Impact of Honey Bees on the California Environment

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Conservationists and beekeepers are interested in the interactions of honey bees with nectar and pollen producing plants in California. One polar view is that honey bees are non-native, pollinate mostly introduced "weed" species, and eliminate native pollinators through competition for food. At the other end of the spectrum is the knowledge that honey bees will visit most blooming plants for food and, if nectar is abundant, will produce a honey crop. While honeys vary in color and taste depending upon floral source, any native or introduced nectar and pollen sources that will preserve honey bees throughout the year are likely to be acceptable to the beekeeper.

A number of agencies and organizations are cooperating in an effort to "restore" regions of the California Central Valley to its "original state." The major emphases are 1. replacing non-native vegetation with native plants and 2. encouraging native animals to return to their former ranges. The result has been eviction of beekeepers from apiary locations that have been used for decades as seasonal spots for rebuilding populations following the stresses of commercial pollination or for producing honey.

While removing this non-native pollinator from an environment may sound rational at first, it may not be the best idea. In most cases, it is not the presence of honey bees that has depressed or eliminated the populations of native pollinators. In fact, no studies have shown that honey bees eliminate native pollinators. In some cases the populations of native pollinators have been reduced by honey bee competition, but following removal of honey bees the native bees built back to usual levels in a couple years.

Coincidental with the introduction of non-native plants and honey bees into the environment, natural habitats were altered in many other ways. With honey bees, if we provide them with an adequate hive and food sources, they are likely to survive. However, native pollinators can be very particular about the environment in which they can exist. If their nesting habitat is disturbed, modified or destroyed, they cannot live in the area, despite an abundance of food plants. In many California locations, it is habitat alteration or destruction, not lack of food, which eliminated the native pollinators.

In cases where habitats are so degraded that some native bee populations have been reduced or eliminated, honey bees may be essential to foster initial re-establishment of native plant populations. Those plants provide food and shelter for wildlife and assist significantly in erosion control. Until the habitat is restored adequately to meet the requirements of native pollinators, it is likely that the presence of honey bees will be much more beneficial than detrimental in keeping the California native plants pollinated and reproducing. Thus, honey bees should be solicited for, not banned from, restoration areas. A list of over 130 native California plants visited, and likely pollinated, by honey bees follows.

California Native Plants Visited (and probably pollinated) by Honey Bees

Excerpted from Nectar and Pollen Plants of California (Bulletin 517) by G.H. Vansell (1941), UC Berkeley plus personnel observations of Dr. Robbin W. Thorp, Emeritus Professor, UC Davis

Updated according to the CalFlora web site – June, 2001 and the Jepson Manual of Higher Plants of California, 1993, edited by James C. Hickman

Alder – *Alnus* spp.

Antelope brush - *Purshia tridentata* (Pursch.) DC.

Arrow-weed – *Pluchea sericea* (Nutt.) Cov.

Asters – *Aster* spp.

Azalea – *Rhododendron* spp.

Barberry – *Berberis* spp.

Beardtongue - *Penstemon* spp.

Blackbrush – *Coleogyne ramosissma* Torr.

Black sage – *Salvia mellifera* Greene

Blue palo verde - *Cercidium floridum* A. Gray

Bluecurls – *Trichostema lanceolatum* Benth.

Box elder – *Acer negundo* L. var. *californicum* Sarg.

Buckwheats – *Eriogonum* spp.

Buffalo berry – *Shepherdia argentea* Nutt.

Burnet – *Sanguisorba* spp.

Button bush – *Cephalanthus occidentalis* L.

Cactus - *Opuntia* spp.

California bay – *Umbellularia californica* Nutt.

California broom – *Lotus scoparius* (Nutt.) Ottley

California buckeye – *Aesculus californica* Nutt.

California coffeeberry – *Rhamnus californica* Esch.

California corn lily – *Veratrum californicum* Durand

California figwort – *Scrophularia californica* Cham. & Schldl.

California hazelnut – *Corylus cornuta* var. *californica* (A. DC.) Sharp

California scale-broom - *Lepidospartum squamatum* Gray

Camas – *Camassia* spp.

Carpet grass – *Phyla* spp.

Cascara sagrada – *Rhamnus purshiana* DC.

Catclaw - *Acacia greggii* A. Gray

Chamise - *Adenostoma fasciculatum* Hook. and Arn.

Checker mallow – *Sidalcea malvaeflora* (DC.) Benth.

Chia - *Salvia columbariae* Benth.

Chinquapin – *Chrysolepis chrysophylla* (Hook) Hjeluq.

Cinquefoil – *Potentilla* spp.

Coffee weed - *Sesbania exalata* (Raf.) Cory

Common cocklebur - *Xanthium stumarium* L.

Common meadowfoam – *Limnathes douglasii* R. Br.

Common rabbit brush – *Chrysothamnus nauseosus* (Pall.) Britt.

Cotton-thorn - *Tetradymia spinosa* Hook. and Arn.

Cottonwood – *Populus* spp.

Coyote brush – *Baccharis pilularis* DC.

Coyote mint – *Monardella villosa* Benth.

Creeping sage – *Salvia sonomensis* Greene

Creosote bush – *Larrea tridentata* (DC.) Cov.

Dalea – *Dalea* spp.

Death-camas – *Zigadenus venenosus* Wats.

Desert peach – *Prunus andersonii* Gray

Dodder – *Cuscuta* spp.

Douglas hawthorn – *Crataegus douglasii* Lindl.

Elderberry – *Sambucus* spp.

Fiddleneck – *Amsinckia* spp.

Fireweed – *Epilobium angustifolium* L.

Flax – *Linum* spp.

Forest clover – *Trifolium breweri* Wats.

Gilia – *Gilia* spp.

Golden fleece – *Ericameria arborescens* (Gray) Greene

Goldenrod – *Solidago* spp.

Grape – *Vitis* spp.

Honey mesquite – *Prosopis glandulosa* Torr.

Honeysuckle – *Lonicera* spp.

Horsemint – *Agastache urticifolia* (Benth.) Ktze.

Hound's tongue – *Cynoglossum* spp.

Jackass clover – *Wislizenia refracta* Englem.

Keckiella - *Keckiella* spp.

Laurel sumac – *Malosma laurina* (Nutt.) Abrams

Lemonadeberry - *Rhus integrifolia* (Nutt.) Brewer and S. Watson

Lily - *Lilium* spp.

Locoweed – *Astragalus* spp.

Lupines – *Lupinus* spp.

Manzanita – *Arctostaphylos* spp.

Maples - *Acer* spp.

Mexican devilweed - *Chlorocantha spinosa* (Benth.) G. Nesom

Milkweed – *Asclepias* spp.

Mistletoe – *Phoradendron* spp.

Mojave stinkweed – *Cleomella obtusifolia* Torr. & Frem.

Mountain misery – *Chamaebatia foliolosa* Benth.

Mule fat - *Baccharis salicifolia* (Ruiz Lopez and Pacon) Pers.

Nightshade (some) – *Solanum* spp.

Oak – *Quercus* spp.

Onion – *Allium* spp.

Our Lord's Candle – *Yucca whipplei* Torr.

Pacific madrone – *Arbutus menziesii* Pursh

Peak rush-rose – *Helianthemum scoparium* Nutt.

Phacelia – *Phacelia* spp.

Poison oak – *Toxicodendron diversilobum* (T. & G.) Greene

Poppy – *Eschscholzia* spp.

Purple sage – *Salvia leucophylla* Greene

Raspberry – *Rubus* spp.

Red maids – *Calandrinia caulescens* H.B. K. var *mensiesii* Gray

Red shank - *Adenostoma sparsifolium* Torrey

Redwood – *Sequoia sempervirens* (Lamb. Endl.

Rocky mountain bee plant – *Cleome serrulata* Pursh.

Sage – *Salvia* spp.

Sagebrush – *Artemisia* spp.

Screw bean mesquite - *Prosopsis pubescens* Benth.

Sea dandelion - *Agoseris* spp.

Serviceberry – *Amelanchier* spp.

Sierra coffeeberry - *Rhamnus rubra* E. Greene

Sierra milkwort – *Polygala cornuta* Kell.

Smartweed – *Polygonum* spp.

Smoke tree - *Psorothamnus spinosus* (A. Gray) Barneby

Snowberry – *Symphoricarpos albus* Blake

Soap plant – *Chlorogalum pomeridianum* (Ker) Kunth

Spanish clover – *Lotus purshianus* (Benth.) Clem. & Clem.

Spikeweed – *Hemizonia* spp.

Spiny cocklebur – *Xanthium spinosum* L.

Spiny redberry – *Rhamnus crocea* Nutt.

Strawberry – *Fragaria* spp.

Sugar bush - *Rhus ovata* S. Watson

Sunflower – *Helianthus* spp.

Tan oak - *Lithocarpus densiflorus* (Hook and Arn.) Rehder.

Tarweed – *Hemizonia* spp.

Toyon – *Heteromeles arbutifolia* (Lindl.) Roemer

Tule mint - *Mentha arvensis* L.

Turkey mullein – *Eremocarpus setigerus* Benth.

Turpentine weed - *Trichostema laxum* A. Gray

Vetch – *Vicia* spp.

Virginia creeper – *Parthenocissus vitacea* (Knerr.) Hitchc.

Wallflower – *Erysimum* spp.

Walnut – *Juglans* spp.

Wax myrtle – *Myrica californica* Cham. & Schldl.

Western false-indigo – *Amorpha fruticosa* L.

Western goldenrod - *Euthamia occidentalis* Nutt.

Western redbud – *Cercis occidentalis* Torr.

White sage – *Salvia apiana* Jepson

Wild lilac – *Ceanothus* spp.

Willow – *Salix* spp.

Wood sorrel – *Oxalis* spp.

Yerba santa – *Eriodictyon californicum* (H. & A.) Torr.

Yellow bee plant - *Cleome lutea* Hook.

Yellow palo verde – *Cercidium microphyllum* (Torr.) Rose & Johnston