

Farming For Native Bees: Habitat Gardening on Brentwood Farms

Farming for Native Bees is an innovative, collaborative project between the UC Berkeley Urban Bee Lab, 8 Brentwood farms in Contra Costa Co, California, UC Cooperative Extension, and USDA-NRCS addressing the precipitous decline of honey bee pollinators.



Project Goals

1. Partner with farmers to establish a stable, cost-effective & sustainable supplement of native bees to honey bees
2. Establish new habitats to conserve & protect California's native bees
3. Learn more about native bees and their critical role in California agriculture



Outreach

A key component of all the Urban Bee Lab projects is outreach. Annually the Urban Bee Lab gives ~40 presentations/workshops/tours throughout California to a wide variety of audiences reaching upwards of 2500 people each year.

Since we began our research in 2009, the Urban Bee Lab has:

- Participated in Frog Hollow's annual Blossom Walk giving tours and talks to their CSA members
- Given workshops for farm workers in Spanish
- Held presentations and activities for grade school groups at Frog Hollow

Partner farmers have also included the Farming for Native Bees project in their own outreach efforts.

- Frog Hollow regularly gives farm tours that feature the Project to school groups, city planners, CSA members and researchers
- During meetings with city planners, local officials, and developers, Dwelley Farm often features the Project as a way to interface farming operations with urban planning



The Urban Bee Lab at UC Berkeley and UC Davis:

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Results to Date

1. Numerous bee plants (**79 types**) added in 2010-2014 attracted **121 species** of bees.
2. Bee populations on most farms have doubled, even tripled.
3. Main (target) bee groups moving between bee plants and crop flowers:
 - 2 spp. of *Bombus* (Bumble bees)
 - 2 spp. of *Ceratina* (Small carpenter bees)
 - >4 halictid spp. (Sweat bees)
 - Several *Osmia* spp. (Mason bees and Leaf Cutter bees)
 - Apids (*Anthophora* and *Habropoda*) spp. (Digger bees)
4. Interfacing bee habitat gardening with current on-farm practices is challenging, but a necessary step for farmer adoption.
5. Farms that are in close proximity to natural or urban areas tend to have more bees present overall.

Key Lesson: Successful native bee habitat will work to draw target native bee species for specific crops AND will be adapted to the existing systems and structures of individual farms.

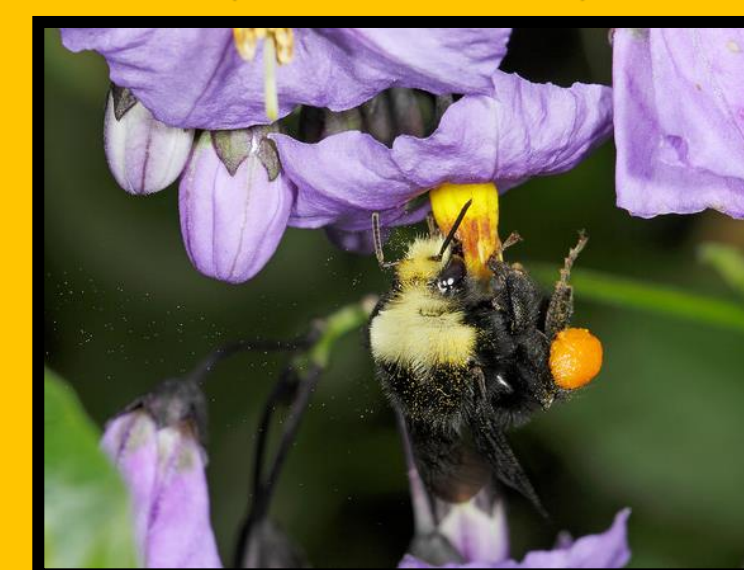
Target Bee Groups



Osmia lignaria propinqua
(Blue Orchard Bee)



Ceratina acantha
(Small Carpenter Bee)



Bombus vosnesenskii
(Yellow-faced Bumble Bee)



Halictus tripartitus
(Sweat Bee)

Nos. Plants Added to Date

Farm	Year Started	Acres on Site	Acres of Habitat	No. of Hedgerow Plants Installed	No. Unique of Plant Types
Dwelley I (Delta)	2011	45	2	297	48
Enos Farm	2011	20	3.5	371	43
Frog Hollow	2010	145	35	350	39
Brookside Farm	2015	10	--	--	--
Total:		220	40.5	1018	79

Nos. Bees Species to Date

	Farm	2010	2011	2012	2013	Total Unique Spp.
Treatment	Dwelley I (Delta)	---	28	46	41	64
	Enos Farm	---	13	18	23	33
	Frog Hollow	11	20	28	---	40
	Brookside Farm	---	35	29	31	51
Control	Dwelley II (Concord)	---	---	19	14	23
	Knoll Farm	13	---	19	18	29
	Tachella Farm	---	---	18	13	20
	Wolfe Farm	---	29	31	39	59
Total Unique Spp:		18	58	87	73	121



Methods

Habitat Development:

- Habitat gardens on farms are established through:
1. Traditional hedgerows
 2. Ephemeral open patches seeded with CA annual wildflowers
 3. Permanent open areas set aside for bee plants (habitat gardens)
 4. Artificial nesting habitat for cavity and soil nesting bees

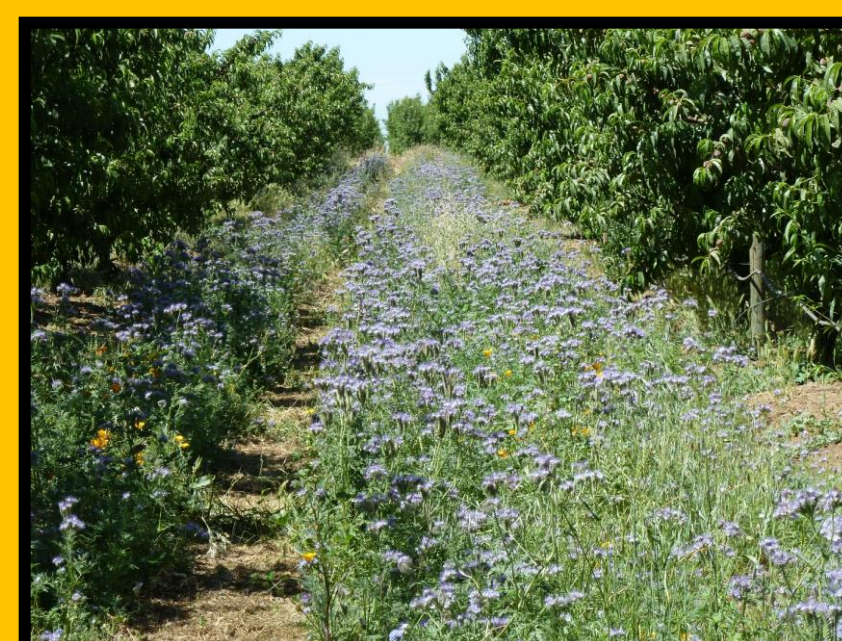
Bee Monitoring:

Three sample periods per year (early March-early June). Sample periods last 4 hours using:

1. Aerial collections from crops and bee flowers
2. Pan trapping using standard methods

Additional monitoring throughout the year using:

1. Frequency/visitation counts on crop flowers
2. Extra aerial collections



To learn more about native bee gardening, native bees, current research, or to support the UCB Urban Bee Lab, visit our website:

<http://helpabee.org>

Next Steps

Farming for Native Bees: Ventura Co. replicates work done in Brentwood in avocado orchards in Ventura and Santa Barbara Counties.

Beginning in 2014, the Urban Bee Lab has been collaborating with 4 farmers to construct and monitor native habitat on 4 farms and compare them with 4 control sites. Unique features include an assessment of wild bees in adjacent natural areas, and a comparison of results across a larger range of agricultural systems and regions.

Farming for Native Bees: Phase II will build on data collected in Brentwood and Ventura Co., and prepare it for public use.

Objectives are to develop 3 products that will guide and support farmers in attracting and sustaining wild and native pollinators. These include:

1. *Prescriptive treatments*
2. *Economic analysis*
3. *Technical Service Provider (TSP) pilot program*

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