and geomorphology (e.g., sediment transport, bank erosion, and river meander) to which native riparian vegetation is adapted and reliant upon for reproduction and successful establishment. Because of these alterations, native vegetation is often outcompeted by aggressive weeds. Restoration projects on the Sacramento River over the past few decades have established approximately 8,000 acres, to date, of riparian forests with native woody species. However, the herbaceous understory is frequently dominated by annual grasses or other weeds including yellow-starthistle or milk thistle.

Within the last decade, River Partners has strived to increase the overall biodiversity and habitat structure for the benefit of wildlife within our restorations. Our goal is to design native plant associations that will develop into sustainable communities through ecological succession under the current and projected future conditions. One of our major advances toward this goal has been achieved through an aggressive approach of understory weed management and the establishment of an herbaceous layer consisting of native perennials. Through experimentation, River Partners has successfully germinated and established several native herbaceous species in the field, including mugwort (Artemisia douglasiana), gumplant (Grindelia camporum), telegraph weed (Heterotheca grandiflora), evening primrose (Oenothera hookeri), western goldenrod (Euthamia occidentalis), creeping wild rye (Leymus triticoides), and blue wild rye (Elymus glaucus), to name a few. We use an approach which combines modern agricultural equipment and techniques, up-to-date horticultural knowledge, and adaptive management practices. With this combination, we are able to; 1) design, plant, and establish large acreages (up to 800 acres at a time) with multiple native understory species, 2) effectively control non-native invasive weeds throughout the project sites, and 3) create beneficial wildlife habitat.

Before creating a field design, River Partners biologists conduct an evaluation to assess the site conditions (e.g., soil types, topography, depth to water table, current vegetation, historical vegetation, and inundation intervals). Once these variables are understood, it is possible to select a suite of species which are capable of self-sustaining growth within those site conditions. In addition, species are chosen and arranged based on their benefits to wildlife (i.e., habitat structure and food source) as well as their ability to compete against non-native and invasive species. Once a suite of species are chosen, River Partners collects and processes native seed from remnant vegetation within...
the project area or as close to the site as possible in order to ensure the genetic adaptation of the local ecotype.

Next, we design the field layout. Design considerations include matching species’ growth requirements to the microsite conditions across the project area and arranging species within this framework to produce habitat (i.e., structure and food sources) required by the focal wildlife species. Finally, the project area can be prepared for planting using modern farming techniques including discing, ripping, floating, pulling planting berms, and installing irrigation. Typically, a project’s life is three years, in which the site can be prepared, planted, maintained, and established as a self-sustaining community.

For example, our approach on the San Joaquin River National Wildlife Refuge (SJRNWR) is to install woody trees and shrubs along the planting berms during the first year of the project, followed by aggressive weed control during the first two growing seasons. Our weed control approach involves flood irrigating the aisle-ways between planting berms in order to promote the germination and growth of non-native and invasive species in the seed bed. Then, aisle-ways are disced or sprayed with herbicide in order to exterminate the weeds before they set seed. Hand labor using backpack herbicide sprayers is used to remove weeds along the planting rows where discing or broad herbicide application would damage the planted native woody species. This process is repeated multiple times throughout the first two growing seasons in order to exhaust the existing seedbed. Ultimately, this sterile seedbed approach reduces competition for native grasses and forbs that are broadcast or drill seeded at the end of the second growing season.

After seeding native grasses or forbs, the understory is actively managed during the third and final year via irrigation, mowing, and herbicide applications. Adaptive management strategies and timing are critical at this stage. For example, it may be necessary to mow the aisle-ways if significant weed pressure still exists. If so, it is important to mow before the weeds become so tall that mowing creates a large amount of mulch which will smother any smaller, native species. However, it is equally important to cut the weeds low enough to reduce the competition for sunlight with the native species. Thus, choosing the optimal timing and blade-height is key to a successful mowing regime. In order to facilitate the use of herbicides for weed control, River Partners separates the aisle-ways into native grass mixes and forb mixes. By planting an alternating pattern of forbs and grasses, it is possible to add diversity and structure to the restoration, while also allowing the use of selective herbicides to combat weeds.

This approach has resulted in a dense cover of native herbs: 65% and 71% absolute cover of native herbaceous species and less than 4% absolute cover or weeds on two fields surveyed in 2010. These results are typical of many of our projects in this region and more recent projects implemented on the Sacramento River. This method of understory establishment has been employed by River Partners since 2004. Since then, we have restored approximately 1,700 acres of riparian habitat on the SJRNWR alone. This approach has not only been successful at combating non-native invasive weeds, the planted understories have also been resilient to disturbances including fires and long-duration flood events. Lastly, the method has also created beneficial wildlife habitat. Over the past decade, River Partners has documented several threatened and endangered species utilizing and breeding in our restoration projects. These species include the least Bell’s vireo, western yellow billed cuckoo, valley elderberry longhorn beetle, and the riparian brush rabbit.

Weeds in Riparian Restoration

Pulling planting berms on a restoration project. Photo by River Partners staff.
Mud Blast Series Brings Runners to the Sacramento, San Joaquin, & Tuolumne Rivers

In 2012, River Partners expanded its signature mud run into a mud run series, holding races in Colusa and Modesto in the Fall. Starting in 2011 with about 600 participants for its one race, the 2012 events attracted 1200 runners to the Sacramento River and 800 runners to the San Joaquin.

These races were made possible thanks to the support of our sponsors, which are listed on page 14. However, just as important to the safety and success of the event were the scores of volunteers. They showed up early to greet and register costumed runners. They stood by obstacles, ensuring everyone was safe while cheerily handing out water and enduring muddy hugs of appreciation.

In addition to all the folks who stepped forward on their own to help, River Partners would like to thank the National Charity League of Chico, Chico Boy Scout Troop 2, SynMedia, Health Careers Academy of Stockton, University of the Pacific, Pacific Gas & Electric, San Joaquin Regional Conservation Corps, the Colusa High School Track Team & Parents, River Partners members, staff and board, and our obstacle team for making the event a huge success!
Thank You *Mud Blast* Sponsors!

- Modesto Subaru
- Strength & Conditioning Performance Based Fitness
- Pacific Gas and Electric Company
- Rumiano Family Organic Cheese
- Sierra Cascade Blueberry Farm
- CBEC Eco Engineering
- Build.com
- Royal Robbins
- The Cellar Radio
- Recology Butte Colusa Counties
- Recology Grover Environmental Products
- Hedgerow Farms
- MBK Engineers
- California Ag Workforce Inc.
- B & J’s Concrete
- MT Shasta Spring Water
- Bertolotti Disposal
- Aquas Premium Water
Help Us Bring Life Back to Dos Rios Ranch: *Adopt a Living Tile of Trees*

In 2012 River Partners celebrated the acquisition of Dos Rios Ranch.

This January 2013, River Partners will plant the first native trees on this amazing conservation property!

We’re starting with 428 “tiles.” These tiles are ¼-acre squares that have a very specific plant composition or “design.” According to San Joaquin Regional Director, Julie Rentner, there will be at least three different types of planting tiles, each containing about 150 shrubs, trees, and forbs.

River Partners must raise at least $40,000 to help us fund the first planting efforts at Dos Rios.

This is the perfect time to renew your support—and at a great deal.

In addition to the option of adopting a tree at Dos Rios Ranch, you could adopt a whole tile of living plants.

Your gift of $150 for each tile will make a huge difference for the environment—supporting the installation and care of 150 native plants on a ¼ acre!

Please take the time to renew your support of our mission and important work.

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**Yes! I’ll give the gift of nature and adopt a tree to support River Partners.**

<table>
<thead>
<tr>
<th>Option</th>
<th>Donation Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼ Acre Tile</td>
<td>$150</td>
</tr>
<tr>
<td>Five Trees</td>
<td>$100</td>
</tr>
<tr>
<td>Four Trees</td>
<td>$80</td>
</tr>
<tr>
<td>One Tree</td>
<td>$60</td>
</tr>
<tr>
<td>Two Trees</td>
<td>$40</td>
</tr>
</tbody>
</table>

Please send your check made out to: “River Partners” 580 Vallombrosa Ave., Chico CA 95926. Thank you for your tax-deductible contribution.

River Partners is a 501(c)3 nonprofit. Online Credit Card payments at RiverPartners.org. Phone orders at (530) 894-5401 x 222.
Together with community leaders and elected officials, the U.S. Fish and Wildlife Service (USFWS), River Partners and Girl Scout Troop #5912 celebrated the groundbreaking for the restoration of a portion of the San Diego Bay National Wildlife Refuge (NWR) and the completion of an educational wildlife mural. About 100 people attended the celebration at the South Bay Unit of the Refuge, including volunteers from River Partners, WiLDCOAST, and the California Conservation Corps.

Thanks to the USFWS and WiLDCOAST supporting River Partners’ project, many community leaders participated in the groundbreaking and mural celebration. They included Charles Eshaur from the San Diego Mayor’s office, Councilmember Pamela Bensoussan of the City of Chula Vista, Andy Yuen of the San Diego National Wildlife Refuge Complex, John Willett of the Otay Valley Regional Park Citizens’ Advisory Group, David Neubert of River Partners, Jo Dee C. Jacob, CEO of Girl Scouts, San Diego-Imperial Council, and Joe Aguilar of Walmart. After the unveiling of a wildlife mural created by 10 scouts from Troop #5912 as a Silver Award project, these officials and community leaders planted the first trees for the project with the assistance from the Girl Scouts. By the end of the planting celebration, volunteers had installed 500 trees.

Over the next few weeks River Partners and the California Conservation Corp will put in 19,000 native trees, plants, and grasses on the 55-acre site. River Partners’ re-vegetation design for the area includes native plants like Fremont cottonwood, coast live oak, elderberry, mulefat, and arroyo willow, among others. The goal is to provide habitat for listed species and migratory wildlife.

“We are extremely proud to begin the planting phase of this important project,” says River Partners’ President John Carlon. “This is the first project for our Otay River initiative. Not only will it provide critical habitat for the California Gnatcatcher and Least Bell’s Vireo, it will also add vital green space to an extremely active public use area.”

This effort to restore 55 acres of wildlife habitat has been funded by the California Wildlife Conservation Board, the California Natural Resources Agency and California Department of Transportation, the U.S. Fish and Wildlife Service, The San Diego Foundation, the Resource Legacy Fund Foundation, and Walmart’s Acres for America program through the National Fish & Wildlife Foundation. Additionally, WiLDCOAST and Friends of the Otay Valley Regional Park have led volunteer efforts to clean-up this critical site and support its restoration.

Members of Girl Scout Troop 5912 helping to plant 500 trees at River Partners’ first restoration site on the Otay River.