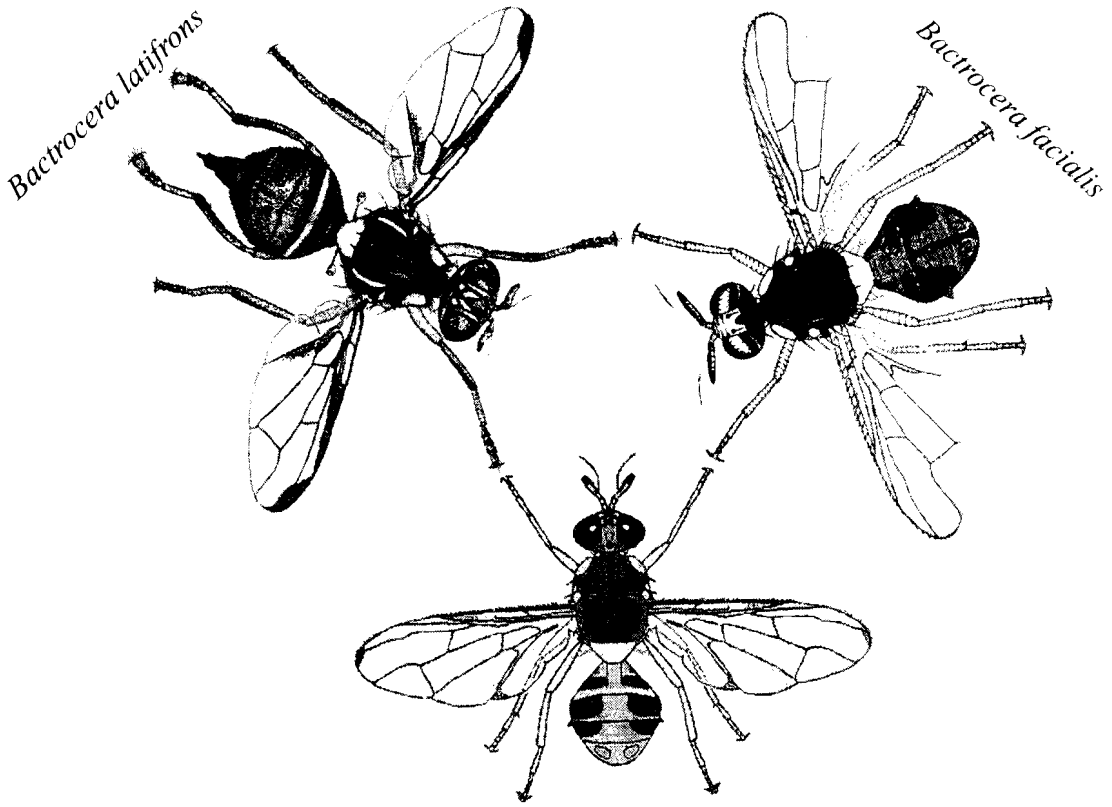
California Plant Pest & Disease Report

California Department of Food and Agriculture
Plant Pest Diagnostics Center
3294 Meadowview Road
Sacramento, CA 95832-1448



Bactrocera oleae

What's Inside: Volume 17 Nos. 4-6, July - December, 1998

-Also Included-

California Plant Pest & Disease Report

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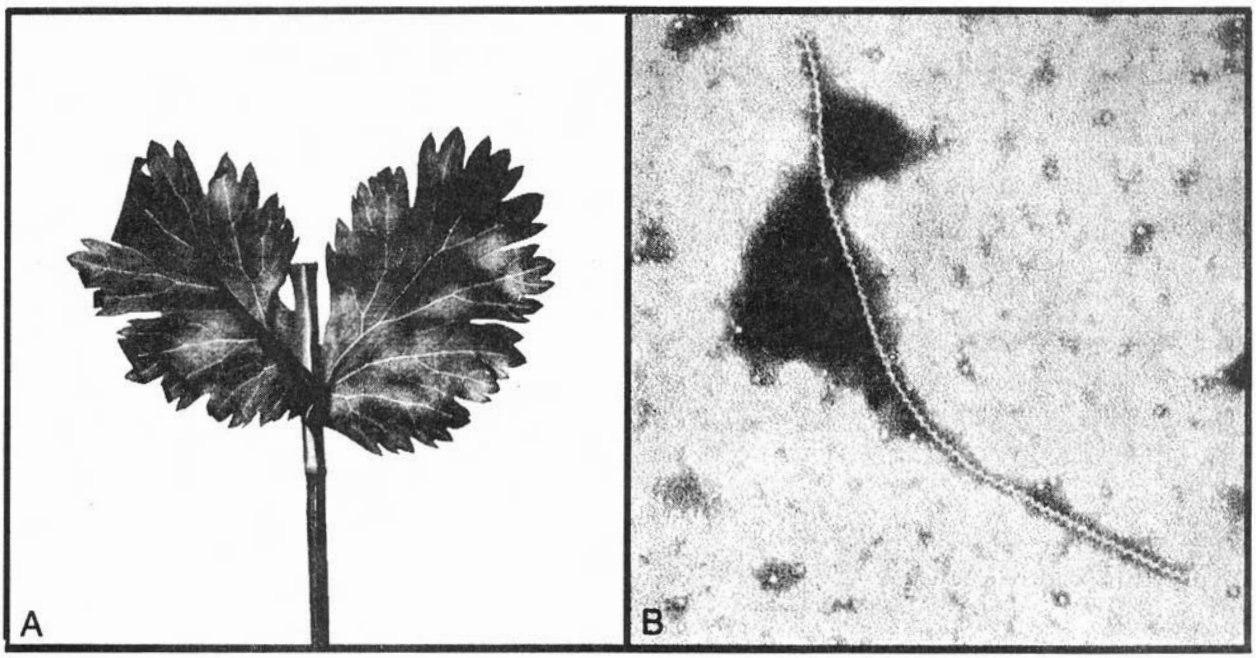
Illustrations on front cover adapted from Fruit Flies of Economic Significance: Their Identification and Bionomics, by I.M. White and M.M. Elson-Harris, and from CABIKEY, the Indo-Australasian Dacini Fruit Flies, by I.M. White and D.L. Hancock.

PLANT PATHOLOGY HIGHLIGHTS

New Virus Disease in Cilantro (*Coriandrum sativum)*

Dennis E. Mayhew

A previously undescribed disease has been found in commercial cilantro (*Coriandrum sativum*) fields growing in **Fresno**, **Monterey**, **Santa Barbara**, and **Ventura** counties. Symptoms are manifested by yellow blotches and vein clearing on leaves (see **A** below) and general stunting of the entire plant. At least two different varieties are known to be susceptible. Initial studies at the Plant Pest Diagnostics Center have found what appears to be a RNA virus with long slender particles approximately 2,000 nm in length (see **B** below) which are restricted to the phloem. At this time, little else is known. Research efforts are underway at both PPDC and University of California, Davis.



SIGNIFICANT FINDS IN OTHER STATES

Citrus Canker Found in Hendry and Broward Counties, Florida

Florida Agricultural Commissioner Bob Crawford announced the possible presence of the Asian strain of citrus canker in both a Hendry County commercial citrus grove and a residential area of Broward County.

Preliminary diagnosis from plant pathologists with the Florida Department of Agriculture and Consumer Services Division of Plant Industry indicate the likely presence of Asian strain citrus canker on samples taken from both areas. However, confirmation is still pending from laboratories at the University of Florida in Gainesville, the United States Department of Agriculture in Maryland and a private laboratory in Indiana.

In Hendry County, initial surveys show approximately 200 trees believed to be positive in a 300-acre grove of grapefruit located roughly 30 miles east of Immokalee.

In Broward County, around 80 properties over a three-square-mile area in southeast Coral Springs show suspect signs of citrus canker. The initial find was on a single grapefruit tree in a residential yard which was discovered by a district plant inspector during a routine inspection. The inspector noticed the suspicious symptoms and alerted the Citrus Canker Eradication Program office in Miami.

Agriculture personnel developed plans for further survey and detection efforts in both counties. Officials expect to remove infected trees as quickly as possible to prevent further spead.

Citrus canker is a plant disease that is not harmful to humans or animals. It spreads rapidly, producing premature fruit drop, and leaf, stem and fruit lesions. The only known way of eradicating the disease is destruction of infected trees.

In 1995, canker was detected on a citrus tree on a residential lot within a mile of Miami International Airport and that outbreak has spread throughout much of Dade County. Agriculture officials have cut nearly 100,000 trees in Dade and neighboring Broward in an ongoing eradication program.

What are believed to be isolated outbreaks have been detected in Manatee and Hendry Counties, and officials are currently working on eradicating diseased trees in those locations.

SAMPLE SUBMISSIONS

PLEASE NOTE: Agricultural Commissioners have been allocated additional funds for the purpose of improving our ability to exclude new and exotic pests from California. With the increased staff we anticipate an upsurge in samples being sent to the Plant Pest Diagnostics Center. Beginning on page 83 of this issue is a compendium of techniques to be used in collecting and preparing samples to be sent to Sacramento for identification. The report was compiled recently by Daud (David) Senzei of the Pest Exclusion Branch. We have put the report at the end so that it can easily be taken out and photocopied for distribution among field personnel for their use.

ENTOMOLOGY HIGHLIGHTS

SIGNIFICANT FINDS

FRUIT FLIES -(A)- Many Tephritid fruit flies were trapped in California between July and December, 1998. To find out trap information on these pests, please see the charts on pages 52-59 that cover Mediterranean fruit fly, Mexican fruit fly, Oriental fruit fly, Malaysian fruit fly, *Bactrocera facialis*, guava fruit fly, melon fruit fly, olive fruit fly, and peach fruit fly occurrences. ***Note: Trap finds do not necessarily indicate actual infestations. For information on actual infestations and eradication programs contact the Pest Detection/Emergency Projects Branch.***

JAPANESE BEETLE, *Popillia japonica* -(A)- Three single collections of Japanese beetle were made from traps this year in the following locations. No infestations were found.

Oakland	**Alameda** County	07/21	Franke/Tadesse
Oakland	**Alameda** County	08/06	Franke
Lakewood	**Los Angeles** County	08/12	Weider

GYPSY MOTH, *Lymantria dispar* -(A)- This serious tree pest was collected several times this year in the following locations. No infestations were found.

Fallbrook	**San Diego** County	07/20	Vanarelli
Santa Rosa	**Sonoma** County	07/21	Peterson
Yosemite Nat'l Park	**Mariposa** County	07/23	Fisher
Delhi	**Merced** County	07/23	Worthley
Petaluma	**Sonoma** County	07/30	Milligan
Sonoma*	**Sonoma** County	08/03	Milligan

* This find was near a property under quarantine surveillance.

PINK BOLLWORM, *Pectinophora gossypiella* -(A)- A total of 135 native (non-sterile) moths were collected this year in the San Joaquin Valley. The total number of traps deployed during the peak season was 14,046.

Fresno County	Kern County	Kings County	Merced County	Tulare County
1	63	16	1	54

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Marin	Novato	07/14	1F	Jackson	plum	Zaro
Orange	Lake Forest	07/27	1F	Jackson	peach	Casas
San Diego	La Jolla	07/30	5M	Jackson	apricot	Agnes, Jr.
San Diego	San Diego	08/02	1F	Panel	nectarine	Liscano
Orange	Lake Forest	08/03	1F	McPhail	peach	Ramirez
San Diego	San Diego	08/03	1F	Panel	peach	Alvarado
Orange	Lake Forest	08/04	1M/1F	McPhail	peach	Rodriguez
Orange	Lake Forest	08/04	1M	Jackson	guava	Rodriguez
Orange	Mission Viejo	09/02	1F	McPhail	fig	Thomas
Orange	Mission Viejo	09/10	1M	Panel	fig	Cortez
Orange	Lake Forest	09/15	1F	McPhail	orange	Casas
Orange	Lake Forest	09/15	2M	Jackson	orange	Casas
Orange	Lake Forest	09/18	2L	N/A	*Citrus paradisi*	Alba
Orange	Lake Forest	09/18	7L	N/A	*Citrus paradisi*	Ruiz
Riverside	Lake Elsinore	10/21	1M	Jackson	fig	Doughty/Razo
Riverside	Lake Elsinore	10/21	1M	Jackson	pomegranate	Doughty/Razo
Riverside	Sedco Hills	10/22	1F	McPhail	persimmon	Doughty/Razo
Riverside	Wildomar	10/26	1F	McPhail	persimmon	Doughty
Orange	Mission Viejo	10/27	1F	McPhail	pepper tree	Gailey/Little
Riverside	Sedco Hills	10/29	1F	McPhail	grapefruit	Doughty
Riverside	Lake Elsinore	10/30	1F	McPhail	peach	Paredes
Riverside	Lake Elsinore	10/30	1M	McPhail	lemon	Smith
Riverside	Lake Elsinore	10/30	1M	Jackson	pomegranate	Jara
Riverside	Lake Elsinore	10/30	2M	Jackson	orange	Smith
Riverside	Lake Elsinore	10/30	2M	Jackson	lemon	Smith
Riverside	Lake Elsinore	10/30	2M	Jackson	apple	Jara
Riverside	Lake Elsinore	10/31	4L	N/A	apple	Lopez/Winters
Riverside	Lake Elsinore	10/31	6L	N/A	Asian pear	Ramirez/Urquieta
Riverside	Lake Elsinore	10/31	2F	McPhail	orange	Smith
Riverside	Lake Elsinore	10/31	1M/2F	McPhail	peach	Paredes
Riverside	Lake Elsinore	10/31	1M	Panel	pomegranate	Ronquillo
Riverside	Lake Elsinore	10/31	4M	Panel	fig	Smith
Riverside	Lake Elsinore	10/31	4M	Panel	apricot	Smith
Riverside	Lake Elsinore	10/31	4M	Panel	orange	Smith
Riverside	Lake Elsinore	10/31	1M	Panel	ornamental	Smith
Riverside	Lake Elsinore	10/31	1M	Panel	orange	Smith
Riverside	Lake Elsinore	10/31	1F	McPhail	persimmon	Smith
Riverside	Lake Elsinore	10/31	1M	Panel	orange	Federico

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1998 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Riverside	Lake Elsinore	11/01	1M	Panel	orange	Federico
Riverside	Lake Elsinore	11/01	2F	McPhail	kumquat	Smith
Riverside	Lake Elsinore	11/01	1M	Panel	orange	Smith
Riverside	Lake Elsinore	11/01	1M	Panel	orange	Paredes
Riverside	Lake Elsinore	11/01	1M	Panel	persimmon	Smith
Riverside	Lake Elsinore	11/01	1M	Panel	lemon	Pupuhi
Riverside	Lake Elsinore	11/01	2M	Panel	ornamental	Smith
Riverside	Lake Elsinore	11/01	2M	Panel	apricot	Smith
Riverside	Lake Elsinore	11/01	3M	Panel	fig	Smith
Riverside	Lake Elsinore	11/02	1F	McPhail	persimmon	Doughty
Riverside	Lakeland Village	11/02	1M	McPhail	orange	Doughty
Riverside	Lake Elsinore	11/02	3L	N/A	peach	Urquieta/Roja/Ramirez
Riverside	Lake Elsinore	11/02	1F	Panel	walnut	Smith
Riverside	Lake Elsinore	11/02	1M	Panel	apricot	Smith
Riverside	Lake Elsinore	11/02	1M	Panel	fig	Smith
Riverside	Lake Elsinore	11/02	1M	Panel	olive	Smith
Riverside	Lake Elsinore	11/02	1M	Panel	pomegranate	Pupuhi
Riverside	Lake Elsinore	11/02	1M	Panel	persimmon	Smith
Riverside	Lake Elsinore	11/02	3M	Panel	ornamental	Smith
Riverside	Lake Elsinore	11/03	22L	N/A	lemon	Lopez/Winters
Riverside	Lake Elsinore	11/03	1F	McPhail	tangelo	Doughty
Riverside	Lake Elsinore	11/03	1M	Panel	persimmon	O'Sullivan
Riverside	Lake Elsinore	11/03	1M	Panel	pomegranate	Pupuhi
Riverside	Lake Elsinore	11/03	1F	McPhail	guava	Doughty
Riverside	Lake Elsinore	11/03	1M	Jackson	guava	Doughty
Riverside	Lake Elsinore	11/04	1F	Panel	lemon	Marroquin
Riverside	Lakeland Village	11/05	1M	Panel	sapote	Thomas
Riverside	Lake Elsinore	11/06	1M	Panel	apple	Pupuhi/Razo
Riverside	Lake Elsinore	11/06	1M	Panel	orange	Pupuhi/Razo
Riverside	Wildomar	11/06	1M	Panel	pomegranate	Weddle/Razo
Riverside	Lake Elsinore	11/09	1M	Jackson	apple	Doughty
Riverside	Lake Elsinore	11/12	1F	McPhail	persimmon	Doughty/Villalobos
Riverside	Lake Elsinore	11/16	1F	IPMT	orange	Whitcomb/Singer
Riverside	Lake Elsinore	11/16	4L	N/A	persimmon	Ayala/Ramirez/Segura
Orange	Santa Ana	11/19	1F	McPhail	guava	Ramirez/Caal

Mexican Fruit Fly, *Anastrepha ludens*, -(A)- July-December, 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Fountain Valley	07/09	1F	McPhail	apricot	Moreno
San Diego	El Cajon	07/20	2M/2F	McPhail	plum	Roseberry
San Diego	El Cajon	07/22	1F	McPhail	plum	Roseberry
San Diego	El Cajon	07/23	1F	McPhail	plum	Stevens
San Diego	El Cajon	07/25	1F	McPhail	peach	Liscano
San Diego	El Cajon	07/26	1F	McPhail	peach	Chavez
San Diego	El Cajon	07/26	1F	McPhail	sapote	Chavez
San Diego	El Cajon	07/27	1F	McPhail	sapote	Chavez
San Diego	El Cajon	07/28	1F	McPhail	peach	Chavez
San Diego	El Cajon	08/13	1F	McPhail	peach	Bullard
San Diego	El Cajon	09/08	1M	McPhail	sapote	Abbott/Rodriguez
San Diego	San Diego	09/16	1F	McPhail	plum	Wise
San Diego	San Diego	09/19	3L	N/A	*Pouteria sapota*	Williams
San Diego	San Diego	09/20	1M/5F	McPhail	sapote	Whitcomb
San Diego	San Diego	09/20	1F	McPhail	sapote	Whitcomb
San Diego	San Diego	09/20	6L	N/A	*Pouteria sapota*	Williams
San Diego	San Diego	09/20	1M	McPhail	sapote	Whitcomb
San Diego	San Diego	09/21	1M/2F	McPhail	sapote	Weddle
San Diego	San Diego	09/21	1F	McPhail	sapote	Weddle
San Diego	San Diego	09/22	2F	McPhail	sapote	Weddle
San Diego	San Diego	09/22	1M	McPhail	sapote	Bullard
San Diego	San Diego	09/22	1M	McPhail	sapote	Paredes
San Diego	San Diego	09/23	1F	McPhail	orange	Bullard
San Diego	San Diego	09/24	1M	McPhail	sapote	Paredes
San Diego	San Ysidro	10/09	1M	McPhail	sapote	Olivares
San Diego	Harbison Canyon	10/14	1M	McPhail	sapote	Deluval
San Diego	San Diego	10/15	1F	McPhail	sapote	Whitcomb
San Diego	San Diego	10/16	2M/1F	McPhail	sapote	Whitcomb
San Diego	San Diego	10/16	9M/17F	McPhail	sapote	Whitcomb
San Diego	San Diego	10/16	1M	Jackson	sapote	Ghebretusen/Rodriguez
San Diego	San Diego	10/17	1F	McPhail	sapote	Chavez
San Diego	San Diego	10/18	1M	McPhail	sapote	Armendariz
San Diego	San Diego	10/18	1F	McPhail	sapote	Olivares
San Diego	San Diego	10/18	2M/3F	McPhail	sapote	Sharon
San Diego	San Diego	10/19	1M	McPhail	sapote	Weddle/Lubrino
San Diego	San Diego	10/19	1F	McPhail	sapote	Smith
San Diego	San Diego	10/19	1M	McPhail	sapote	Smith
San Diego	San Diego	10/19	1F	McPhail	sapote	Moreno

Mexican Fruit Fly, *Anastrepha ludens*, -(A)- July-December, 1998 collections, continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
San Diego	San Diego	10/19	1F	McPhail	sapote	Smith
San Diego	San Diego	10/19	1M	McPhail	sapote	Smith
San Diego	San Diego	10/20	1F	McPhail	orange	Fitzpatrick
San Diego	San Diego	10/20	1M	McPhail	sapote	Bullard
San Diego	San Diego	10/20	1F	McPhail	sapote	Melgoza
San Diego	San Diego	10/20	1M/1F	McPhail	Mexican guava	Bullard
San Diego	San Diego	10/20	3M	McPhail	sapote	Bullard
San Diego	San Diego	10/20	2F	McPhail	sapote	Bullard
San Diego	San Diego	11/24	1M	McPhail	grapefruit	Jordan
San Diego	Chula Vista	12/18	1F	McPhail	sapote	Sanchez
San Diego	San Diego	12/21	1F	McPhail	Mexican guava	Bullard/Vargas

Oriental Fruit Fly, *Bactrocera dorsalis*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Buena Park	07/01	1M	Jackson	apricot	Rodriguez
Los Angeles	Los Angeles	07/06	1M	Jackson	peach	Sandoval
Orange	Buena Park	07/08	1M	Jackson	avocado	Hernandez
Contra Costa	Concord	07/16	1M	Jackson	loquat	Cervantes
Los Angeles	San Marino	07/21	1M	Jackson	nectarine	Garcia
Santa Clara	San Jose	07/20	1M	Jackson	kumquat	Crawford
Santa Clara	San Jose	07/22	1M	Jackson	apricot	Crawford
Santa Clara	San Jose	07/24	1M	McPhail	peach	Crawford
Orange	Anaheim	08/26	1M	Jackson	apricot	Rodriguez
Los Angeles	Rosemead	09/03	1M	Jackson	guava	Velazquez
Orange	Garden Grove	09/15	1M	Jackson	lemon	Rodriguez
Los Angeles	Alhambra	09/15	2M	Jackson	peach	Garcia
Los Angeles	El Segundo	09/24	1M	Jackson	shade tree	Girgis
Orange	Irvine	10/05	1F	Jackson	ornamental	Ramirez
Orange	Irvine	10/19	1M	Jackson	fig	Joseph
Los Angeles	Alhambra	10/24	1F	McPhail	plum	Vega
Orange	Alhambra	10/27	1F	McPhail	plum	Vega
Los Angeles	Alhambra	11/04	1M/1F	McPhail	sapote	Montoya
Los Angeles	City Terrace	11/16	1F	McPhail	psidium guava	Garcia
Los Angeles	Redondo Beach	11/18	1M	Jackson	tangerine	Girgis
Los Angeles	Alhambra	11/21	1F	McPhail	lemon	Vega
Los Angeles	Alhambra	11/21	1M	Jackson	sapote	Vega

Peach Fruit Fly, *Bactrocera zonata*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Garden Grove	08/04	1M	Jackson	peach	Diaz
Contra Costa	Pinole	11/12	1M	Jackson	apple	Glenn

Olive Fruit Fly, *Bactrocera oleae*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	West Los Angeles	10/19	1F	McPhail	orange	Dominguez/Vargas
Los Angeles	Westwood	11/09	8M/1F	McPhail	olive	Ortiz
Los Angeles	Westwood	11/12	5L/1P	N/A	olive	Ruiz/Ramirez
Los Angeles	Westwood	11/12	1F	McPhail	olive	Dominguez/Vargas
Los Angeles	Westwood	11/13	1M/1F	McPhail	olive	Ortiz
Los Angeles	Westwood	11/13	1L	N/A	olive	Urquieta/Ruiz
Los Angeles	Westwood	11/14	1L	N/A	olive	Urquieta/Ruiz
Los Angeles	Westwood	11/14	1M	AM/Panel	olive	Cordova
Los Angeles	Westwood	11/14	1M	AM/Panel	olive	Cordova
Los Angeles	Westwood	11/14	1F	McPhail	olive	Ronquillo
Los Angeles	Westwood	11/14	1M	McPhail	olive	Ronquillo
Los Angeles	Westwood	11/16	5L	N/A	olive	Urquieta/Ruiz
Los Angeles	Westwood	11/16	1M/1F	AM/Panel	olive	Cordova
Los Angeles	West Los Angeles	11/16	1M/1F	McPhail	olive	Perez
Los Angeles	Westwood	11/16	1M	AM/Panel	olive	Cordova
Los Angeles	Westwood	11/16	1M/1F	AM/Panel	olive	Cordova
Los Angeles	Westwood	11/16	1M	McPhail	olive	Cordova
Los Angeles	Westwood	11/16	1M	AM/Panel	olive	Cordova
Los Angeles	West Los Angeles	11/17	21L/7P	N/A	olive	Urquieta/Ramirez
Los Angeles	West Los Angeles	11/17	2L	N/A	olive	Urquieta/Ramirez
Los Angeles	West Los Angeles	11/18	6L/7P	N/A	olive	Urquieta/Ramirez
Los Angeles	Westwood	11/19	1M	McPhail	olive	Enciso
Los Angeles	Westwood	11/19	1M/1F	McPhail	olive	Cordova
Los Angeles	Westwood	11/20	1M	McPhail	olive	Harris
Los Angeles	Cheviot Hills	11/23	1P	N/A	olive	Ruiz/Ramirez/Urquieta
Los Angeles	Cheviot Hills	11/23	7L/1P	N/A	olive	Ruiz/Ramirez/Urquieta
Los Angeles	Cheviot Hills	11/24	1L/6P	N/A	olive	Ruiz/Ramirez/Urquieta
Los Angeles	West Los Angeles	11/25	1M	McPhail	olive	Enciso
Los Angeles	West Los Angeles	11/30	1F	AM/Panel	olive	Ronquillo
Los Angeles	West Los Angeles	12/01	1P	N/A	olive	Urquieta/Segura
Los Angeles	Manhattan Beach	12/02	1M	McPhail	lemon	Wieder
Orange	Garden Grove	12/02	1M	McPhail	persimmon	Mandujano/Hernandez
Los Angeles	Inglewood	12/14	1M	McPhail	orange	Dominguez/Singer
Los Angeles	Westwood	12/15	6M/6F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/15	1F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/15	2M/2F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/15	1M	Panel	olive	Ronquillo

Olive Fruit Fly, *Bactrocera oleae*, -(A)- 1998 collections,continued

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	Westwood	12/15	1F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/15	1M	McPhail	olive	Cordova
Los Angeles	Westwood	12/15	1F	Panel	olive	Ronquillo
Los Angeles	West Los Angeles	12/15	1M	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/16	2M	McPhail	olive	Ronquillo
Los Angeles	West Los Angeles	12/16	1F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/16	3M	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/21	1M	McPhail	olive	Montoya
Los Angeles	Palms	12/22	1F	McPhail	olive	Enciso
Los Angeles	Mar Vista	12/23	1M	Panel	olive	Montoya
Los Angeles	Mar Vista	12/23	1M	Panel	olive	Montoya
Orange	Rossmoor	12/24	1M	McPhail	pineapple guava	Diaz
Los Angeles	Westwood	12/29	1M	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	2M	AM/Panel	olive	Ronquillo
Los Angeles	Westwood	12/29	1F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	1M	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	2M/1F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	1M/1F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	37M/26F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/29	1M	AM/Panel	olive	Ronquillo
Los Angeles	Westwood	12/29	1M/1F	AM/Panel	olive	Ronquillo
Los Angeles	Westwood	12/29	1M	Panel	olive	Ronquillo
Los Angeles	Westwood	12/29	5M/6F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/30	1M/1F	Panel	olive	Ronquillo
Los Angeles	Westwood	12/30	1M/1F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/30	3M/2F	McPhail	olive	Ronquillo
Los Angeles	Westwood	12/30	1M	Panel	olive	Ronquillo

Guava Fruit Fly, *Bactrocera correcta*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Orange	Garden Grove	07/08	1M	Jackson	ornamental	Moreno
Los Angeles	Los Angeles	07/23	1M	Jackson	fig	Carrera
San Mateo	San Mateo	09/02	1M	Jackson	pear	Toruno

Malaysian Fruit Fly, *Bactrocera latifrons*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	South Gate	07/21	1M	Jackson	ornamental	Garcia

Melon Fruit Fly, *Bactrocera cucurbitae*, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
San Bernardino	Rancho Cucamonga	08/25	1M	McPhail	nectarine	Martin/Khowsudtsi

Bactrocera facialis, -(A)- 1998 collections

County	City	Date	#M/F/Stage	Trap	Host	Collector(s)
Los Angeles	La Verne	08/04	1M	McPhail	plum	Borgie/Olagues

SIGNIFICANT FINDS, continued

GRAPE PHYLLOXERA, *Daktulosphaira vitifoliae* -(C)- Several collections of the leaf-gall form of this species have been found in California recently. This is a significant find, since this form of phylloxera has only been observed two or three times in the history of this insect in the state. The collections were made in rootstock nurseries at Gonzales, **Monterey** County in September 1997 by Monterey County Biologist Brad Oliver and in Hopland, **Mendocino** County by CDFA Nursery Inspector Bill Ogden in August 1997 and later by Mendocino County Assistant Commissioner Steve Hajik in July, 1998. The Mendocino County collections were from the leaves of the "phylloxera-resistant" SO-4 rootstock. Circumstances surrounding the presence of this form of phylloxera in California are currently under investigation.

Grape phylloxera is an insect closely related to the aphids, but in the family Phylloxeridae. The phylloxerids differ from aphids and the other aphid-like families in that they lack the cornicles usually found in aphids but have abundant dorsal wax glands on the abdomen, do not produce flocculent wax as do the Adelgidae and Eriosommatidae, and unlike the other three families the wings of the adult reproductive forms are held flat over the body instead of roof-like. There are only a few species in the family.

Grape phylloxera is native to eastern North America, where it has evolved with the eastern grape species. Since the mid-1800s, it has been spread to Europe, Africa, Asia, South America and Australia. It was first discovered in California in 1852 and is now generally distributed over most of the state where grapes are grown. It is responsible for tremendous losses to vineyards in Europe starting with its introduction sometime prior to 1863 and is recorded as destroying one-third of the vineyards in France within 25 years of its introduction there. It was accidentally introduced into Victoria, Australia in 1875 and was found in Queensland in 1910. A major breakthrough in the control of this pest was the development of resistant rootstocks such as AXR-1 and SO-4 from varieties of grapes native to the eastern US. Unfortunately, a few years ago, the resistance of AXR-1 to phylloxera began to break down [see CPPDR 5(1-2):203-205 + cover, 1986].

Leslie Smith and Gene Stafford made the following comments in their 1955 California Ag Experiment Station Bulletin #445:

> California is especially fortunate in that the winged migratory forms do not succeed here as they do in the eastern states and in Europe. Spread of the pest is therefore limited to the distance the wingless crawlers can cover, and they can travel only a few feet. During late summer and fall occasional winged phylloxera appear in coastal areas. They emerge from the soil and fly about, but, unlike the eastern forms, they are unable to establish new colonies.

Whether or not the leaf-form that has been found here now will produce winged reproductives that can spread the infestations more rapidly than the root form is unknown at this time, or why the leaf form has not been present here for so many years. It is also not known whether the leaf galls will have that much effect on grape production in California, whether this leaf gall form will be successful on the roots of the resistant rootstocks including SO-4, whether the leaf-form will do well outside the cool, humid coastal areas where it is now found, or whether the

leaf form is really the same as the root form that we have had in California for so many years. (For more information see California Agriculture article by John Stumbos, 52(6):4, 1998 and the Sonoma County Viticulture Newsletter by Rhonda Smith, U.C. Extension, December 1995.)

The following is an old report by H. J. Quayle, Insects Injurious to the Vine in California, Berkeley College of Agriculture, Bulletin No. 192,1907.

California, with its extensive areas of vineyards and lack of extremes in climate, offers suitable conditions for the development of a considerable number of insect pests of the vine. Here also the huge plantings of the European, or vinifera, vines have given the phylloxera an opportunity to do greater damage than elsewhere in the United States.

Historical—The phylloxera is a native of the United States east of the Rocky Mountains, where it is found living upon the wild vines. It is a minute insect, related to the scale insects and plant lice.

The insect was probably introduced into California upon vines, cuttings or roots, imported from France, though it was possibly introduced from several sources and at several points. It was first noticed in the southern part of Sonoma County; in the valley surrounding the old town of Sonoma, about 1874. By 1880 vines killed by the insect had been found in Napa, Solano, and Placer counties, and hundreds of acres had been pulled up in Sonoma Valley. Since then the insect has spread to all the important grape-growing regions of California north of Tehachapi, and probably not less than fifty thousand acres have been destroyed.

The gall insect lives upon the leaves, and is the commonest form on the wild vines in the native habitat of the insect. It rarely or never occurs in California. In Europe it is found often upon American and rarely upon European varieties. It causes little swellings or galls upon the leaves and younger parts of the vine, which, though sometimes very numerous, do little permanent injury. The chief danger from the gall form is that it multiplies with astonishing rapidity and migrates from the leaves to the soil. Here it attacks the roots and gives rise to the root form, which is the "form of devastation," the one which finally destroys all the vines it attacks which are "non-resistant". Every insect of the root form which reaches maturity lays about twenty-five or thirty eggs, each of which is capable of developing into a new egg-layer, needing no fertilization. As there are from five to seven such generations during the year the increase in numbers is extremely rapid.

Sometimes during the summer, usually in July or August, some of the eggs laid by the root insects may develop into insects of slightly different form, called nymphs. They are somewhat larger than the normal root form and show slight protuberances on the sides, which finally develop into wings. These are the winged or colonizing insects, which emerge from the soil, and, though possessing very weak powers of flight, are capable of sailing a short distance, and if a wind is blowing may be taken many rods, or even miles. Those which reach a vine crawl to the under side of a leaf and deposit from three to six eggs. These eggs are of two sizes, the smaller of which produce males and the larger produce females. The females arising from these eggs, after fertilization, migrate to the rough bark of the two-year-old wood, where each deposits a single egg, called the winter egg, which remains upon the vine until the following spring. The insect which hatches from this egg in the spring goes

either to the young leaves and becomes a gall-maker, or descends to the roots and gives rise to a new generation of egg-laying root-feeders.

The normal and complete life cycle of the phylloxera appears then to be as follows: *Male and female insects* (one generation in autumn); *gall insects* (one to five generations while the vines are in leaf); *root insects* (an unknown number of generations throughout the year); *nymphs*, which become *winged insects* (one generation in midsummer). The gall stage may be omitted, as it generally is in California, and the insects which hatch from the fertilized eggs laid by the female go directly to the root and produce offspring, which are indistinguishable from the root form produced in the normal cycle. For how many generations the root form can exist and reproduce without invigoration supposed to come from the production of the sexual form is not known, but certainly for four years and probably more. The gall form on American vines may probably be prevented by spraying the vines in winter to kill the winter eggs; but this treatment has no effect on the root forms, which in California hibernate abundantly in the soil.

All forms of the phylloxera are extremely minute, the root form being about one twenty-fifth of an inch long when it reaches the adult egg-laying stage, and little more than half this length when young and active. It is just large enough to be seen by the unaided eye in a good light when its presence is known, and, by the help of a glass magnifying five diameters, its legs and antennae are plainly visible. Its color is light greenish-yellow in summer, and somewhat darker in winter; so that when numerous the attacked roots appear as though dusted in spots with powdered mustard or cinnamon. The newly hatched insect is fairly active, and at first moves about from place to place on the roots, but finally, when it reaches the egg-laying stage, inserts its stylet into the root and remains fixed.

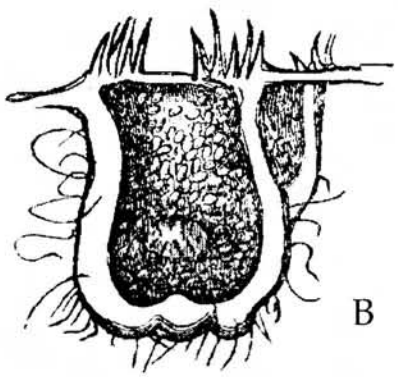
Nature of Injury—The amount of nutrients taken from the vine by such minute insects, even when present in the immense numbers in which they sometimes occur, is not sufficient to account for the disastrous effect upon the plant. The death of the vine is due to the decay which sets in wherever the phylloxera inserts its stylet, for a swelling is produced, composed of soft tissue, which soon decays. When this swelling occurs at the end of a young rootlet, growth in length is stopped; when it occurs on larger roots, a kind of "cancer" or decay spot is finally formed, which soon extends around the root, and all below the point of attack dies.

During the first year or two after a vine is attacked there is little apparent damage. In fact, the effect of the phylloxera is equivalent to root pruning, and in some cases results in an unusually large crop of grapes. The year after this crop, however, the vine having endured the double strain of heavy bearing and root injury, is unable to recuperate, and generally dies. In rich moist soil the death of the vine is not so sudden, and two or even more crops *may mature after symptoms of the disease are evident.*

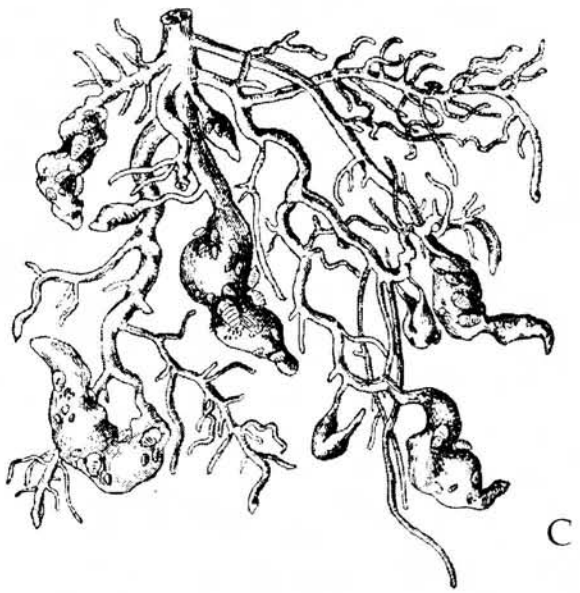
Methods of Dispersal—The ways in which new vines and vineyards become infested may be classed as natural and artificial. The natural ways may be inferred from what has been said of the life history of the insect. From a vine first attacked the root form spreads through the soil to neighboring vines slowly, but continuously, thus forming the so-called "oil-spots."

A typical oil-spot of several years' standing will show several dead vines in the center, then a ring of vines with very short growth and no grapes, next another ring where the growth is not of normal vigor, but where the crop may be equal to or larger than that of the healthy vines. Such a spot enlarges its area year after year at a gradually accelerating rate as the front of the invading army becomes longer. The rate of advance will vary with the soil and climate, but will probably never exceed forty or fifty feet annually. If this were its only method of spreading, the insect could be controlled or even exterminated with comparative ease. Unfortunately, it is able to spread much more rapidly by means of the winged form; and the rapidity of its extension over the south of France was due principally to this agency. In California, though the winged form has been found, it seems to be rare, especially in the central valleys, which probably accounts for the comparative slowness with which new districts have become infested. The artificial methods of dispersal here are probably more effectual in spreading the insect than the natural. The insects are taken from one part of the vineyard to another on pieces of the roots of infested vines adhering to the plows or other implements used in cultivation; while they are introduced into new localities on rooted vines or cuttings brought from infested districts. See illustrations below.

galls caused by *Phylloxera* on the underside of a grape leaf



cross section of a leaf gall

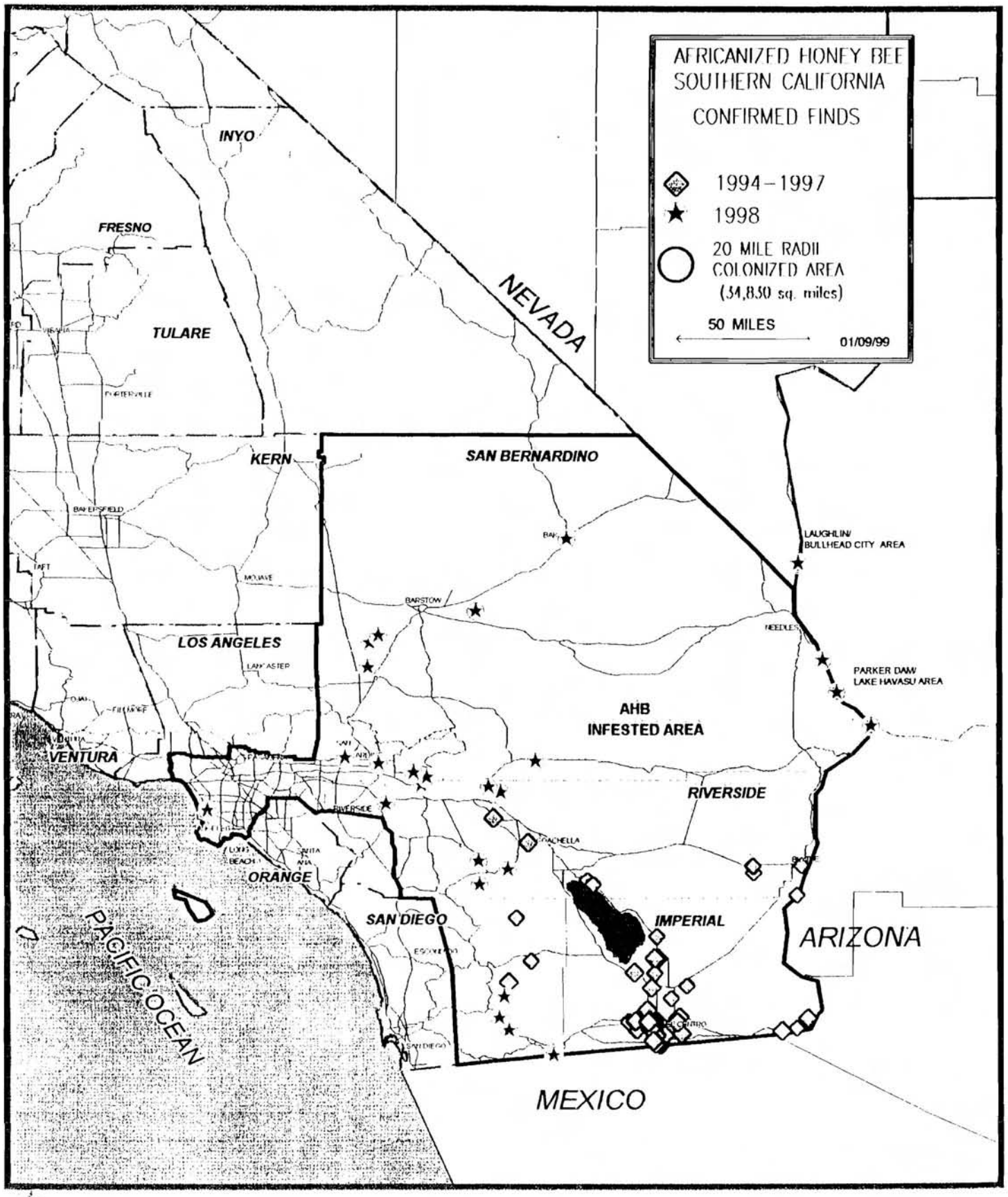


root galls formed by *Phylloxera*

AFRICANIZED HONEY BEE (AHB), *Apis* "Africanized"-(B)- Africanized honey bees were found for the first time in **Los Angeles** County. Other collections are listed below. For an updated map of where AHB has been found in California, see the following page.

San Bernardino	Helendale	07/01	Nielen
San Bernardino	Helendale	07/01	Nielsen
San Bernardino	Oro Grande	07/01	Nielsen
San Bernardino	Newberry	07/08	
Imperial	Holtville	07/26	Bolin
Riverside	Blythe	07/28	Elms/Nelson
Imperial	Brawley	08/06	McLaughlin
San Bernardino	Joshua Tree	08/28	
Imperial	Palo Verde	09/11	McLaughlin
Riverside	Blythe	09/16	Elms
San Diego	Morena Village	09/17	Kellum
San Diego	Jacumba	09/17	Kellum
San Diego	Pine Valley	09/17	Kellum
Riverside	Desert Hot Springs	09/22	Drake
Riverside	Desert Hot Springs	09/22	Drake
Riverside	Desert Hot Springs	09/22	Drake
Riverside	Desert Hot Springs	09/22	Drake
San Bernardino	Fontana	09/23	
Riverside	Anza	09/24	Drake
Riverside	Anza	09/24	Drake
Riverside	Pinyon Pines	09/24	Drake
San Bernardino	Mentone	09/28	Lampman
San Bernardino	Oak Glen	09/28	Lampman
San Bernardino	Yucaipa	09/28	Mian
San Diego	S-2 & state route 78	09/28	Kellum
Riverside	Blythe	10/13	Elms
Riverside	Moreno Valley	10/21	Durso
San Bernardino	Big River	10/22	
Los Angeles	Carson	11/04	Pearson
San Bernardino	Baker	11/06	Mian
Riverside	Blythe	11/19	Nelson
Los Angeles	Lawndale	11/23	Ball
Riverside	Palm Desert	11/24	
Los Angeles	Lawndale	12/07	Hurley/Murphy
Los Angeles	Lawndale	12/07	Hurley/Murphy
Los Angeles	Lawndale	12/08	Murphy
San Bernardino	San Bernardino	12/15	Mian
Los Angeles	Los Angeles	12/22	Lawndale
Los Angeles	Carson	12/28	Hurley

California Department of Health Services has published a report in California Morbidity titled "Africanized Honeybees in California: Public Health Aspects." To receive a copy of this article, contact Department of Health Services, Disease Investigations and Surveillance Branch, 601 N. 7th Street, MS 486, P.O. Box 942732, Sacramento, CA 94234-7320. (916)324-3738.


AFRICANIZED HONEY BEE
SOUTHERN CALIFORNIA
CONFIRMED FINDS
1994-1997
1998
20 MILE RADII
COLONIZED AREA
(34,830 sq. miles)
50 MILES
01/09/99
INYO
FRESNO
TULARE
KERN
NEVADA
SAN BERNARDINO
LOS ANGELES
VENTURA
ORANGE
SAN DIEGO
RIVERSIDE
IMPERIAL
AHB
INFESTED AREA
LAUGHLIN/
BULLHEAD CITY AREA
PARKER DAM/
LAKE HAVASU AREA
ARIZONA
MEXICO
PACIFIC OCEAN
BAKERSFIELD
MOJAVE
BARSTOW
NEEDLES
LANCASTER
RIVERSIDE
INDIO
SAN DIEGO
CDFA
12/03/98

NEW STATE RECORDS

OLIVE FRUIT FLY, *Bactrocera oleae*,-(A)- This fruit fly was detected for the first time in California and North America in West Los Angeles, **Los Angeles** County. On October 19, one female fly was found in a McPhail trap placed in an orange tree. The trap density at the time of the find was 5 McPhail traps per square mile.

Los Angeles County trapper Rene Dominguez and CDFA ID Sorter Gloria Vargas are credited with finding the fly.

Olive fruit fly is a native to the olive growing regions of the Mediterranean (Italy, Greece, etc), Algeria, Canary Islands, Egypt, Ethiopia, Kenya, Libya, Morocco, South Africa, Sudan and Tunisia. It is a serious pest of cultivated olives, capable of destroying over 90% of the crop. It is especially important in olives grown for consumption rather than oil. Its host is wild and cultivated olives.

CDFA Insect Biosystematists Kevin Hoffman and Eric Fisher made the determination. Kevin Hoffman and entomologist Bob Dowell provide the following information:

The head, wing, and thorax of the olive fruit fly, *Bactrocera oleae* (OLFF), resembles an Oriental fruit fly, but the olive fruit fly differs from it by the lack of some coloration on the thorax, the somewhat different wing pattern, and by the coloration pattern on the abdomen. The top of the thorax lacks the yellow stripes at the base of the wings. The dark band along the front edge of the wing is interrupted midway and reappears as a small dark spot at the wing tip. The pattern of the abdomen consists of a series of four black spots on either side, which contrasts with the otherwise orange abdomen. The size of the captured specimen is intermediate between the larger Oriental fruit fly and the smaller Mediterranean fruit fly. Males are not known to be attracted to any synthetic lure, and therefore specimens are most likely to be found in McPhail traps. When servicing these traps, personnel should be reminded to submit any specimens which display typical Oriental fruit fly thorax and wing patterns, regardless of the pattern on the abdomen.

Olive fruit fly does not respond to cue lure or methyl eugenol. CDFA increased the McPhail trap density to 80 traps per square mile in the core square mile and 40 McPhail traps per square mile in the eight adjacent square miles.

During the period between October 19, 1998, and December 31, 1998, a total of 166 olive fruit flies were trapped in California. One hundred and sixty two(162) OLFF were trapped in the Westwood/Palms area of Los Angeles and nine larval properties were found. In response, CDFA has been applying malathion bait from the ground to all olive trees within 200 meters of these finds. Also, two OLFF were trapped at separate sites in Inglewood and Manhattan Beach areas of Los Angeles. CDFA has increased trapping according to protocol around these finds.

In addition to Los Angeles County, two OLFF have been trapped in Garden Grove and Rossmoor, **Orange** County and CDFA has increased trapping according to protocol around these finds.

MALAYSIAN FRUIT FLY, *Bactrocera latifrons* -(A)- This fruit fly, previously intercepted in quarantine situations from Hawaii, was trapped for the first time in California on July 21 at South Gate, **Los Angeles** County. The collection was made by trapper Jesus Garcia in a Jackson trap. No further finds have been detected, and this is not considered an infestation. This fruit fly is also known by the name "solanum fruit fly."

This fly is distributed primarily on the western side of the Pacific rim, including China, India, Laos, Malaysia, Pakistan, Sri Lanka, Taiwan and Thailand. It was found established in Hawaii in 1983 on the island of Oahu.

Adult flies have a predominately black scutum with lateral yellow stripes. Presence of facial spots and a predominately orange abdomen are also characteristic of this fly. The costal band is expanded into an apical spot.

Economically this fly is more or less restricted to fruit of plants in the potato family (Solanaceae). It is known to attack bell and chili peppers, eggplant, tomatoes and nightshades. There are records from non-solanaceous hosts but these are either mis-identifications or are rare and unusual events. The fly is not attracted to cue lure or methyl eugenol, so it is not likely to be readily noticed in trap lines for other *Bactrocera* species.

A FRUIT FLY, *Bactrocera facialis* -(A)- This fly was discovered for the first time in California in La Verne, **Los Angeles** County on August 4. The collection was made from a McPhail trap in a plum tree by county trapper Todd Borgie. No further finds have been detected, and this is not considered an infestation.

Bactrocera facialis has the potential to become a serious pest in any major fruit and vegetable producing country. The hosts it attacks include avocado, bell pepper, common guava, grapefruit, lemon, mandarin, mango, peach, pummelo, Tahiti chesnut, breadfruit, Surinam cherry, and sweet orange.

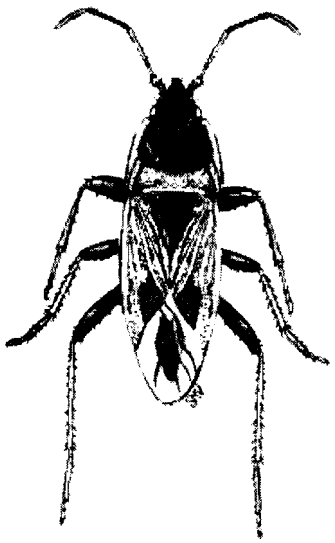
The head, wing, and thorax of *Bactrocera facialis* resemble that of an Oriental fruit fly, but *B. facialis* differs from it by the coloration pattern on the abdomen. Instead of the usual T-shaped mark, the pattern consists of a single medial black line flanked by a series of four black spots on either side, which contrast strongly with the otherwise yellow to orange abdomen. The size of the captured specimen is intermediate between the typically larger Oriental fruit fly and the smaller Mediterranean fruit fly. Males are attracted to cue lure, and therefore can be found in melon fly traps.

This species of fruit fly is apparently found only in the South Pacific, specifically on several of the island groups of Tonga.

NEW STATE RECORDS, continued

A LYGAEID BUG, *Rhyparochromus saturnius* -(Q)- This Lygaeid bug, similar to but smaller than the common milkweed bug, has been found all over central California. This insect is new to California and to North America. It is apparently native to the Mediterranean area of Europe and northern Africa. Initially it was not recognized here but was sent to Dr. Thomas Henry, Systematic Entomologist and Hemiptera Specialist at the Smithsonian Institution in Washington D.C. Dr. Henry stated that this insect is commonly intercepted coming into the U.S. from Italy and Greece on shipments of stone such as slate and marble. The initial collection was by Larry Allen, Entomologist with the San Joaquin County Department of Agriculture. It is now known to be established in the following counties: **Alameda, Amador, Contra Costa, Fresno, Kern, Lake, Los Angeles, Madera, Sacramento, San Benito, San Joaquin, San Mateo, Santa Cruz, Solano,** and **Sonoma**.

Little is known about the biology of this insect. About all that is mentioned in the literature is that many of the species in the related groups are seed feeders. Dr. Henry spent several days in California trying to find out more information, but nothing developed relating to favored host plants. This species is similar to other common species of Hemiptera in California that tend to migrate in large numbers to hibernation sites during certain times of the year. In these cases, the insects tend to become noticeable because they frequently get into buildings, especially houses near open fields or agricultural lands. There seems to be no other economic effects caused by this new insect at this time. It is also not known whether the heavy annual plant growth resulting from the El Niño weather patterns the last two years have caused the high populations. Considering the large distribution of this insect already, it appears to have been in California for some time. The insect is currently "Q" rated but likely will be lowered to a "C" rating as time permits because of the wide spread distribution and the apparent lack of economic potential. The first collections were made early in the spring of 1998, but were not mentioned in the last issue of CPPDR because Dr. Henry is planning to publish a paper on the new records and we did not want to supercede that effort. However, due to the fact that large numbers were collected this summer, because it was "Q" rated, there was no information about it for use by the counties, and because Ag Extension personnel have been producing newsletter articles about it, we made the decision to provide the information here.



This species is easy to recognize. It is 7-8 mm in length, basic black with a tan band on the thorax, tan colored fore wings and a tan marginal border. Nymphs are basically the same color and shape as the adults, with tan wing pads instead of the tan elytra of the adult insects.

CURRANT-LETTUCE APHID, *Nasonovia ribis-nigri* -(Q)- This aphid has been found for the first time in California at Gonzales, **Monterey** County in July by Ag Extension Specialist William Chaney. The aphids were attacking 'Iceberg' lettuce and were getting down inside the heads where control is difficult. This problem is new to California as is the aphid, since other aphid species attacking lettuce here in California as a rule do not get down into the heads. Monterey County Biologist Brad Oliver made additional collections on August 26 from the same area. In May prior to this find, this same aphid was intercepted on shipments of radicchio (Chicory) leaves from Italy being imported for use as salad greens to a warehouse-distribution center in Madera County. These collections were made by William Abel, a Federal Port Inspector. It is not known whether this interception had anything to do with the find in Gonzales or not, but it is most likely that other previous shipments may have also harbored this insect. It is not particularly likely that one shipment would be responsible for a heavy infestation over in Monterey County three months later.

This aphid is native to Europe, where it occurs eastward to the Ukraine. It has been introduced into North America and is known from New England, Quebec, New Brunswick and British Columbia. In South America it is known from Argentina, Brazil and Peru.

The aphid has a complex life cycle (holocycly) with the winter spent on the primary host *Ribes* and the summer feeding on the secondary hosts. The secondary hosts are the Asteracea (*Cichorum, Lactuca*), Solanaceae (*Nicotiana, Petunia*) and some of the Scrophulariaceae. The adult female aphids leave the *Ribes* plants in early spring and the sexual forms return to the primary host in September and October.

It is a known vector of gooseberry veinbanding virus and it can also transmit mosaic viruses of cauliflower and cucumber. It is not known to transmit lettuce mosaic.

On the primary host the aphids are shiny pale or apple green and occur usually in small colonies. The emigrant females have extensive black sclerotization, particularly in the form of black blotch patterns on the abdominal dorsum. On *Lactuca* and other secondary hosts, the apterous forms are usually dispersed under the leaves or on flower stalks. The color is shiny pale yellow to green or sometimes reddish, with dorsal black abdominal patches. The siphunculi are often black or very dark green at the tips. The species that would most closely resemble *Nasonovia* on lettuce would be the foxglove aphid, *Aulacorthum solani*. Foxglove aphid is either a shiny whitish green or yellow color with a green or rusty spot at the bases of the siphunculi, or a uniform dull green or greenish brown. It does have dark sclerotic blotches similar to those of *Nasonovia*, but not as dark as in *Nasonovia*. Foxglove aphid can be separated from *Nasonovia* in the lab because it has less than 20 sensoria on antennal segment III and no sensoria on IV. Currant-lettuce aphid has over 30 sensoria on III and five or more on segment IV. For additional information on this pest, see California Agriculture, 53(1):4, 1999.

NEW STATE RECORDS, continued

A PYRALID MOTH, *Pyrausta volupialis*, (Q)- This moth has been collected for the first time in California. Our first knowledge of it is from Santa Maria, **Santa Barbara** County. The collection was made from rosemary shrubs (*Rosmarinus officinalis*) on October 9 by UC Extension Specialist Frank Laemmlen. Frank took specimens to Santa Barbara County Entomologist Jerry Davidson who reared them out to adults.

However, on further investigation into the identification and distribution of this moth, we find that Dr. Jerry Powell at U.C. Berkeley has found records of this moth from several locations in southern California and the Bay Area since 1991. Dr. Powell is planning on publishing more information on the occurrence of this moth in California, probably in the Pan-Pacific Entomologist.

The moth is apparently native to south-central United States and into Mexico, having been recorded in the literature from Texas, Colorado, Arizona and Chiapas. Little is known about this moth and its economic potential. Until this recent find, the immature stages were unknown. Unfortunately, after this collection was identified, recollection attempts showed that the similar species *Pyrausta laticlavia* was also infesting the same plants, so it is not certain at this point which larvae go with which moth.

Pyrausta volupialis

light and dark forms of *Pyrausta laticlavia*

NEW COUNTY RECORDS

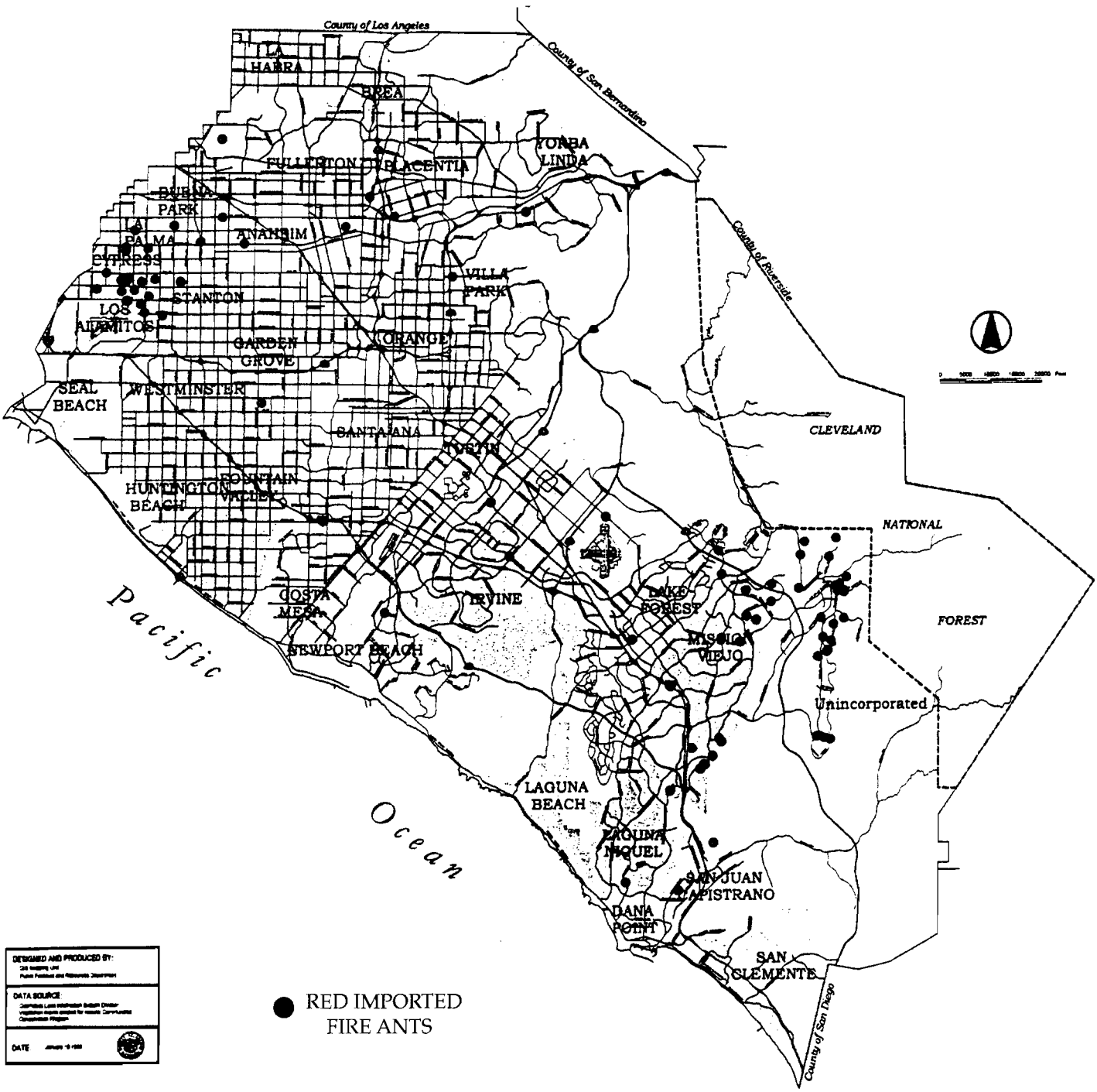
RED IMPORTED FIRE ANT, *Solenopsis invicta* -(A)- Major problems now exist in California with the finding of this pest, red imported fire ant (RIFA), in numerous new locations since the first find of established colonies in an almond orchard near Buttonwillow, Kern County in October, 1997. Other more important finds were made based on information from the State of Nevada Department of Agriculture that RIFA specimens had been intercepted in nursery stock moving from a wholesale nursery in Trabuco Canyon, **Orange** County, to Las Vegas.

The first established, non-nursery finds of RIFA were made as the result of a load of honeybees moving from Texas to California for the annual almond pollination season. In February, 1997, a shipment of hives on several trucks were inspected at the border stations and ants were found. As per the quarantine policy at the time, the bees were allowed to continue on to destination pending identification of the ants. The hives were off-loaded from trucks directly with their pallets and placed around a large orchard near Buttonwillow in the Lost Hills area of Kern County, before the hives could be re-inspected and sent out of state. In October of that year, it was found that ants had escaped from the hive frames and pallets, and established themselves around the orchard. For further details on this incident see CPPDR 16(3-6):50 -55, 1997. As a result of this infestation, the route of the beekeeper involved was traced to several other San Joaquin Valley orchards. This resulted in new county records of established colonies at Kerman, **Fresno** County and Newman, **Stanislaus** County. Eradication procedures were initiated for these finds as they were in the Buttonwillow infestation.

After the initial find of RIFA in the Trabuco Canyon nursery, detection efforts showed that the ants were well established in recently built subdivisions nearby and along roadways and parkways leading into the residential neighborhood. Since the nursery involved has not received plant material from out of state, but has dealt only with other wholesale nurseries within the state, it was decided that other nurseries dealing with the Trabuco Canyon nursery should also be inspected. As a result other nurseries in Orange County and in **Los Angeles** County have been found infested. Surveys in other areas of Orange County have found numerous local infestations in non-nursery settings in the cities of Mission Viejo, Los Alamitos, Stanton, Cypress, Anaheim, and Placentia (see map on page 72). Likewise, a non-nursery infestation has been located in Los Angeles County near the city of Cerritos.

With the recent construction of the subdivisions near the original Trabuco Canyon find, it was discovered during investigations into the source of the ants that some sod grown in the Coachella Valley had been used for lawns around the new homes. Follow up surveys in the Rancho Mirage area of **Riverside** County revealed that several sod farms and nearby golf courses were also infested with RIFA.

RED IMPORTED FIRE ANT DISTRIBUTION
ORANGE COUNTY



AFRICANIZED HONEY BEE (AHB), *Apis* "Africanized,"-(B)- On November 23, the first naturally migrating swarm of AHB was found in Lawndale, **Los Angeles** County. As a result, a survey of the area was conducted by Los Angeles County Department of Agriculture. For an updated map of AHB in California and for more 1998 finds, see pages **64-65**.

VINE MEALYBUG, *Planococcus ficus* -(B)- This serious pest of grapes has been found for the first time in the San Joaquin Valley. The collection was made from a young grape vineyard near the town of Arvin, **Kern** County. Samples were submitted to the Sacramento lab by Kern County Ag Biologist Matthew Peet on July 28. Subsequently, several other nearby vineyards have also been found to be infested. The original find was in a vineyard planted just a few years ago from cuttings from the Coachella Valley in Riverside County. However, these cuttings were made before it was known that the vine mealybug was present there. It seems quite likely that these cuttings were the source of the Arvin infestation. For more details on the California infestation of vine mealybug and its economic importance see CPPDR 13(1-2):8-9, 1994, and California Agriculture, 53(1):4, 1999.

WOOLLY WHITEFLY, *Aleurothrixus floccosus* -(B)- This whitefly has been a common species in California for many years, particularly in southern California, where it has been especially troublesome at times. However, there was one county there that until now has been free of this insect. A new county record has been established for **Imperial** County, with a collection at an El Centro residence. The collection was made from a citrus tree by the homeowner on August 24. The sample was given to Imperial County Ag Extension Specialist Eric Natwick, who submitted it to the Sacramento lab. The whitefly was first found in San Diego County in the 1960s. It was under eradication for a time but without success. It later moved all over the coastal counties wherever citrus would grow and was a particularly bad problem on dooryard citrus. Introduction of natural enemies has eased that problem considerably. The only serious commercial citrus problem has been orchards in the Coachella Valley of Riverside County, where the Coachella Valley Red Scale Control District has been trying to eradicate it. It now occurs in all counties from San Luis Obispo south, and in Santa Clara and San Mateo Counties.

REDGUM LERP PSYLLID, *Glycaspis brimblecomei* -(Q)- This Australian native was first found in Los Angeles County in June, 1998 and shortly thereafter was found heavily infesting trees in three counties in the Bay Area. The latest finds have been in southern California. Collections were made in Ontario, **San Bernardino** County on October 27 by J. Davey, and in Anaheim, **Orange** County on December 3. The Orange County find was made by personnel with the Disney Corporation. This psyllid forms sugary, crystalline conical covers called lerps that protect the immature stages. It attacks eucalyptus trees of many kinds, but prefers the redgum group of eucalypts such as *Eucalyptus camaldulensis.* Infestations have been very heavy, particularly in Alameda and Santa Clara Counties, and trees are suffering with major leaf drop. The fallen leaves are sticky with honeydew and are sticking to soles of shoes and to automobiles parked under the trees. Stanford University in Palo Alto is a prime example because the stickiness has resulted in major janitorial problems in the campus buildings and classrooms. For more information on this psyllid see CPPDR 17(1-3):7-8, 1998.

GRAPE LEAF FOLDER, *Desmia funeralis* -(C)- This moth has been extremely common at times in California and has been generally distributed throughout the state for many years. It was recently found in a new county, however. The collection was made by a homeowner in El Centro, **Imperial** County. The homeowner gave the sample to Imperial County Ag Extension Specialist Eric Natwick, who submitted it to the Sacramento lab. The larvae of this moth feed on the leaves and sometimes the grape berries, occasionally causing serious damage. The larvae roll the edges of the leaves to provide a shelter when not feeding. The adult moth is an attractive one, brown in color with two large cream colored spots on each wing.

GIANT WHITEFLY, *Aleurodicus dugesii* -(Q)- This whitefly has become a real nuisance in southern California. It was first found in California in San Diego County in October 1992. It has spread since then to Orange, Los Angeles and Santa Barbara Counties. The latest find has been at Ventura, **Ventura** County. The collection was made by Ventura Count Ag Inspector Heidi Wong from a hibiscus bush on July 20. The whitefly heavily infests hibiscus, covering the undersides of the leaves with white powdery wax. The nymphs produce long silky wax rods which extend an inch or more below the leaf surface, giving the leaves a bearded appearance. When populations get too heavy on hibiscus, the whitefly begins to attack many other hosts, particularly schefflera, bird of paradise, banana, and many other smooth-leaved species. For more information on this whitefly see CPPDR 11(5-6):78-81, 1992.

MISCANTHUS MEALYBUG, *Miscanthococcus miscanthi* -(C)- This mealybug has been found for the first time in **Orange** County. The collection was made at San Juan Capistrano on July 22 by Orange County Ag Inspector Milton Bennett. This mealybug is apparently restricted to various cultivars of the ornamentally planted *Miscanthus* grass, commonly referred to as maiden grass, zebra grass and eulalia. California infestations of the mealybug apparently originated from infested stock first found in nurseries in Virginia and Maryland in 1989. Other California records were Azusa, Los Angeles County in 1990, San Marcos, San Diego County in 1990, Santa Barbara, Santa Barbara County in 1990 and at Woodlake, Tulare County in 1997.

ASH PSYLLID, *Psyllopsis fraxinicola*, -(C)- This psyllid was rediscovered in California in 1987 in Fairfield, Solano County. It had been found in San Mateo and Madera County locations in the 1920s, but was not seen again until the Solano County collection. It has now been found in **Santa Cruz** County. The collection was made by Ag Extension Specialist Bill Chaney at Watsonville on July 29 from raywood ash. It is a minor pest of some varieties of ash trees and now is known to occur in Alameda, Santa Clara, San Joaquin, Sonoma, Yuba, Contra Costa, Merced, Mendocino, Butte and Santa Cruz Counties.

GLASSYWINGED SHARPSHOOTER, *Homalodisca coagulata* -(C)- This leafhopper was first recognized as established in California in 1994, although it was probably in the state prior to 1990. It is a large leafhopper ranging from 11 to 13.5 mm in length. It is a known efficient vector of a number of plant diseases caused by the richettsia-like organisms such as *Xylella fastidiosa*, the causative agent of Pierce's Disease of grapes, phony peach, citrus blight, oleander scorch, almond scorch and alfalfa dwarf. For more information see CPPDR 13(1-2):8, 10-11, 1994 and CPPDR 14(5-6):64, 66-68, 1994. It was recently collected at Goleta, **Santa Barbara** County on July 7 from a sticky trap. The collection was made by County Trapper E. Gliessman and County Entomologist J. Davidson. This insect now occurs in the counties of San Diego, San Bernardino, Los Angeles, Riverside, Orange, Ventura and Santa Barbara Counties.

EXCLUSION

Several pest species are collected every year on incoming or newly arrived nursery stock or other similar quarantine situations that are not considered to be established in the state. The following is an example of such rated pests found between July and December.

PINK HIBISCUS MEALYBUG, *Maconellicoccus hirsutus*, -(A)- Also called the pink mealybug, was found on *Euphoria longan* in a supermarket on September 11 in San Francisco, **San Francisco** County by Hoffman. This is a significant interception. The following information from the USDA Program Aid No. 1606 explains the economic importance of this mealybug:

> The pink hibiscus mealybug (PHM) is a serious new threat to U.S. agriculture. It attacks more that 200 plants, including beans, chrysanthemum, citrus, coconut, coffee, cotton, corn, croton, cucumber, grape, guava, hibiscus, peanuts, pumpkin, rose, and mulberry. This pest is presently established in central and northern Africa, India, Pakistan, northern Australia, and southeastern Asia. But it has recently arrived in tropical areas in the Western Hemisphere.
>
> Since it arrived in Grenada in 1994, the PHM has spread to Guyana in South America and at least 14 other Caribbean islands: St. Thomas, St. John, and St. Croix in the U.S. Virgin Islands; and St. Martin, St. Eustatius, St. Kitts, Nevis, Anguilla, Antigua, Ste. Lucia, St. Vincent, and Trinidad and Tobago. Eventually, this mealybug will spread to the continental United States. Heavy cottonlike, white, waxy buildup on the terminals, stems, and branches of the infested host plants may indicate a severe mealybug infestation.
>
> Identification: The adult female is about 3 mm long and wingless with white, flocculent wax covering the dorsal surface. It has two short, inconspicuous caudal filaments and no lateral wax filaments. The female's body and body fluid are both reddish. The female secretes a white cottonlike egg mass, irregular in shape, and lays from 300 to 600 pink eggs inside. First instar nymphs, or pink crawlers, emerge from the eggs. When the egg mass is teased open, the pink eggs and crawlers are exposed and easily seen. In tropical climates, it takes about 30 days to complete one generation.
>
> Damage: The PHM sucks juices from its host plant and injects a toxic saliva as it feeds. This process leads to the malformation of leaves and fruit, as well as stunted leaves and terminal growth, which is commonly called "bunchy top". This mealybug's feeding can also lead directly to the death of its host. Economic losses exceed $3.5 million a year in Trinidad and Tobago.

A SNAIL, *Zachrysia provisoria* , -(Q)- Found on February 25, 1998 in a nursery in Lodi, **San Joaquin** County by A. Lansigan. Several of these snails were found in the nursery. This snail is found frequently on nursery stock shipped from Florida.

BALSAM FIR GALL MIDGE, *Dasineura balsamicola* and **BALSAM GALL MIDGE,** *Paradiplosis tumifex*, -(B)- These two species of Cecidomyiid gall flies caused considerable excitement during the preholiday Christmas season this year. It was apparently a very good year for these insects in the northeastern parts of the United States, and many Christmas wreaths containing infested needles were rejected in quarantine, particularly by the central and northern coastal counties.

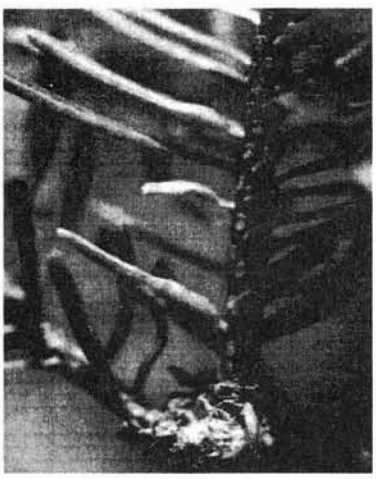
The balsam gall midge is responsible for the development of galls on the needles of balsam and Fraser fir (see Figs A & B). They can be found where balsam grows from the Canadian Maritime Provinces west to Wisconsin and south along the Appalachians to North Carolina. They are likely to occur for 2 or 3 consecutive years, and then may be absent or nearly absent for several years.

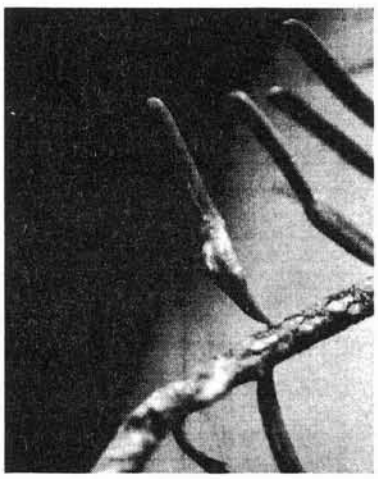
Eggs of *P. tumifex* are laid in early spring on elongating fir buds which yield larvae that crawl to feed on the immature needles. Gall formation begins within a week due to continuous exposure to gall-inciting chemicals from the maggot. The cells lining the resin ducts are altered by this formation, however, it does not affect the vascular bundle. In late summer the larva vacates the gall, dropping to the ground where it will pupate through winter. Once the gall has been abandoned, the leaf dies and drops to the ground.

The balsam fir gall midge (*D. balsamicola*) is closely associated with *P. tumifex* and has been thought to be the causal organism of the gall's rapid growth. It lays its eggs near the larvae of *P. tumifex* before the gall tissue covers the insects. When the gall is nearly closed, eggs of *D. balsamicola* hatch and the larva crawls into the gall opening, where it grows much faster than the gall maker. *P. tumifex* eventually dies, and *D. balsamicola* emerges and drops to the soil where it completes its lifecycle.

Richard Spadoni, Senior Inspector with Humboldt County, supplied the following notes on the recent quarantine rejections of balsam fir shipments originating in Maine:

> The number of live gall midge larvae found in individual shipments ranged from one to 631. The number of needles found showing galls was 4927; ranging from one to 404 on individual articles. Galls were found in every shipment from Maine. Larvae were found in every shipment from Maine except three.

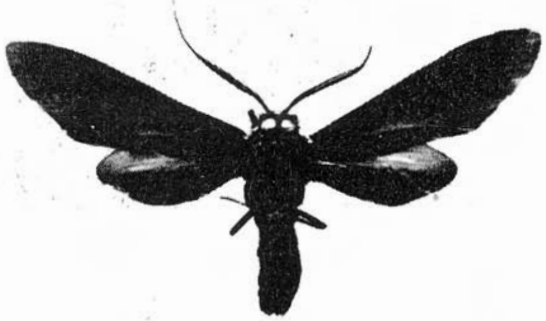
A 

B 

Photos by Richard Spadoni

The balsam fir gall midge complex is rated a "B" pest in California. This is because there was a collection or two of a *Dasineura* from the native white fir, *Abies concolor*, in Susanville, Lassen County and at Alturas, Modoc County in 1964 which was identified as possibly this species. To our knowledge they have never been recollected there. Whether or not this collection was either of the two species in question is unknown. No other similar fir infesting gall midges are known from the western United States, except for a similar group of species in the genus *Contarinia* that cause similarly shaped galls in needles of Douglas fir. Exclusion Specialists at CDFA are attempting to relocate the original collection sites in Lassen County to determine if possible which gall flies are involved. If they do not appear to be these two flies then a protocol for acceptance or rejection of future shipments of Christmas wreaths will be developed. Of primary concern, however, are some of the native firs, particularly in the north state, that could be severely injured by the introduction of either of these insects.

BANANA CTENUCHINE MOTH, *Antichloris viridis* -(C)- Ventura County Agricultural Biologist Tom Dimock was intrigued by a collection of this interesting moth by a home owner from Central American bananas purchased at a grocery store in Oxnard in June. The cocoon was found attached to the banana bunch and was brought to Tom for identification. Tom reared the moth and took it to Ron Leuschner at the Los Angeles County Museum of Natural History for identification. According to CDFA records, the moth has been collected approximately 20 times on incoming banana fruit since 1995, usually as cocoons. It is not considered to have any great economic significance, but it has a striking appearance as an adult and the homemaker probably would be concerned in finding the cocoons among the bananas, so now is a good time to call attention to its presence in the food market situation. The moths have a wingspread of one and a half inches, are coal black with a very dark iridescent emerald green or lemon yellow patch at the base of each forewing, and a white patch at the base of the venter of the abdomen.



banana ctenuchine moth, *Antichloris viridis*

BORDER STATIONS

Several notable pests were intercepted at border stations during 1998. Among these were Oriental fruit fly, originating from Thailand, as well as several zebra mussels. For other significant quarantine and border station interceptions, see pages 78-82.

Important "A", "B", and "Q" Rated Arthropods and Mollusks Intercepted in Quarantine through December 1998

Rating	Species	Common Name	Date	Origin	County	Host	Collector(s)
A	*Rhizotrogus majalis*	European chafer	07/07	Indiana	ALA	aircraft	Faria
A	*Anomala orientalis*	Oriental beetle	07/07	Tennessee	ALA	aircraft	Mason
A	*Anoplolepis longipes*	longlegged ant	07/07	Hawaii	ORA	cut foliage	Gibbs
A	*Orgyia leucostigma*	whitemarked tussock moth	07/07	Florida	SAC	asparagus fern	Bianchi
Q	*Orchamoplatus mammaeferus*	croton whitefly	07/16	Hawaii	SBA	*Alyxia olivaeformis*	Davis
Q	*Sophonia rufofascia*	two spotted leafhopper	06/26	Hawaii	LAX	automobile	Lawrence
Q	*Zachrysia provisoria*	snail	07/06	Florida	LAX	*Schefflera* sp.	Calicchia
Q	*Zachrysia provisoria*	snail	07/10	Florida	SBA	*Schefflera arboricola*	Davis
Q	*Proxys punctulatus*	stinkbug	07/13	Florida	SAC	*Plumosa*	Hightower
Q	*Pinnaspis uniloba*	unilobed scale		Hawaii	SBA	Lei/ti leaves	Davis
Q	*Prosapia bicincta*	twolined spittlebug	07/02	Tennessee	LAX	aircraft	Ramsey
A	*Chrysodeixus eriosoma*	green gardenlooper	07/09	Hawaii	SMT	*Cordyline terminalis*	Loux
Q	*Diploptera punctata*	Pacific beetle cockroach	07/15	Hawaii	SAC	flowers	Omar
Q	*Coccus acutissimus*	slender soft scale	07/16	Hawaii	LAX	Sago palm	Dias/Sadey
Q	*Morganella longispina*	plumose scale	07/17	Louisiana	ORA	*Plumeria* sp.	Sanford
Q	*Orchamoplatus mammaeferus*	croton whitefly	07/23	Hawaii	MER	cut flowers	Aguilar
A	*Ostrinia nubilalis*	European corn borer	07/21	Nebraska	SJQ	*Zea mays*	Giesing
A	*Lymantria dispar*	gyspy moth	07/17	New York	SBA	wood post	Davis
Q	*Geococcus coffeae*	soil mealybug	07/22	Hawaii	LAX	*Chamaedorea* sp.	Sader
A	*Ceroplastes rubens*	red wax scale	07/23	Hawaii	MER	cut flowers	Aguilar
Q	*Wasmannia* sp.	an ant	07/29	Costa Rica	SJQ	*Dracaena marginata*	Giesing
A	*Maladera castanea*	asiatic garden beetle	07/29		ALA	aircraft	Mason
Q	*Meghimatium striatum*	a slug	07/22	Hawaii	LAX	*Dracaena* sp.	Sader
A	*Cerotoma trifurcata*	bean leaf beetle	07/29	Ohio	ALA	aircraft	Mason
Q	*Pseudaulacaspis major*	lychee bark scale	08/07	Florida	ORA	*Dimocarpus longan*	Gibbs
Q	*Euetheola* sp.	scarab beetle	07/31		ALA	aircraft	Mason
Q	*Pinnaspis uniloba*	unilobed scale	08/05		SMT	*Alyxia olivaeformis*	Loux
A	*Anomala orientalis*	Oriental beetle	07/14	Ohio	LAX	aircraft	Frerking
A	*Anomala orientalis*	Oriental beetle	07/30	Tennessee	ALA	aircraft	Grazzini
Q	*Coccus acutissimus*	slender soft scale	08/07	Florida	ORA	*Dimocarpus longan*	Gibbs
A	*Rhizotrogus majalis*	European chafer	08/13	Utah/Texas	ALA	aircraft	Fario/Mason/ Grazzini
Q	*Zachrysia provisoria*	a snail	08/11	Florida	SJQ	*Cordyline terminalis*	Lanchester
Q	*Zachrysia provisoria*	a snail	08/11	Florida	SJQ	*Ficus benjamina*	Lanchester
Q	*Orthezia tillandsiae*	Spanish moss orthezia	08/10	Florida	LAX	airplants	Park
A	*Rhizotrogus majalis*	European chafer	08/13	Texas	ALA	aircraft	Faria

Rating	Species	Common Name	Date	Origin	County	Host	Collector(s)
B	*Ferrisia virgata*	striped mealybug	08/12	Costa Rica	SBA	croton	Davis
A	*Maladera castanea*	asiatic garden beetle	08/05		ALA	aircraft	Faria
A	*Rhizotrogus majalis*	European chafer	08/20		ALA	aircraft	Mason
A	*Rhizotrogus majalis*	European chafer	08/21		ALA	aircraft	Mason
Q	*Rhizoecus hibisci*	root mealybug	08/11	Florida	LAX	*Ravenea rivularis*	Rose
Q	*Palmicultor palmarum*	palm mealybug	08/24	Hawaii	SMT	*Strelitzia augusta*	Loux
A	*Pinnaspis buxi*	boxwood scale	08/25	Hawaii	SJQ	*Cordyline terminalis*	Lansigan
A	*Orgyia leucostigma*	whitemarked tussock moth	08/17	Florida	SAC	asparagus fern	Bianchi
A	*Ostrinia nubilalis*	European corn borer	08/20	Nebraska	SJQ	*Zea mays*	Giesing
A	*Coccus viridis*	green scale	08/06	Hawaii	VEN	*Cordyline terminalis*	Alamillo
B	*Ferrisia virgata*	striped mealybug	08/06	Hawaii	VEN	*Cordyline terminalis*	Alamillo
A	*Rhizotrogus majalis*	European chafer	08/26		ALA	aircraft	Mason
Q	*Ponera* sp.	an ant		Florida	LAX	*Ficus benjamina*	Cartana
Q	*Camponotus* sp.	carpenter ant	08/20	Tennessee	LAX	aircraft	Ramsey
B	*Diaphania nitidalis*	pickleworm	08/26	Florida	SMT	*Tindora*	Loux
A	*Lymantria dispar*	gyspy moth	08/28	Massachusetts	ALA	plastic patio chair	Pleasanton
A	*Anomala orientalis*	Oriental beetle	08/26		ALA	aircraft	Grazzini
Q	*Aspidiotus excisus*	aglaonema scale	08/26		SJQ	*Aglaonema* sp.	Curry
A	*Bactrocera dorsalis*	Oriental fruit fly	08/26	Thailand	LAX	*Euphoria longan*	Arellano
A	*Bactrocera dorsalis*	Oriental fruit fly	08/22	Thailand	LAX	*Euphoria longan*	Arellano
Q	*Conopomorpha* sp.	Gracillariid moth	08/22	Thailand	LAX	*Euphoria longan*	
Q	*Geotomus pygmaeus*	a burrowing bug		Hawaii	ALA	*Zingiber* sp.	Albrecht
A	*Howardia biclavis*	mining scale	08/24	Florida	ORA	*Ficus benjamina*	Fernandez
A	*Lymantria dispar*	gyspy moth	08/26	Connecticut	SFO	wooden lounge chair	Lino
A	*Malacosoma americanum*	eastern tent caterpillar	08/26	Connecticut	SFO	wooden lounge chair	Lino
Q	*Coccus formicarii*	a soft scale	08/22	Thailand	LAX	*Euphoria longan*	Arallano
Q	*Thysanofiorinia nephelii*	longan scale	08/20	Florida	ALA	*Euphoria longan*	Albrecht
Q	*Thysanofiorinia nephelii*	longan scale	08/21		ALA	*Euphoria longan*	Albrecht
Q	*Zachrysia provisoria*	a snail	09/11	Florida	SDG	*Schefflera arboricola*	Matsumoto
Q	*Zachrysia provisoria*	a snail	09/09	Florida	SCL	*Areca* palm	Nachand
Q	*Rhizoecus hibisci*	root mealybug	09/10	Florida	ALA	*Ravenea rivularis*	Fernandez
Q	*Orchidophilus* sp.	a weevil	09/02	Hawaii	LAX	cut flowers	Dias
Q	*Pheidole* sp.	an ant	09/15	Costa Rica	SDG	*Dracaena* sp.	Connelly
A	*Pinnaspis strachani*	lesser snow scale	09/10	Hawaii	LAX	*Cyphosperma* sp.	Sium
Q	*Empoasca* sp.	a leafhopper	09/10	Florida	SCL	*Cordyline terminalis*	Walter
A	*Aonidiella orientalis*	Oriental scale	08/13	Puerto Rico	LAX	*Cocos nucifera*	Rose
Q	*Nysius* sp.	a seed bug	09/01	Hawaii	LAX	orchid	Bakri
B	*Diaphania nitidalis*	pickleworm	09/16	Florida	SMT	*Tindora*	Loux
Q	*Aleurotrachelus* sp.	a whitefly	09/03	Hawaii	SBA	*Chamaedorea* sp.	Davis/Stark

Rating	Species	Common Name	Date	Origin	County	Host	Collector(s)
A	*Chrysodeixis eriosoma*	green garden looper	09/22	Hawaii	SCL	*Heliconia* sp.	Nachand
Q	*Pseudaonidia trilobitiformis*	trilobe scale	10/02	Thailand	SCL	*Euphoria longan*	Price
Q	*Toumeylla pini*	striped pine scale	09/22	Colorado	MNT	*Pinus* sp.	Oliver
A	*Aspidiotus destructor*	coconut scale	09/22	Hawaii	SFO	bitterleaf	Lino
B	*Diaphania nitidalis*	pickleworm	10/14	Dom. Republic	SMT	*Tindora*	Garibaldi
B	*Diaphania nitidalis*	pickleworm	10/14	Dom. Republic	SMT	*Tindora*	Garibaldi
Q	*Dichromothips corbetti*	a thrips	10/02	Hawaii	VEN	*Dendrobium* sp.	Alamillo
A	*Hemiberlesia palmae*	tropical palm scale	10/06	Hawaii	ORA	bromeliads	Wynn
Q	*Philephedra tuberculosa*	a soft scale	10/07	Florida	SON	*Spathipyllum* sp.	Correia
A	*Pinnaspis strachani*	lesser snow scale	10/05		ORA	*Chamaedorea* sp.	Fernandez
A	*Planococcus lilacinus*	a mealybug	10/02	Thailand	SCL	*Euphoria longan*	Kiser
Q	*Euxoa* sp.	a cutworm	10/07		LAX	lindgren funnel trap	Arroyo
Q	*Banza* sp.	a katydid	02/12/98	Hawaii	ORA	*Cordyline terminalis*	Barnes

Border Stations

Important "A", "B", and "Q" Rated Arthropods and Mollusks Intercepted through December 1998

Pest	Station	Date	Origin	Collector	Host
whitemarked tussock moth-*Orgyia leucostigma*	WI	06/25	Maryland	Vasquez	underneath RV
whitemarked tussock moth-*Orgyia leucostigma*	YE	06/29	New York	Villegas	travel trailer
European corn borer-*Ostrinia nubilalis*	LO	06/30	Kansas	Rudolph	*Zea mays*
zebra mussel-*Dreissena polymorpha*	YE	07/01	Ohio	Holman	sailboat
Colorado potato beetle-*Leptinotarsa decemlineata*	DO	06/30	Oregon	Garrison	Canola seed
Colorado potato beetle-*Leptinotarsa decemlineata*	DO	06/30	Oregon	Gleason	Canola seed
Colorado potato beetle-*Leptinotarsa decemlineata*	DO	06/30	Washington	Garrison	Canola
Oriental scale-*Aonidiella orientalis*	NE	03/05	Florida	Friedman	*Cocos nucifera*
Oriental scale-*Aonidiella orientalis*	NE	03/05	Florida	Friedman	*Cocos nucifera*
wax scale-*Ceroplastes* sp.	TR	05/18	Florida	Morrow	trees
an aphid-*Acyrthosiphon* sp.	LO	04/04		Rudolph	*Citrus sinensis*
an aphid-*Calaphis* sp.	NE	05/19	Arkansas	Derichsweiler	trailer floor
whitemarked tussock moth-*Orgyia leucostigma*	LO	07/18	New York	Rudolph	frame
European corn borer-*Ostrinia nubilalis*	NE	07/20	Arkansas	Guthrie	*Zea mays*
gyspy moth-*Lymantria dispar*	NE	07/16	Maryland	Derichsweiler	camper frame
gypsy moth-*Lymantria dispar*	NE	07/13	New York	Johnson	chassis
an ant-*Camponotus abdominalis*	NE	07/29	Florida	Shelton	cut flowers
an ant-*Colobopsis* sp.	VI	06/24	Arkansas	Gresick	trailer
longan scale-*Thysanofiornia nephelii*	HO	06/06	Oregon	Martinez	*Litchi chinensis*
arrowhead scale-*Unaspis yanonensis*	AL	12/09/97	British Columbia	Leneave	*Citrus* sp.
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	07/18	British Columbia	Whitman	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	07/19	Oregon	Pastell	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	07/29	Oregon	Bridges	
European corn borer-*Ostrinia nubilalis*	WI	07/09	Louisiana	Vanhorn	*Zea mays*
oak phylloxera -*Phylloxera* sp.	VI	07/30	Texas	Granger	trailer carrying fertilizer
European corn borer-*Ostrinia nubilalis*	NE	08/03	Missouri	Walker	*Zea mays*
bean leaf beetle-*Cerotoma trifurcata*	NE	08/04	Missouri	Urquidi	*Phaseolus* sp.
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	VI	07/25	Mexico	Duitsman	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	08/02	Idaho	Whitman	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	09/01	Washington	Middleton	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	VI	08/01	Mexico	Duitsman	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	08/04	Oregon	Whitman	*Mangifera indica*
zebra mussel-*Dreissena polymorpha*	NE	04/07	Maryland	Freidman	boat
squarenecked grain beetle-*Cathartus quadricollis*	BL	08/20	Mexico	Villa	trailer
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	DO	08/11	Idaho	Garrison	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	08/09	Washington	Baker	*Mangifera indica*
Japanese beetle-*Popillia japonica*	SM	08/17	Rhode Island	Kirkland	front of travel trailer
cotton bud thrips-*Frankliniella schultzei*	AP	09/04	Florida	Sohal	*Saintpaulia* sp.

Pest	Station	Date	Origin	Collector	Host
Parlatoria date scale-*Parlatoria blanchardi*	AP	09/23	New York	War	palms
Euonymous scale-*Unaspis euonymi*	AP	10/02	Massachusetts	Wion	deciduous bush
an ant-*Lasius* sp.	NE	08/12	Ohio	Urquidi	*Zea mays*
an ant-*Crematogaster* sp.	NE	08/15	Oklahoma	Guthrie	*Prunus persica*
a casebearing moth-*Coleophora* sp.	HO	08/20	New Hampshire	Whitman	RV
a leafhopper-*Homalodisca* sp.	NE	08/12	Tennessee	Johnson	outdoor plants
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	08/23	Oregon	Bridges	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	HO	08/22	Oregon	Whitman	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	VI	09/11	Mexico	Connors	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	DO	09/04	Oregon	Bienenfield	*Mangifera indica*
vanda orchid scale-*Genaparlatoria pseudaspidiotus*	VI	09/01	Mexico	Guilin	*Mangifera indica*
crambine pyralid moth-*Diatraea* sp.	BL	09/15	Mexico	Kane	*Saccharum officinarum*
a gracillariid moth-*Conopomorpha* sp.	HO	08/25	Washington	Morris	*Euphoria longan*

Submitting Disease, Nematode, Insect, Weed or Seed Samples to the Lab

Compiled by Daud Senzai, CDFA Agricultural Biologist

A. Plant Disease Samples:

A sample should be submitted to the Plant Pathology Laboratory located on Meadowview Road in Sacramento, any time you intercept plant material which you believe may be infected with a quarantined virus, bacteria, or fungus. The following are guidelines for submitting such samples:

1. Collect as many portions of the symptomatic diseased plants as possible (roots, branches, stems, leaves, and fruit), entire plants may be submitted if small. Mark suspected symptom areas with tape, string, or waterproof pen, directly on specimen. Include specimens that exhibit margins of healthy and diseased tissues. These margin areas will facilitate testing and disease determination.

Virology specimens should include "green" plant tissues associated with the symptomatic tissues (area). Dry necrotic or rotting "brown" areas are impossible to test for viruses.

Mycology & Bacteriology specimens should include as much of the margin area (healthy/diseased) as possible. This area is where the fungus or bacteria is still alive and active, facilitating isolation and identification.

2. Packaging of samples is dependent on the material you wish to send: 1) Leaves - Place loosely in plastic bag with dry paper towels. 2) Stems - Cut to size and place in small plastic bag with crumpled paper towels. Lighty moisten towels if dry conditions occur. 3) Roots - Wash free of soil and send like stems. 4) Whole plants - Bag roots to separate from top then bag whole, intact plant. Specimens submitted in plastic bags should have holes punched in bags. This will allow specimen to "breathe" and not kill the organism. Do not enclose the PDR document inside the bag.

3. When filling out the Pest Damage Report (65-020) be sure to complete all pertinent spaces. Under the space marked "remarks," note what you suspect, what you want them to identify, and anything else that may help with the diagnosis. Please include FAX and Phone# where necessary on the PDR for immediate reply, etc.

4. Samples should be refrigerated and submitted as soon as possible. Samples collected in the field should be stored in an incubated cooler with blue ice, but not touching the blue ice. Keep specimens at approx (50-55F).

5. Specimens should be mailed early in the week (e.g. Mon. Thru Wed.) To avoid lay-overs during the week-end which may cause sample spoilage.

   Do not send specimens by Greyhound, as notification may be slow and CDFA personnel are not available to pick up the sample immediately. (UPS is a good shipping alternative if not too expensive).

B. **Nematode Samples:**

Damage to plants caused by plant parasitic nematodes cannot be diagnosed on the basis of plant symptoms. Plants affected by nematodes may either be without symptoms of damage, or with general symptoms of an impaired root system commonly produced by several biotic and/or abiotic conditions. In order to detect the presence of plant parasitic nematodes associated with plants, samples are collected appropriate to the biology and feeding behavior of nematodes. Most nematodes of quarantine significance feed on plant root tissue, e.g., Burrowing Nematode, Reniform Nematode, Sting Nematode, European Dagger Nematode and Soybean Cyst Nematode. Others, such as the Strawberry Summer Dwarf Nematode feed on above ground plant parts. The following guidelines concern the collection, preservation and shipment of quarantine samples for nematode assay:

1. Collect up to one quart of roots and soil from plant, *when possible.* If shipment is less than one quart, then collect one cup full of roots and soil. If less than one cup, collect as much of a representative sample as possible.

2. Collect roots and soil from several plants (subsamples) in large shipments. Mix subsamples to composite sample. Sample plant varieties separately.

3. When sample comprises a few roots without soil, and no processing facility exists in the county laboratory, put roots in a nematode sample vial with one or two drops of water and send by the quickest mail to CDFA's Nematology Laboratory. More than one vial per sample may be used as long as proper and complete designation is given. When the root sample is large, put roots with one or two drops of water in a plastic bag. Avoid large air spaces by sealing (tying) the bag close to the enclosed sample.

4. Do not moisten sample by enclosing a moist paper towel in sample bag.

5. Put sample in durable plastic bag only. Use two bags if necessary. Dry seed samples may be put in durable plastic, paper or cloth bags. Raw vegetable and above ground plant parts should be put in plastic bags.

6. Label sample bag. Do not enclose label tag in bag. For shipment to laboratory, place all written material in box, *not* within sample bag.

7. Keep samples cool (50-55F). During collection, put samples in an insulated cooler. Use a blue ice packet if necessary, however, wrap packet in paper to prevent freezer burn of sample through direct contact. Do not freeze sample. Do not place samples in direct sunlight or in car trunk.

C. **Insect Specimens:**

The following is a simple outline of collecting, preserving and shipping techniques which will assist field personnel in submitting specimens to the CDFA Plant Pest Diagnostics Branch in Sacramento:

All samples should be mailed in boxes, such as the ones provided by CDFA. Do not submit samples in envelopes, even the padded ones. The samples invariably arrive crushed.

Alcohol (70% isopropyl) is supplied in small vials by CDFA. These vials should be used for most general collecting work. Larger collection containers will have to be supplied by the collector. Any jar or vial with a tight fitting lid is adequate, and these can be filled with common rubbing alcohol.

Killing bottles can be used for some groups of insects, especially adult Lepidoptera. Cyanide is no longer recommended, but ethyl acetate or fingernail polish remover (use few drops on absorbent paper wad) can be used for this purpose.

Some specimens, especially the relatively non-mobile insects such as **scale insects and whiteflies,** are best sent dry, either in perfectly dry vials or in paper or plastic bags. If the sample is in bags, some amount of paradichlorobenzine (PDB, moth balls or flakes). should be included in the container to kill anything that might be alive. The PDB must be wrapped and sealed in paper toweling or tissue to keep it from mixing throughout the sample.

Try to collect an adequate number of specimens. Variability is a common problem in some species groups, and a large series facilitates the taxonomist's ability to give correct determinations. Also, a series may assure that the proper life stage necessary for identification is present, especially in the case of those insects which have incomplete metamorphosis.

Whenever possible the sample should include the host plant. Small **arthropods** such as **scales, whiteflies, aphids, mites, thrips** and the like are easily damaged if collected individually. Parts of the plants with the specimens attached are often best collected by placing the infested plant parts directly into alcohol. However, be careful not to take whole leaves and roll them too tightly in order to get them into a small vial, because the leaves turn brittle and will shatter when removed from the vial. The specimens may also be crushed.

The following recommendations apply to individual arthropods or other groups:

ACARI (mites) are best collected associated with part of the leaf or other plant parts.

Identifications, particularly of the tetranychid mites, require the male mite. Collecting a good sample on infested plant parts improves the chances that a male will be present in the sample. Samples could be collected in bags if the sample is mailed as soon as possible after collection, and the mail service to Sacramento is generally good. Too long a wait results in dried out or moldy samples and lost specimens.

ORTHOPTERA are best collected into alcohol, either using a large vial or inserting into a small vial posterior end first. Grasshoppers and katydids inserted into a vial head first often cannot be extracted without breaking off the rear appendages.

HETEROPTERA - HEMIPTERA (true bugs) should be collected directly into alcohol.

HETEROPTERA - "HOMOPTERA" (Scales, mealybugs, whiteflies, aphids, psyllids, leafhoppers etc.) are collected in a number of ways depending on the group. Scale insects and immature whiteflies can be submitted in alcohol, but it is preferable if they are sent on the host plant in plastic bags. Adult whiteflies should be collected in alcohol, because they are small and fragile enough to be lost or broken in transit. Also, in the case of whiteflies for positive identification, it is usually necessary to have the last stage nymph or pupa in the sample. Mealybugs should always be collected into alcohol and can be collected with part of the host if convenient. Most mealybugs are mobile throughout life and will often get into corners of the collection bag and be crushed; therefore the alcohol is necessary to prevent this. While mealybug wax patterns can be used for tentative field identification, the wax patterns are not used in Sacramento for identification; therefore, it is not important if the wax comes off the specimen in alcohol. Also, mealybugs usually must be slide mounted using a process that takes several hours at the very least, and the turn around time in this group is generally longer than for the rest of the scale insects, which often do not require this same preparation. Aphids and psyllids should be collected in alcohol and should never be preserved dry. Alcohol is preferable for the leafhopper, cicada, treehopper groups, but dry or pinned material is adequate.

THYSANOPTERA (thrips) must be shipped in alcohol. They are best collected by beating the host over a light and/or dark paper or cloth sheet and capturing with a wetted camel hair brush directly into alcohol. If the host is not a valuable one, the camel hair brush can be used to collect the thrips directly into the vial.

COLEOPTERA (beetles) may be killed in either alcohol or a killing bottle. Immature stages should be dropped in boiling water for 1-2 minutes and then transferred to 70-75% alcohol. If it is not possible to kill them in boiling water, specimens may be placed in the vial of alcohol and carefully boiled by the application of heat using a match or cigarette lighter. Either method keeps the immature stages from turning black. If beetles in any stage have been killed in alcohol, they may be preserved and shipped in the same material. If killed by other methods, adults may be transferred to alcohol or layered between such material as Kleenex or paper napkins - do not use cotton as the fibers become tangled about appendages and removal breaks them off. Broken and missing tarsal or antennal segments hamper identification.

DIPTERA AND HYMENOPTERA: Adults of all Diptera and Hymenoptera are most easily handled for identification if sent to the laboratory preserved fresh in 70-75% alcohol. Most may be killed and preserved directly in the alcohol. Specimens which are dead when found should be carefully placed in hot water for 10 minutes before being transferred to alcohol. This softens the tissue and prevents breakage.

Larvae of Diptera and Hymenoptera should be submitted for identification in 70-75% alcohol. They are best preserved if fixed before preservation. Fixing may be accomplished by dropping the living larva in boiling water or alcohol for 1-2 minutes.

Larvae of Diptera and Hymenoptera are usually much more difficult to identify than the adults, so if at all possible, adults should be associated with larvae, preferably by rearing.

If it is not possible to rear adults and send them along with the larvae, a sample of the damage caused by the larva should be submitted.

LEPIDOPTERA (moth and butterfly) adults should be submitted in alcohol only as a last resort. Wing color patterns may be critical for identification and these are often destroyed in alcohol. After killing in a kill jar or by freezing, adult Lepidoptera should be placed in a container lined with soft paper toweling or Kleenex such that the specimens will not shift around during shipment. Where numerous specimens are to be sent, several layers of insects and paper may be placed in a shipping box.

Larvae of the Lepidoptera should be killed in boiling water and transferred after 1-2 minutes into 70-75% alcohol. If boiling water is not available heat the alcohol vials as described under Coleoptera.

ODONATA, NEUROPTERA, DERMAPTERA and other miscellaneous orders not covered above can be sent dry or in alcohol. If sent dry, they should be carefully layered in tissue paper and packed so as to not break apart during shipping.

GASTROPODA (snails and slugs) should be collected in alcohol, allowing for approximately 10 times the specimen body size with alcohol.

Things to be aware of when filling out PDR slips:

Use correct activity codes:

Quarantine inspections use codes beginning with "0."

Nursery inspections use codes beginning with "7."

Detection surveys use code "12."

General situations use code "10."
(These usually involve "walk-ins" by members of the public.)

The "city" given should be the location of the collected specimen. And, please do not abbreviate city names.

If the specimen was collected during a quarantine inspection, we need the quarantine origin.

Always state the host from which the specimen was collected. This may not always be plant material; it may be a building or a home.

A slip filled out as completely as possible increases the accuracy of record keeping. Slips appropriately marked "RUSH" are handled expeditiously. Phone calls are made to the county offices on those involving quarantines or human health problems. All others are mailed as soon as they are returned from the entomologist.

A reminder regarding abbreviations — please don't use them. States are easy to figure out, but city and street names and many hosts can be a challenge.

Please write your first and last name on PDR. This helps the lab to credit the collector in publications dealing with new or otherwise important collections.

Things to be aware of when submitting insect specimens to the lab:

Nothing should be sent to the lab alive unless first cleared by the entomologist involved.

There should be enough alcohol in the vial to cover the specimen and then some (See Gastropoda above). If not properly preserved, the specimen can rot by the time it is received and be unidentifiable. (It can also be very smelly!)

When submitting insects still in traps, please protect the slips from the sticky material.

Please make sure each vial or trap has a corresponding slip # attached to it.

Please submit specimens in clear vials or bottles and make sure the corresponding slip # is attached lengthwise to that vial or bottle. This facilitates viewing of the specimen.

Gypsy Moth Samples: Submit a lab sample when evidence of any life stage is found. Use the following procedures when submitting egg masses for confirmation.

1. When removing egg masses, use only enough detergent solution to prevent scattering of eggs.

2. Place the egg mass in a dry container. Do not soak in detergent solution.

3. Using a dissecting scope, forceps and a pin, rupture a small number of eggs to determine if they are filled with fluid.

4. Place the remaining egg mass in alcohol and send it to the lab. Write on the PDR under "REMARKS" that some of the eggs were examined and found to be filled with fluid. All specimens submitted in the manner described above will be identified as viable or non-viable by the lab. .

Fill out a PDR on all gypsy moth specimens whether or not they appear to be alive. Before submitting specimens, assure that all life stages are dead. In the "REMARKS"section of the PDR include the following information:

If egg mass, whether they were examined and filled with fluid

County or border station name

Number of the 66-008A

If OHA document was present or absent

Affix the gummed label from the PDR slip to the copy of the 66-008A that is mailed to Sacramento.

D. **Weed Samples:**

Plant specimens in plastic bags or bottles always run the risk of arriving at the laboratory decomposed or "cooked" beyond recognition. The preferred way to send a plant specimen to the Botany (Weed) laboratory is to place the specimen between sheets of folded newspaper. Don't use tape or staples; they aren't needed and only get in the way.

Put the specimen in a manila envelope, or a flat box. A very good shipping container can be made from two pieces of corrugated cardboard. Place the specimen and the PDR slips between the two pieces of cardboard and then seal with shipping tape around the edges. The mailing label is placed on the outside and it's ready for mailing. Several counties have used this method for years with excellent results.

Even very delicate aquatic plants such as hydrilla or elodea should be sent this way. If the newspaper becomes soggy, you should change the paper, perhaps several times, to remove the excess moisture before sending the specimen. This will help to dry it out and keep it from rotting while it is in transit.

Remember: A specimen can never become *too* dry. Dry plant material can always be examined and identified by a plant taxonomist, but nothing can be done with a soggy, moldy and decomposing specimen.

E. **Seed Samples for Noxious Weed Seeds:**

Seed for quarantine purposes should be collected and submitted in the same manner as Regulatory seed samples. The California Seed Law lists the appropriate amount of seed necessary for an exam.

Seed which is treated (includes those treated with pesticides, fertilized, pelleted, coated, or dyed) **SHALL BE PLACED IN PLASTIC** BAGS. If samples are not in plastic, the sample may not be processed.

If the sample is a seed mixture, a copy of the seed label with the percentages of the components shall be submitted.

A sample submitted as a quarantine and a regulatory must have both an Inspector's Description of Sample (Official Sample Form) and a PDR with the following:

One PDR per sample

Note the origin of the seed (as well as where shipped from and the destination)

Remember to fill the shipment size of the lot shipped/received. Also, include the size of the container. E.g., 20/50#, or 1,000#/50# - not 20 sacks

Host/Crop section enter kind of crop. E.g., tall fescue, not grass seed

In the REMARK section of PDR, enter: Lot Number, Type of treatment, etc. **Signal words- Noxious Weed Exam, Rush,** and Fax or Phone number of County contact (not the seed company).

F. **Seed Samples Submitted for Mill Approval:**

Samples are best submitted in brown paper bags (double bagged in necessary). Write one PDR with the following REMARKS:

If sample is processed (cracked, rolled, pelleted, heat treated, etc.), use the words: **Mill Approval, check viable weed seeds.**

If sample is from a cleaner, use the words: **Mill Approval, check for noxious weeds.**

G. **Individual Seeds Submitted for Identification:**

Seed samples may be submitted any way except in alcohol with complete information on PDR.