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Profile in Conservation: Jeff and Annie Main Cultivating Biodiversity and Small Farm Preservation

by Diane Crumley

For Jeff and Annie Main of Good Humus Produce, their 20-acre farm serves as more than their family's home and livelihood; it also functions as an increasingly complex agro-ecosystem, hosting numerous species of animals and plants, as well as serving as a "living laboratory" where school children regularly visit to learn about the farm environment, nutrition, and sustainable agriculture practices.

Jeff and Annie are fourth-generation Californians who have benefited from the agricultural experiences of their parents and grandparents. Both are UC Davis graduates, with Jeff's training in civil engineering and Annie's in renewable natural resources. Equipped with this knowledge and a strong commitment toward the land, in 1976 they set to work transforming a fallow milo field in Hungry Hollow into the 20-acres of certified organic vegetables, fruit, herbs and flowers that are grown year-round today.

The farm is located in the uplands along the eastern slope of the Capay Hills northwest of the town of Esparto. As Jeff describes, "they started with 20 acres, two large olive trees, a well, and a whole lot of view". One of their first projects involved the planting of



Photo by Nancy Warner; warnerphoto.com

600 fast-growing Australian beefwood trees to serve as field borders and much-needed shelterbelts for the prevalent high winds. Although the Casuarina trees established quickly, their aggressive shallow roots created an 80-foot strip that could no longer sustain crops.

To offset the effective loss of over 190,000 sq. ft. of cropland, it was suggested that they use those areas to plant hedgerows of drought tolerant native trees, shrubs and grasses. Apart from enhancing biodiversity and wildlife habitat, they anticipate that the productivity of adjacent fields may improve due to an increase in abundance of beneficial insects to provide pollination services and prey upon crop pests. Jeff and Annie successfully applied for EQIP funding for plantings and conservation planning assistance through the NRC5, and undertook a five-year installation program of a series of four 80ft. by 600 ft. hedgerow borders adjacent to their fields and orchards. The EQIP funding also assisted the Mains in replacing

Inside this edition:

- Jeff & Annie Main Conservation Profile
- Native Pollinators
- Hedgerows' Benefits Measured
- Weed Warriors Scale Cliffs
- Fall Ground Work



Continued on page 2

their above-ground irrigation system with a buried PVC system, resulting in water conservation and reduced usage costs.

The initial installation and early maintenance proved to be a challenge to Jeff and Annie's already busy year-round crop schedule. However, now that the hedgerows are mature, the inherent benefits are starting to accrue. Jeff and Annie rely solely on native bees for pollination, and Jeff has observed a substantial reduction in crop pests over the past two years. Jeff estimates that it took about five years for a balance in favor of beneficial insects to emerge as a result of the diverse hedgerow plantings. The mature hedgerows also benefit local second-graders, who regularly visit and receive on-site field biology lessons, as part of a farm-to-school program that Annie helped to initiate. Additionally, UC Davis scholars in agronomy, biology, ecology and entomology have conducted short and long-term research projects on their farm. A list of the resulting research publications can be found on the farm's website at www.goodhumus.com/pages/education_&_research.htm.

Jeff and Annie are committed to developing "intensively", with over 70 annual and perennial crops, rather than "extensively". They have focused on mar-



keting their produce locally and regionally, instead of entering into the national or international market. The Mains are considered local pioneers in the development of a farm-to-market system in Yolo County, and are among the founders of the Davis Food Co-Op and the Davis Farmers Market. For the past decade, they have also been providing fresh produce to residents in Woodland, Sacramento, Davis and San Francisco through their Community Supported Agriculture (CSA) subscription box program.

Annie explains that one of the goals of Good Humus Produce is "to create a working partnership: food security for local communities, and land security for local farmers." To address this goal, Jeff and Annie are currently working with a land trust to develop a new model for agricultural easements that stipulates that the land must continue to be farmed using sustainable practices, must be lived on by a farmer deriving his/her income through farming, and must remain affordable so that future generations can continue to live and work in local agriculture. To do this, they have embarked on the Farm Preservation Campaign, to raise \$300,000 to purchase their agricultural easement, and permanently remove the property from the pressures of speculative real estate investment or development. Their model is called a Shared Equity Ag Easement and is created with a philosophy that encourages community partnership with farmers to create and maintain a viable, secure local food production system.

Jeff and Annie have learned that it can take multiple generations to build a healthy, sustainable farm. The term "sustainable" is used frequently these days, and when applied to agriculture, it often highlights the need for a combination of practices that are economically and environmentally sound, and socially responsible. The Farm Preservation Project draws attention to the potential role the local community can play in providing more economic stability for local family farmers. We are fortunate to have innovative growers like the Mains, who have the long-term vision and field-tested knowledge needed for the challenge of preserving the viability of small farms in Yolo County.

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Using Hedgerows to Bring Back Native Pollinators

By Katharina Ullmann, Coordinator, California Pollinator Project, Xerces Society

Driving through Yolo County this upcoming spring, you may notice bright blooming western redbuds dotting a hedgerow. If you look closer you will see these plants buzzing with bees – honey bees and native bees. While most people are familiar with the European honey bee, few people are aware of the 1,500 species of wild native bees in California, an estimated 300 of which are found in Yolo County.

Over the past 10 years, researchers have found that native bees can play a valuable role for growers, both by pollinating crops themselves, and through their presence, increasing the efficiency of the non-native honey bee. Native bees can only provide these services if their habitat needs are met.

Unlike the highly social honey bee, the majority of our native bees are solitary. Some of these native species nest alone in the ground, while others build their brood cells in narrow tunnels found in twigs or old tree snags.

While native bees and honey bees may have different social and nesting behavior, both rely on a continuous supply of pollen and nectar to feed their young. When pollen rich crops are in bloom, ample resources are available for these important insects. However, for the rest of the year, bees rely on the handful of other flowering plants found around fields. Diverse native plantings in hedgerows and along field borders that bloom throughout the year can go a long way towards supporting these valuable pollinators.

Building on past research, the Xerces Society for Invertebrate Conservation, Audubon California's Landowner Stewardship Program (LSP), and the University of California, Berkeley have been collaborating

with landowners, NRCS staff and YCRCD staff to restore native bee habitat along sloughs and field borders. This project is a first of its kind effort in North America to bring native bees back to large scale agriculture, and to track changes in their populations.

Many of the landowners involved in the California Pollinator Project received EQIP grants through the NRCS. They are either implementing pollinator restoration plans on their own or working with the LSP and high school students from the Center for Land-Based Learning's SLEWS program to do so.

Scientists from UC Berkeley and the Xerces Society are monitoring restored areas to determine the abundance and diversity of native bee species before and after restoration. They are also evaluating the pollination services returning bees provide. Researchers expect that pollinator plantings will lead to an

increase in the number and types of bees found adjacent to restoration sites.

On January 17th, Katharina Ullmann (the Xerces Society) and Dr. Eric Mussen (UC Cooperative Extension) will lead a free workshop in partnership with the YCRCD and LSP, highlighting the latest research on native bees and honey bees. This workshop will be held at the Farm on Putah Creek from 9am to noon, and will outline practical steps landowners can take to encourage these valuable pollinators on their property.

To learn more about the workshop or how you can participate in the Pollinator Project contact Katharina Ullmann at 530-510-0976. For more information about native bees visit the Xerces Society website at www.xerces.org.



Melissodes.

Painting by Sarina Jepsen.

Pollinator Workshop: Enhancing Habitat for Crop Pollinators in Yolo County

Thursday, Jan. 17, 2008

9 a.m. - noon

Farm on Putah Creek
5265 Putah Creek Road
Winters, CA 95694

Learn about:

- latest research on European honey bees
- latest research on crop pollination by wild native bees
- practical steps to improve native pollinators populations on your land

Measuring Benefits of Native Hedgerows

By Rachael Long, UC Cooperative Extension, Yolo County

In collaboration with YCRCD in the late 90's, UC Cooperative Extension planted four hedgerows to evaluate the contribution of these plantings to the presence of beneficial insects and pest control, adjacent to fields of wheat, alfalfa and tomatoes. Hedgerows included native California drought tolerant plants, known to provide nectar and pollen necessary for beneficial insect survival and reproduction, especially during times of prey scarcity. The plants included buckwheat, Ceanothus, coffeeberry, coyotebrush, elderberry, and toyon. At each of the four sites, 10-foot strips of native perennial grasses were also planted, including purple and nodding needlegrass, California onion grass, one-sided bluegrass, and blue and creeping wildrye.

Beneficial and pest insects were sampled year-round for two years in the hedgerows, and compared to insect samples in invasive weedy areas nearby. Beneficial insects included the typical predators found in our area including assassin bugs, lacewings, lady beetles, and parasitic wasps. Pest insects included stinkbugs, flea beetles, lygus, and cucumber beetles.

Throughout the two-year study, we consistently found a significantly higher ratio of beneficial insects to pests within the hedgerow and native perennial grasses, as compared to adjacent weedy areas. This includes both in-season and wintertime monitoring. Our research compares favorably with many other studies that have also shown enhanced natural enemy activity in diverse landscapes. As a result, planting hedgerows around farms can serve as replacement vegetation for weedy areas, thus eliminating habitat for pests, and encouraging the presence of beneficial insect residents.

Next year, in collaboration with Dr. Lora Morandin, a post-doc from UC Berkeley, we will be assessing the impact that hedgerows can have on pest control in adjacent field crops in Yolo County, with an emphasis on processing tomatoes. If you are interested in working with us on this study or know of a hedgerow that will be adjacent to a tomato field next year, please call Rachael Long at the UC Cooperative Extension Office at 530-666-8734.



Photo by Mace Vaughan.

Male *Agapostemon*.

Dedicated Weed Warriors Scale Cliffs to Combat Ravenna Grass

Ravenna grass (*Saccharum ravennae*) is an escaped ornamental grass that has a strong capacity to become invasive, and has already invaded the Cache Creek watershed. It continues to be promoted by the nursery industry because of its hardiness and impressive size, with flowering stalks reaching 12 feet, looking a lot like Pampas grass.

Individual plants can produce thousands of seeds that can be dispersed by both wind and water, contributing to its potential for invasion in riparian sites.

YCRCD Vegetation Specialist Tanya Meyer's keen eye spotted an untreated infestation along a steep slope east of Cache Creek, near Camp Haswell this past summer. Refusing to be discouraged by the inhospitable topography, Tanya enlisted the help of Super Weed Warrior Ken Moore, formerly of State Parks, who trained Tanya and YCRCD Re-Vegetation Specialist Sean Kenady in the use of a fail-safe rope system he has developed for his projects in the Santa Cruz Mountains. Ken monitored and coached Tanya and Sean's technique as they carefully lowered themselves down the 80 degree slope to treat the patches of Ravenna grass . . . one less haven for this weed in Yolo County.



Steep weeding along Cache Creek.

A Fall Full of Projects

YCRCD directed and partnered in a variety of on-the-ground projects this fall, including rock barb streambank protection and revegetation, farm waste cleanup and revegetation, extensive riparian weed control, and small stream levee ‘set-back’ and bank revegetation. Below are brief descriptions of some of this work.

FARM AND RANCH CLEANUP

Staff and contractors conducted work funded by the California Integrated Waste Management Board Farm and Ranch Solid Waste Cleanup and Abatement Grant Program on three sites this fall. The projects removed an estimated total of 88 tons of debris from construction, automobiles, household waste, tires, and appliances and an additional 143 cubic yards of mixed debris. YCRCD staff conducted re-vegetation and erosion control practices on the recently repaired sites, which included planting native trees and shrubs, native grass plugs and seed, and applying straw or erosion-control netting.

The site shown below also included significant re-contouring of the highly eroded site, broadcast native grass seed, and native grass straw for erosion control.



Cleanup site before garbage removal and gully repair.



Cleanup site recontoured, seeded with native grass, and protected with straw wattles and native grass straw.

RIPARIAN ENHANCEMENT

As part of the CALFED-funded Yolo-Solano Conservation Partnership, NRCS, Audubon Landowner Stewardship Program and YCRCD initiated habitat improvement along a half-mile stretch of Cottonwood Slough near Madison. This included the farmer and landowners ‘setting back’ and recontouring the channel banks and seeding and laying straw on the exposed soil, with installation of native trees and shrubs planned for later this winter. Area high school students who take part in the Center for Land-Based Learning’s SLEWS program have “adopted” the site for the school year and are participating in all phases of initial riparian habitat enhancement.



Students visit project site during initial bank recontouring.



Audubon and NRCS staff blowing straw over the recently recontoured and seeded banks of Cottonwood Slough.

Yolo County RCD Publications

The Yolo County RCD offers various resource materials for sale. To place an order, send your request to Yolo County RCD - Orders, 221 W. Court Street, Suite 1, Woodland, CA 95695; call 530-662-2037, ext. 117; or send an e-mail to pratt@yolorcd.org.

Please add tax and shipping and handling costs to publication prices below:

- Know Your Natives; A Pictorial Guide to CA
Native Grasses (includes supplement)\$30
- Know Your Natives - supplement ONLY \$15
- Bring Farm Edges Back to Life! \$15
- California Native Grass (poster) \$17
- Monitoring on Your Farm \$15
- Working Habitat for Working Farms (video) . \$10
- Yolo County Soil Survey (CD-ROM) \$13.92
- Capay Valley Conservation & Restoration
Manual (free to Capay Valley residents) \$15



Shipping & handling:

- 1 item: \$6.00
- 2-5 items: \$9.00
- 6-10 items: \$12.00
- 11-30 items: \$16.00
- Poster: \$7.50

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Find project progress reports, events, links, and updated conservation articles on the RCD website at www.yolorcd.org

If you would like to receive this newsletter electronically instead of by mail, please notify Sheila Pratt at pratt@yolorcd.org.

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