California Plant Pest & Disease Report

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Plant Pest Diagnostics Branch
3294 Meadowview Road
Sacramento, California 95832, USA

2007 – Volume 23, Number 1 *Covering period from July 2005 through December 2006*

California Plant Pest & Disease Report

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Funding for this publication was provided through the
California Department of Food & Agriculture and USDA-APHIS-PPQ.

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Cover Photograph:
The parasitic plant, *Cuscuta japonica* Choisy (Convolvulaceae), Japanese dodder, covering a 25 ft. tall tree in Sacramento in June 2006. Photo by Terra Irving, CDFA/PPD.

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INTRODUCTION

The California Plant Pest & Disease Report was last printed and issued as Volume 22, Number 1, in 2005, covering the period of July 2002 through July 2005. Since that time, there have been many significant pest finds in the State of California not published through this medium. The current issue (Volume 23, Number 1) covers the time period from the end of Volume 22 through December 2006.

SIGNIFICANT RECORDS IN ENTOMOLOGY

ACARINA

New species – Eriophyidae
An eriophyid mite

Prepared by P. Kerr

Venegasia carpesioides DC (Asteraceae) is a woody, perennial sunflower present in the coastal canyons of central and southern California and Baja, Mexico. Commonly known as Canyon Sunflower, it is the only species of its genus. Although attractive and robust, the canyon sunflower is not a common horticultural plant. An organic nursery specializing in restoration of native habitats in Santa Barbara County is one of the few commercial operations with experience in growing *Venegasia carpesioides*. At this nursery, it was noticed that some plants of this species exhibited leaf deformation such as puckering and curling and leaf stippling.

A sample of an infected plant was sent to the lab in June, 2006. Eriophyid mites were determined to be the cause of the damage, collected off the plants, and relayed to eriophyid specialist Dr. James Amrine, at West Virginia University, for further identification. Dr. Amrine identified the mite as a new species of *Aceria* (Eriophyidae). He noted, however, the mite has a mix of qualities found in two genera. The shield is like an *Abacarus*, but the rest of the body is like a typical *Aceria*.

Fig. 1. *Venegasia carpesioides* DC (Asteraceae) exhibiting leaf deformation and stippling damage caused by undescribed species of eriophyid mite. Photo by John Warner.

For this reason, this mite is important from a phylogenetic and taxonomic standpoint. Its future study, in a phylogenetic context, may test whether *Abacarus* (Phyllocoptinae, Anthocoptini) and other *Aceria* stem from the same evolutionary lineage or not. As a result, the taxonomic status of these eriophyid genera may be assessed. Mites were preserved in 100% EtOH and deposited in the CSCA-Frozen Tissue Collection to preserve their DNA in order to facilitate future studies.

Most eriophyid mites are exceptionally host specific and due to the relatively isolated phylogenetic position of its host, it is unlikely that the mite found on canyon sunflower poses a danger to commercially grown sunflowers or other commercially grown composites. Since the discovery of this mite, the nursery in Santa Barbara has kindly assisted in the collection of additional material. A paper describing this new eriophyid species will be forthcoming, in a collaboration between Dr. Amrine, Dr. Ronald Ochoa (ARS-USDA), and PPDB biosystematist Peter Kerr.

COLEOPTERA

***Protaetia orientalis* (Gory & Percheron)** – Scarabaeidae: Cetoniinae
Oriental flower beetle

Prepared by C. Bellamy

Adults are 20 to 25mm long. Their bodies vary in color from glossy dark green to red-black, with white spots on the wing cover. They have diurnal habits and emerge from late May to September. As with a number of Asian scarab beetles, this species has the potential to feed on a large variety of endemic, ornamental and crop species. A single adult was collected from Lindgren funnel traps as part of the exotic wood-boring beetle survey collaboration between CDFA and USDA.

Figures. Oriental flower beetle, *Protaetia orientalis*.

***Icosium tomentosum* Lucas** – Cerambycidae: Cerambycinae: Achrysonini
A longhorn beetle

Prepared by C. Bellamy

Icosium tomentosum is a circummediterranean species represented by two distinct subspecies: *tomentosum* Lucas, 1854 and *atticum* Ganglbauer, 1881. *Icosium tomentosum atticum* is mainly an East Mediterranean subspecies occurring in Turkey, Balkan Peninsula and reaching South France in the West. Both subspecies develop in various Cupressaceae (*Juniperus*, *Cupressus*, *Thuja*, *Callitrix*, *Tetraclinis*, etc.). Larvae first feed under bark and later enter the wood of recently dead or moribund hosts. The adults are nocturnal and frequently come to light. The identity of this species was confirmed by Steve Lingafelter, Systematic Entomology Lab., ARS, USDA.

The recently collected specimen came from Lindgren funnel traps baited with UHR ethanol at green waste recycling site in Orange, Orange Co. as part of the exotic wood-boring beetle survey collaboration between CDFA and USDA.

These data and images are from http://www.uochb.cas.cz/~natur/cerambyx/it.htm

Figures. *Icosium tomentosum*.

***Chrysolina bankii* (Fabricius)** – Chrysomelidae: Chrysomelinae
A leaf beetle

Prepared by C. Bellamy

A native of the western Palearctic region, including western Europe and North Africa (Algeria, Azores, England, Italy, Madeira, Malta, Morocco, Spain, Tunisia, etc.). This is a new record for California and North America. The identification was confirmed by Alexander Konstantinov, Systematic Entomology Lab., ARS, USDA. This species was reportedly collected by an entomology student from Colorado State University several years ago and the specimen first seen by Shawn Clark, BYU, Provo, Utah. In late November 2006, Art Gilbert and Curtis Takahasi collected specimens near Half Moon Bay, San Mateo Co., from wild mint, *Stachys bullata* Benth.

(Lamiaceae). In this same area, there are tracts of agriculture growing various herb and spice plants, including several species of exotic mints.

There are two endemic California species that may be confused with *C. bankii*: *C. extorris* Brown, 1962 and *C. gemellata* (Rossi, 1792) but both differ by having darker coloration and smaller size.

Figures. *Chrysolina bankii*, from left: adult male, adult female, male aedeagus (ventral, lateral), adult in nature.

HEMIPTERA: HETEROPTERA

NEW STATE RECORDS

***Agonoscelis puberula* Stål** – Pentatomidae
African cluster bug

Prepared by R. Garrison

A recent article on this African species reports its recent introduction to the New World (Thomas, D. B., J. E. Eger, W. Jones, and G. Ortega-Leon. 2003. The African cluster bug, *Agonoscelis puberula* (Heteroptera: Pentatomidae). *Florida Entomologist*, 86(2): 151-153 [online at: http://www.fcla.edu/FlaEnt/fe86p151.pdf]. When found in Morelos State, Mexico, this small (approximately 7-9 mm) stink bug was tentatively identified by the junior author above as an undescribed species of *Trichopepla*, a superficially similar genus of stink bugs found in the New World. The following is quoted from their paper:

> *Agonoscelis puberula* has a distinctively marked hemelytral membrane featuring dark radiating stripes [see detail photo below]. This character is variable among species of *Agonoscelis*, but the membrane is unmarked in all species of *Trichopepla* (McDonald 1976 [Revision of the genus *Trichopepla* (Hemiptera: Pentatomidae) in N. America. Journal of the New York Entomological Society 84: 9-22]); thus, the striped membrane allows quick recognition of this adventive stink bug.

And:

> *Agonoscelis puberula* is native to southern and eastern Africa extending northward to the Arabian peninsula. Our oldest New World record dates from 1985 on the island of Jamaica. The first record for the United States was from Arizona in 1990. U.S. records include Arizona, New Mexico, and Texas. It is also well established in Mexico with records from Yucatan in the south to Nuevo Leon in the north covering the years 1988 to 2001.

A series of this species was first collected in California from Ontario, **San Bernardino** County, in a vineyard on 19 August, 1997 by David C. Hawks, University of California, Riverside, on its known host plant, common horehound (*Marrubium vulgare* (Labiatae)). Thomas *et al.* (2003) report that "According to Correll and Johnston (1970. Manual of the vascular plants of Texas. Texas Research Foundation, Renner, Texas.), common horehound is widely distributed in North America, flowers throughout the year, and is a weed typical of waste places and roadsides." Another specimen was collected in **Los Angeles** County at a nursery on 5 November 2002 by Los Angeles County Agricultural Inspector T. Heskra. A series of this species has since been collected from a residential garden in Ontario on 15 November and 1 December 2006.

The following photographs of *Agonoscelis puberula* and *Trichopepla aurora* Van Duzee should enable recognition of the former species.

Figures. Left – African cluster bug, *Agonoscelis puberula*, dorsal view; Middle – African cluster bug, detail of forewing membrane, showing distinctively marked hemelytral membrane; Right – *Trichopepla aurora*, dorsal view, noting the concolorous hemelytral membrane.

***Corythucha gossypii* (Fabricius)** – Tingidae
Cotton lace bug

Prepared by R. Garrison

This small (2.5-3 mm) lace bug was first reported from Valley Center, **San Diego County**, on White Sapote (*Casimiroa edulis*) and tentatively identified as this species by Nick Nisson, Orange County Entomologist, in August, 2000. The specimens were confirmed as this species by Dr. Alan Hardy, since retired Senior Insect Biosystematist, with the following annotation: "possibly this taxon." Additional specimens were later collected on Purple hibiscus from Carpinteria, **Santa Barbara** County in May 2004, submitted by Santa Barbara County Entomologist Jerry Davidson and similarly identified by Dr. Hardy. The species was recently recorded from Hawaii (Miller, L. T. and W. T. Nagamine. 2005. First records of *Corythucha gossypii* (Hemiptera: Tingidae) in Hawaii, including notes on host plants. *Proceedings of the Hawaiian Entomological Society*, 37:85-88) from Oahu, Maui, Kauai, and the big island of Hawaii; this species has also been intercepted at Californian ports of entry in shipments originating from Hawaii.

Diagnostic photos of this species are provided here, along with the only other introduced Hawaiian species of *Corythucha* (*C. morrilli* Osborne & Drake, also common in California). Further information, including photographs of living adults and larvae, is given in the cotton lace bug Pest Sheet in this issue of CPPDR (p 18).

Figures. Dorsal views of: Left – cotton lace bug, *Corythucha gossypii;* Right – *Corythucha morrilli*.

Figures. Lateral views of: Left – cotton lace bug, *Corythucha gossypii;* Right – *Corythucha morrilli.*

NEW COUNTY RECORDS

***Halyomorpha halys* Stål** – Pentatomidae
Brown marmorated stink bug

Prepared by R. Garrison

Since the report of this adventive stink bug in the last issue of CPPR, this species has become established in Pasadena, **Los Angeles** County. Specimens collected in February 2006 were identified as this species by Dr. Gevork Arakelian, Los Angeles County Entomologist. The insects were recorded by a pest control company as being "….found inside [a] residential property in [a] closet. Specimen was dead when collected. The owner of the house saw several specimens flying indoors". Subsequent surveys have shown this species to be locally common on *Pittisporum undulatum* at residential properties.

HEMIPTERA: STERNORRHYNCHA

NEW FEDERAL RECORDS

***Delottococcus* sp.** – Pseudococcidae
A mealybug

Prepared by G. Watson

The first outdoor infestation of *Delottococcus* sp. near *confusus* De Lotto in California and the United States was collected from Jenner, **Sonoma** County, on *Leucadendron argenteum* trees, 9 November 2006, by Dan Curtin, Agricultural Biologist at the Sonoma County Agricultural Commissioner's Office. The site was visited by Dr Lucia Varela (IPM Advisor, University of California Cooperative Extension), who reported a heavy infestation on *L. argenteum* trees about 18 ft tall, causing necrosis of the leaves and growing tips and possibly being responsible for the death of one tree. Other Proteaceae grown on the site were also infested to a lesser extent. Lucia estimated that the infestation must have been present for at least three years.

Figures. *Delotococcus* sp. near *confuses*, on a *Leucadendron argenteum* lef: Left – mature females and egg sacs; Right – young adult female.

The genus *Delottococcus* is native to southern and eastern Africa; eight described species are known, many of which feed on Proteaceae. Since 2003, an undescribed species of *Delottococcus* near *D. confusus* has been seen occasionally on shipments of cut protea flowers and on Proteaceae grown in California nurseries. The species was first recognized as something unusual by Nick Nisson, Orange County Entomologist, who collected it on cut protea flowers originating from a nursery in San Diego County in April 2003.

Infestations were subsequently found and eradicated at several nurseries (in Salinas, Monterey County, July 2004 on *Protea* spp.; Ventura, Ventura County, August 2004 on *Protea* sp. and *Berzelia lanuginose* (Proteaceae); Arroyo Grande, San Luis Obispo County, August 2004 on *Protea* sp.; Aptos, Santa Cruz County, November 2005 on *Protea* spp.).

The evidence suggests that *Delottococcus* sp. near *confusus* has been moving about on cut proteas and planting material of Proteaceae for several years. It seems likely that more nurseries growing Proteaceae will be found to be infested.

NEW COUNTY RECORDS

Ferrisia gilli Gullan – Pseudococcidae
Gill's mealybug

Prepared by G. Watson

A summary of county records for Gill's mealybug was given in CPPDR [22(1): 16-17]. Since July 2005, the following new county records have been received: from Anaheim, **Orange** Co., on grapevines, 10 August 2006; and from Willows, **Glenn** Co., on pistachio, 5 September 2006.

Planococcus ficus Signoret – Pseudococcidae
Vine mealybug

Prepared by G. Watson

A summary of vine mealybug county records was given in CPPDR [22(1): 18]. Since July 2005, several new county records have been received, all collected on grapevines. Female *P. ficus* were collected from Ione, **Amador** County for the first time, 26 July 2005, although males had been collected in this county in 2004. This infestation is currently under an eradication program. Female vine mealybugs were collected for the first time from Livingston, **Merced** County, 4 October 2005; males had been collected in this county in 2004. Females were collected for the first time from Clarksburg, **Yolo** County, 8 November 2005.

More male records of *P. ficus* were received from San Mateo County in late 2005 and in 2006, but so far no females have been collected there. Vine mealybug was recorded on fig in California for the first time, from a back yard near Thornton, San Joaquin County, in late summer 2006.

Aleurodicus dugesii (Cockerell) – Aleyrodidae
Giant whitefly

Prepared by G. Watson

A summary of giant whitefly county records was given in CPPDR [22(1): 17-18]. Since July 2005, the following new county record has been received: from **Sonoma** County on back-yard plants, 11 January 2006, collected by Alex McVicker, Agricultural Biologist Standards Specialist, Sonoma County Agricultural Commissioner's Office.

Figures. Giant whitefly, *Aleurodicus dugesii*: Left – adult; Right – third instar larva.

OTHER RECORDS OF INTEREST

***Aleuroclava aucubae* (Kuwana)** – Aleyrodidae
Aucuba whitefly

Prepared by G. Watson

The host range and distribution of aucuba whitefly in California was summarized in CPPDR [22(1): 15-16]. Since July 2005 there have been two new host plant records for this insect, from back yards in **Sacramento** County: on *Hydrangea macrophylla* in Sacramento, 30 June 2006, collected by Ramona Saunders (Deputy Agricultural Commissioner at Sacramento County Agricultural Commissioner's Office); and on *Vitis vinifera* in Rancho Cordova, on 23 August 2006, collected by Kristi Vana, (Agricultural Aide, Sacramento County Agricultural Commissioner's Office).

LEPIDOPTERA

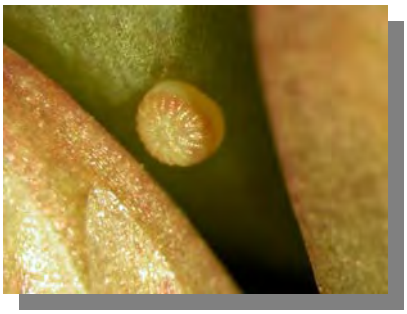
***Lymantria dispar* (Linnaeus)** – Lymantriidae
Gypsy moth: European and Asian strains

Prepared by P. Kerr, M. Epstein, S. Kinnee

During the summer of 2006 there was an increase in the number of gypsy moths found in pheromone traps from seven the previous year to 17 in 2006. One specimen was determined to be the Asian strain (AGM; BamH I+, Nla III+ / 'Asian' FS1) from Long Beach, Los Angeles County. This is the third report of AGM confirmed by PPD since 2003. The AGM is of special concern because it prefers conifers, has females capable of flight and is more cold-tolerant than the European Strain (EGM). One EGM from Montecito, Santa Barbara Co. was determined to be heterozygous (BamH I-, Nla III- / heterozygous FS1), while all others (n=15) were homozygous at the FS1 locus. The Siberian strain (BamH I-, Nla III+ / heterozygous FS1), found in Santa Ana, Orange Co. in 2005, was not found in 2006. For more information on this pest and the specific molecular methods used for diagnosis of gypsy moth strains, see PPDR 2005, volume 22(1).

***Copitarsia* sp. –** Noctuidae
eggs on Peruvian asparagus

Prepared by M. Epstein



During 2006 there have been numerous samples of noctuid eggs on asparagus shipped from Peru. Epstein was able to confirm that the eggs are of the moth family Noctuidae from successfully hatching one individual. Other samples have been confirmed by APHIS and collaborators using DNA sequencing as being *Copitarsia*, a genus known to attack a variety of crops in addition to asparagus and thus is of special concern.

***Darna pallivitta* (Moore)** – Limacodidae
Nettle caterpillar

Prepared by M. Epstein

This invasive species that has established on the Big Island of Hawaii continues to be imported to California from our neighbor state in the Pacific. The largest known shipment *D. pallivitta* was on

pygmy date palms to San Joaquin Co. in May 2006 and included eggs, larvae and cocoons. Examination of caterpillars from this shipment revealed that the caterpillars have an extra row of lateral spines not normally found in slug and nettle moth caterpillars (Limacodidae). These spines are not present when the larva first hatches from the eggs.

***Disclisioprocta stellata* (Guenée) –** Geometridae
Bougainvillea looper

Prepared by M. Epstein

This species represents another Bougainvillea caterpillar new to California since the previous CPPDR report, was found in San Diego Co. in 2006. This one is a geometrid moth, or looper, *Disclisioprocta stellata*, as opposed to the pyraloid with the common name "Bougainvillea caterpillar," *Asciodes gordialis* Guenee, from Imperial Co. This looper is rather cosmopolitan, previously known in the U.S. from the southeast and occurs in Mexico and the Caribbean to South America, as well as in Africa and the Indian Ocean. The species was confirmed by comparing reared adults with specimens from the National Museum of Natural History, Smithsonian Institution.

***Thaumatotibia leucotreta* (Meyrick)** – Tortricidae
False codling moth

Prepared by M. Epstein

Larval stages of the False Codling moth, first detected in 2005, continue to be intercepted at California border stations after being imported from South Africa on Clementine Oranges. None of the caterpillars have been reported as viable in 2006.

***Noctua pronuba* (Linnaeus)** – Noctuidae
Large Yellow Underwing

Prepared by M. Epstein

Adults of this large European noctuid moth, which first established in Canada in the late 1970's, has recently been found in California from the Central Valley at lights and in MacPhail traps for pink gypsy moth, *Lymantria mathura*, in the Eureka area in 2006. At present there are no known reports of the grass and herb feeding caterpillars of this species.

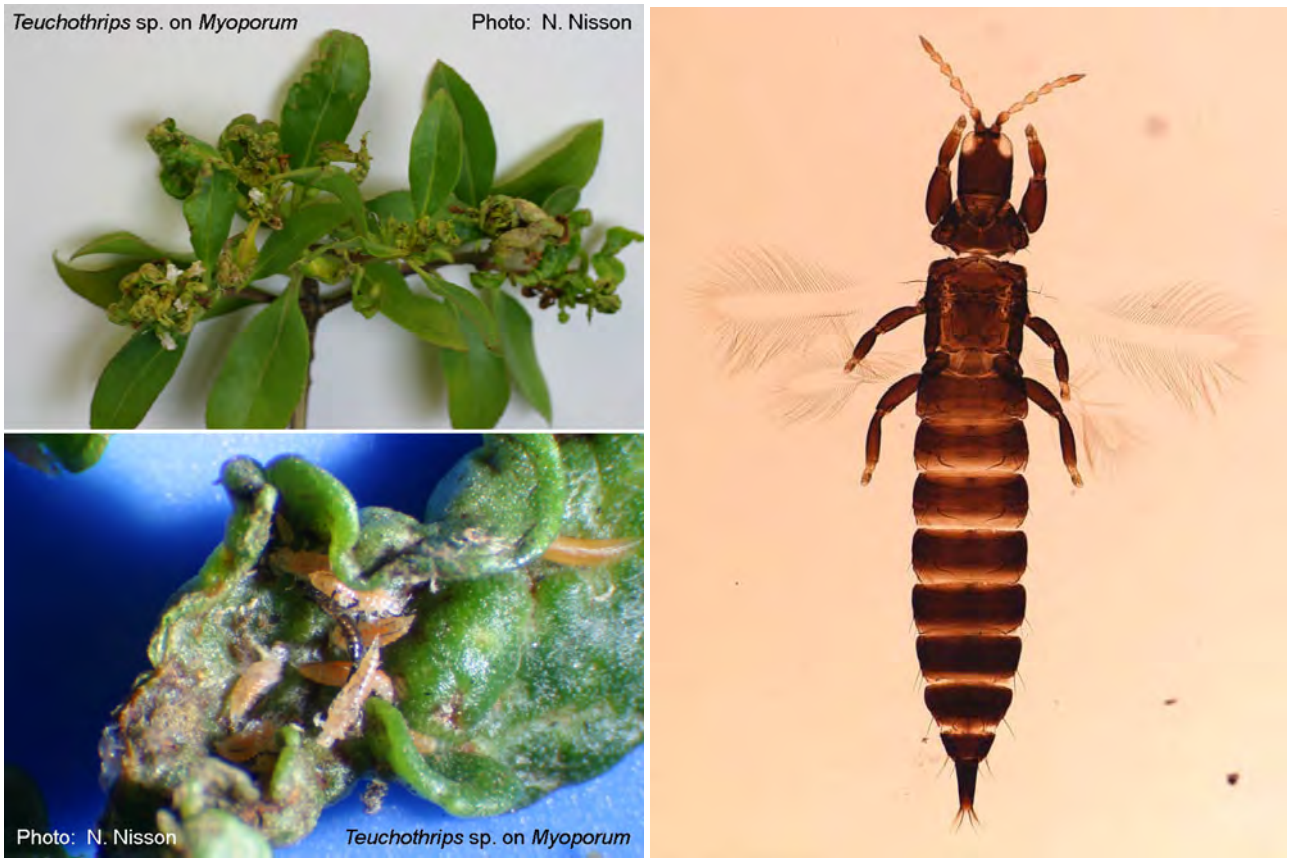
THYSANOPTERA

NEW FEDERAL RECORDS

***Teuchothrips* sp.** – Phlaeothripidae
A thrips

Prepared by G. Watson

An undescribed species tentatively identified as *Teuchothrips* sp. was found severely distorting and sometimes killing growing points and young leaves of *Myoporum* "*pacificum*" in a roadside planting at Huntington Beach, **Orange** County, on 1 December 2005 by Hugo Andreani, a pest control advisor. The species was first recognized as something unusual by Nick Nisson, Orange County Entomologist. This is a new record for California and the United States. The plant genus *Myoporum* is native to Australia and this thrips species has been collected there in the past. The thrips species is currently being described in a different genus by Dr. Laurence Mound at CSIRO, Canberra, Australia.



Figures. *Teuchothrips* sp.: Upper Left – twig of *Myoporum* sp. showing stunting and distortion of new growth caused by feeding; Lower left – pale larvae and a dark brown adult inside a distorted leaf of *Myoporum* sp.; Right – slide mounted adult female.

A second sample of *Teuchothrips* sp. was received from Anaheim, Orange County, on a roadside planting of *Myoporum* "*pacificum*", 20 December 2005, collected by Nick Nisson; he reports that the species is now widespread in Orange County. Subsequent samples with similar damage were

received from: **Santa Barbara** County, Santa Barbara, on *Myoporum* sp. in a back yard, 9 January 2006, collected by Frank Spagnolo; **Los Angeles** County, Rolling Hills, *Myoporum* sp. in a back yard, 9 January 2006, collected by Kevin Holman; and from nurseries on *Myoporum laetum* in Sylmar, 13 February 2006, and North Hollywood, 22 March 2006, both collected by Rob Orsburn; **Ventura** County, Santa Paula, on *Myoporum* spp. in landscape planting, 7 August 2006, collected by T. Fritch; and from a nursery in Somis, on *Myoporum* sp., 1 December 2006, collected by Tina Dwyer, with a note that the nursery owner had only noticed the damage during the previous six months.

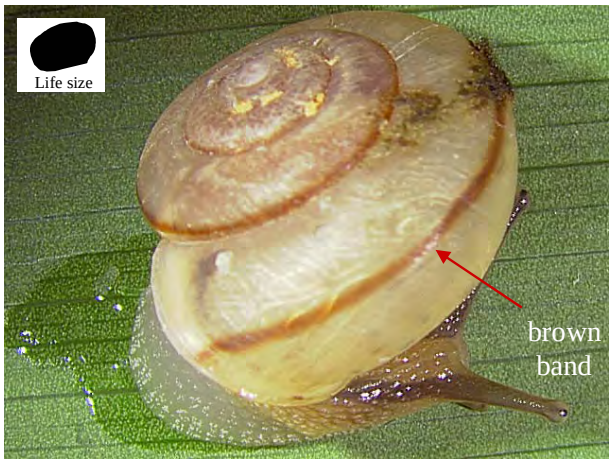
Dr. Gevork Arakelian, Los Angeles County Entomologist, reported that the thrips appeared to be widespread within just a few weeks of first being collected in the county. James Downer [2006. New thrips pest attacks *Myoporum*. *Landscape Notes* 19 (July issue, 3): 1] reported that it was widespread in Los Angeles, Santa Barbara, Orange and Ventura counties, and described the symptoms caused. It seems likely that this pest will continue to spread where *Myoporum* is grown, especially along freeways where the wind of passing traffic may assist its dispersal.

INSECT PEST SHEETS

We continue with our one-page color sheets documenting new or interesting pests relevant to California agriculture. In this issue, we present six sheets, on: the snail *Bradybaena similaris*, spotted gum lerp psyllid, cotton lace bug, a planthopper, fig wax scale and red date scale. All were prepared by California State Collection of Arthropods Research Associate Natalia von Ellenreider.

A snail (*Bradybaena similaris*)

- Intercepted in potted-foliage plants from Florida and Hawaii.
- Hosts: Litter and soil associated with vegetable and ornamental crops, such as: *Aglaonema*; *Areca*; Beans; Betel; Cabbage; *Chamaedorea*; *Cycas revoluta*; *Dieffenbachia*; *Dracaena marginata*; *Dypsis*; *Ficus*; *Hibiscus*; Longan; Orchids; *Phoenix roebelinii*; *Sanseveria*; *Schefflera*; *Spathiphyllum*, *Syagrus*; *Ravenea rivularis;* Taro; Ti (*Cordyline terminalis*); Tindora; Watercress.
- Field ID: Shell rounded, 11-15 mm in diameter, with 5 whorls; **pale brown often with a distinct brown band**. **Umbilicus** clearly **visible** in ventral view.



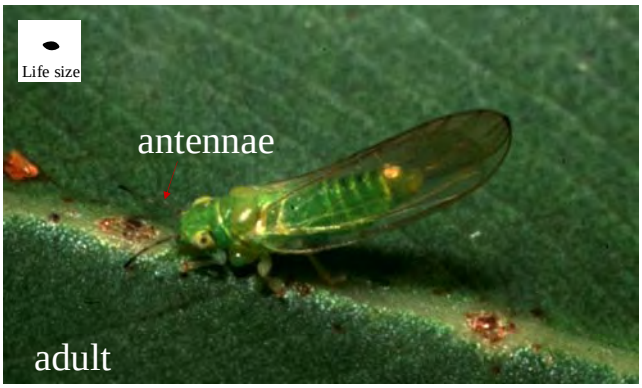
dorso-lateral view

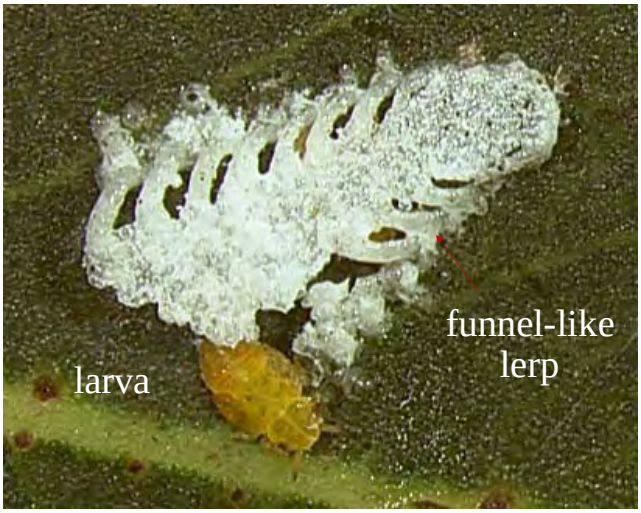
ventral view

Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, November 2003

Spotted gum lerp psyllid (*Eucalyptolyma maideni*)

- Widespread in southern California; introduced from Australia.
- Hosts: Lemon gum (*Eucalyptus citriodora*) and Spotted gum (*E. maculata*).
- Field ID: Adult resembles a small cicada, 3 mm long, slender, green. Yellow or yellow-green larva builds flat **funnel-like lerp**, 5-6 mm long, by excreting gelatinous honeydew. Unlike larvae of Red gum lerp psyllids, larvae move freely in and out of the lerps and more than one larva has been observed occupying the same lerp.



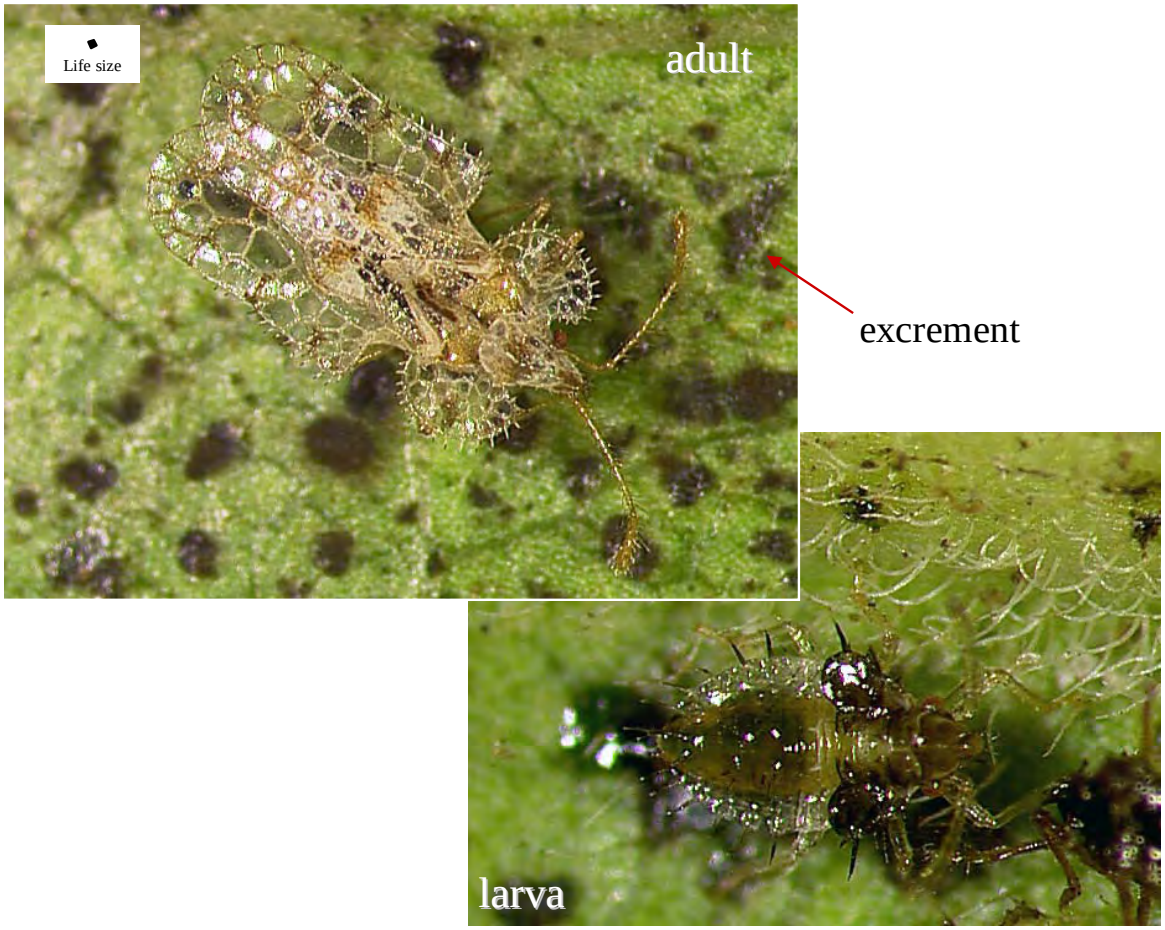


heavy infestation on Spotted gum eucalyptus leaf

Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, October 2003

Cotton lace bug (*Corythucha gossypii*)

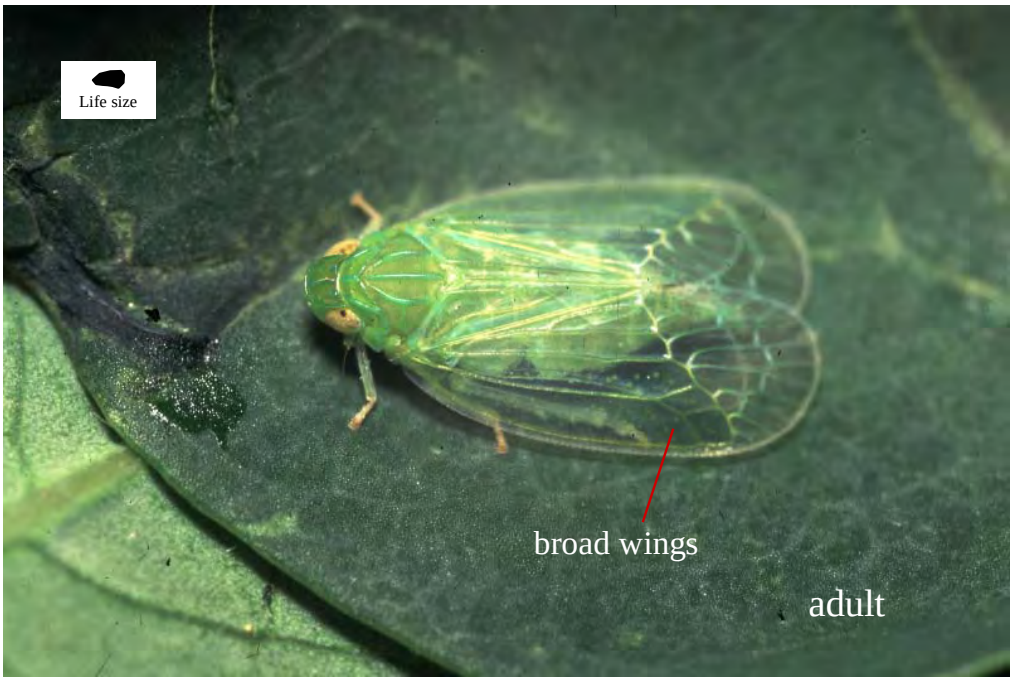
- Native to Latin America; present in southern coastal counties of California.
- Hosts: Castor bean (*Ricinus communis*); *Citrus* spp.; Cotton (*Gossypium* spp.); Eggplant (*Solanum melongena*); Guava (*Psidium guajava*); *Hibiscus*; Orchid tree (*Bauhinia* spp.); White sapote (*Casimiroa edulis*).
- Field ID: Adult 2.5-3 mm long, with characteristic **lace-like pattern** and **no prominent dark spots** on dorsal surface. Adults and larvae on underside of leaves where feeding results in **shiny dark spots** of excrement.



Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, November 2003

A planthopper (*Kallitaxila granulata*)

- Native to S.E. Asia; introduced into Hawaii, from where it is intercepted.
- Hosts: Crops and native plants; found on shipments of Basil; Betel; Curry; Ginger; Malangai; Orchids; Ti.
- Field ID: A medium-sized planthopper (5.6-6 mm) belonging to the family Tropiduchidae; flattened, with head apically broadened, and large, **horizontally placed wings**. Adult green to yellowish green in life; larva yellowish.



Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, January 2004

Fig wax scale (*Ceroplastes rusci*)

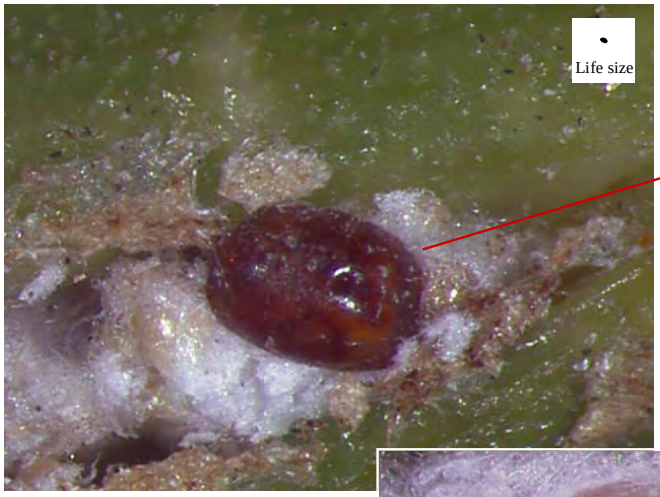
- Intercepted in shipments from Florida; native to the Mediterranean region.
- Hosts: Polyphagous. Common hosts are: Banana; Bay laurel; Brazilian pepper; Cherimoya; *Citrus*; *Dypsis*; Fig (*Ficus)*; Mango; Mulberry; *Phoenix roebelenii*; *Pittosporum*; *Ravenea rivularis*; *Strelitzia.*
- Field ID: Adult female 2-7 mm long, body hemispherical, reddish brown with thick **pinkish-gray wax cover divided into distinct plates**, each plate with a darkened central area containing a **white button-like wax filament**. Larva red with white conical wax filaments. Larva feeds on leaves, adults on twigs. Very similar to **Barnacle scale**, from which it differs by the **wide lateral spiracular bands** (these are narrow in Barnacle scale).

wide spiracular bands

Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, August 2003

Red date scale (*Phoenicococcus marlatti*)

- Found on date and ornamental palms in in date-growing areas of southern California.
- Hosts: Only on palms, especially *Phoenix*, and *Pandanus*.
- Field ID: Adult female 1-1.5 mm long, body **oval, dark red** to **brown**, surrounded by a **mass of white cottony wax**. The male develops in an elongated white cocoon. Usually found at frond bases near trunk and at midribs.



Adult female removed from wax mass

Larvae in cottony wax mass

Prepared by Natalia von Ellenrieder, Research Associate, California State Collection of Arthropods, December 2003

RATING CHANGES IN ENTOMOLOGY

Species	Order	Family	Rating Old	Rating New
Actias luna	Lepidoptera	Saturniidae	A	C
Aethina tumida	Coleoptera	Nitidulidae	Q	B
Anoplophora chinensis	Coleoptera	Cerambycidae	Q	A
Anoplophora glabripennis	Coleoptera	Cerambycidae	Q	A
Chrysodeixis chalcites	Lepidoptera	Noctuidae	Q	A
Chrysophtharta m-fuscum	Coleoptera	Chrysomelidae	Q	B
Cinara cedri	Hemiptera	Aphidae	Q	C
Dasineura balsamicola	Diptera	Cecidomyiidae	B	C
Dinapate wrighti	Coleoptera	Bostrichidae	Q	C
Megaselia seticauda	Diptera	Phoridae	B	C
Metapoplax ditomoides	Hemiptera	Lygaeidae	Q	C
Neohydatothrips burungae	Thysanoptera	Thripidae	Q	C
Paradiplosis tumifex	Diptera	Cecidomyiidae	Q	C
Pseudacysta perseae	Hemiptera	Tingidae	Q	B
Raglius alboacuminatus	Hemiptera	Lygaeidae	Q	C
Schizaphis celti	Hemiptera	Aphidae	Q	C
Spilonota ocellana	Lepidoptera	Tortricidae	Q	C
Thaumatotibia leucotreta	Lepidoptera	Tortricidae	Q	A
Tipula oleracea	Diptera	Tipulidae	Q	B

SCIENTIFIC NAME CHANGES

Changes at the order/suborder level

Hemiptera/"Homoptera" – The Hemiptera and "Homoptera" are now considered to belong to the same order of insects (inclusively, the Hemiptera), which is divided into several suborders. Of importance to agriculture are the suborders Heteroptera (i.e., the true bugs, previously alone under the name Hemiptera), the Sternorrhyncha (i.e., scales, mealybugs, aphids, whiteflies, and relatives), and the Auchenorrhyncha (i.e., leafhoppers, sharpshooters, planthoppers, spittlebugs, cicadas, and relatives). Although the PDR database may still retain the use of "Homoptera" for the time being, it should be recognized that this name will be phased out in favor of the correct Order and Suborder for these groups of insects.

Changes in family-group name

Diptera -- The family group name for "picture winged flies" has long gone by the family-group name "Otitidae." Over the last years, it has been recognized that the family-group name Ulidiidae is older, and therefore has priority. The name Ulidiidae has long been utilized for this family by European workers, and has only recently been more widely recognized by American workers (despite some resistance) as the correct name for the family. So, although the PDR database may still retain the use of "Otitidae" for the time being, it should be recognized that this name will be phased out in favor of the correct family name for this group of flies.

Changes in generic combination

Hemiptera: Sternorrhyncha: Aphidoidea: Phylloxeridae

Phylloxera popularia Pergande is now *Phylloxerina popularia* (Pergande)
Phylloxera salicicola Pergande is now *Phylloxerina salicicola* (Pergande)

Hemiptera: Sternorrhyncha: Aleyrodoidea: Aleyrodidae

Aleuroglandulus malangae Russell and *A. emmae* Russell have been sunk in synonymy with *A. subtilis* Bondar (this species is not present in California)
Aleurotuberculatus aucubae (Kuwana) is now *Aleuroclava aucubae* (Kuwana)
Dialeuriodes citrifolii (Morgan) is now *Singhiella citrifolii* (Morgan)
Dialeurodes chittendeni Laing is now *Massileurodes chittedeni* (Laing) (this species is not present in California)

Hemiptera: Sternorrhyncha: Coccoidea: Asterolecaniidae

Asterolecanium stentae Brain is now *Planchonia stentae* (Brain)

Hemiptera: Sternorrhyncha: Coccoidea: Coccidae

Coccus acutissimus (Green) is now *Prococcus acutissimus* (Green) (this species is not present in California)

Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae

Nuculaspis californica (Coleman) is now *Dynaspidiotus californicus* (Coleman)
Melanaspis aliena (Newstead) is now *Acutaspis aliena* (Newstead)

Hemiptera: Sternorrhyncha: Coccoidea: Eriococcidae

Gossyparia spuria (Modeer) is now *Eriococcus spurius* (Modeer)

Hemiptera: Sternorrhyncha: Coccoidea: Ortheziidae

Orthezia insignis Browne is now *Insignorthezia insignis* (Browne)

Hemiptera: Sternorrhyncha: Coccoidea: Pseudococcidae

Some of the root mealybug species previously placed in the genera *Rhizoecus* and *Radicoccus* have been transferred to the genus *Ripersiella* by Kozár & Konczné Benedicty (2002, 2003, 2004). Taking species that occur in California, or are intercepted on roots of plants entering California, for example:

Radicoccus kelloggi (Ehrhorn & Cockerell) is now *Ripersiella kelloggi* Ehrhorn & Cockerell
Rhizoecus bituberculatus McKenzie is now *Ripersiella bituberculata* (McKenzie)
Rhizoecus gracilis McKenzie is now *Ripersiella gracilis* (McKenzie)
Rhizoecus disjunctus McKenzie is now *Ripersiella disjuncta* (McKenzie)
Rhizoecus hibisci Kawai & Takagi is now *Ripersiella hibisci* (Kawai & Takagi) (this species is not present in California but is intercepted at plant quarantine frequently)
Rhizoecus kondonis Kuwana is now *Ripersiella kondonis* (Kuwana)

Kozár & Konczné Benedicty. 2002. Bollettino di Zoologia Agraria e di Bachicoltura (Milano), **34**(2): 213-218.
– 2003. Bollettino di Zoologia Agraria e di Bachicoltura (Milano), **35**(3): 225-239.
– 2004. Bollettino di Zoologia Agraria e di Bachicoltura (Milano) **36**(3): 303-334.

SIGNIFICANT RECORDS IN BOTANY

Cuscuta spp.
Giant Dodders

Prepared by F. Hrusa, D. Kelch

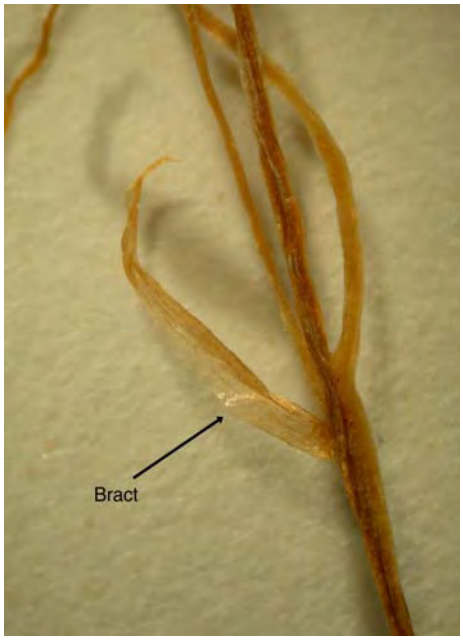
The genus *Cuscuta* (dodder) comprises approximately 150 species of chlorophyll-less, often thread-like parasitic plants, which connect to a host via haustoria. They may be viewed from an evolutionary viewpoint as parasitic morning glories (Convolvulaceae), although they are often included in their own family, the Cuscutaceae. Most, if not all dodders have orange to yellowish stems and are readily visible on their hosts. While the plants lack true leaves, small bracts are present in their place and these are colored the same as the stems. The flowers are generally white, but sometimes are almost colorless. Most are not agricultural weeds, and in California there are eight native species and three naturalized non-natives. All but the A-rated *Cuscuta reflexa* and *Cuscuta japonica* are given a "C" pest-rating by the CDFA because, although mostly native and not generally pestiferous, they can reduce crop yields if infestations become large. The two A-rated species are part of a related group of dodders known as the "giant dodders". These plants have distinctively thick stems, about the thickness of spaghetti pasta, and are not easily confused with the thin-stemmed native species.

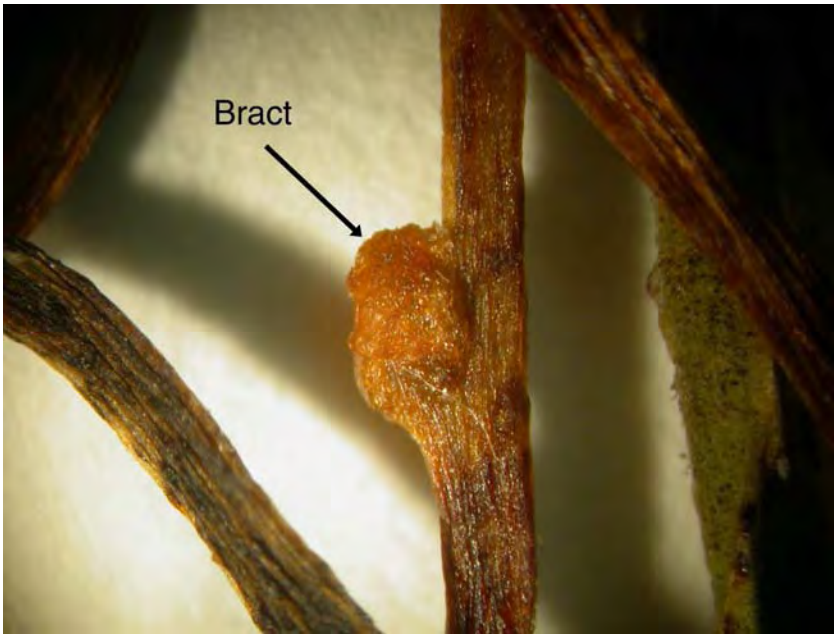
History in California

***Cuscuta reflexa.* Roxb.** *Cuscuta reflexa* is native to southern Asia, ranging from Afghanistan to Yunnan, China, northern India to Ceylon and Java. It has been found only once in California; in 1969 a patch was found parasitizing an ivy planting on the University of California Los Angeles campus. Coincidentally a researcher working on *Cuscuta* occupied an office in the adjacent building, but denied any connection with the infestation. In any case, the infestation was eliminated and *Cuscuta reflexa* has not been found in California since.

***Cuscuta japonica* Choisy** In June 2004 a sterile specimen of a dodder with thick, spaghetti-like stems was submitted to the Botany Laboratory for identification. It was parasitizing a *Citrus* tree in a backyard planting in Redding, Shasta County. The plant was identified as possibly *Cuscuta reflexa*, based on it being a "giant dodder" but the determination was incomplete as mature flowers are necessary for conclusive identification in this genus. Consequently it was given a Q-rating. Although several more sterile specimens were submitted over the next few months, it was not until October of 2005 that a specimen with fully developed flowers was received and identified as *Cuscuta japonica*. Native along the eastern Asian seaboard and Islands from Vladivostock and Amur to Yunnan, as an adventive it is established as a pest in the U.S. southeast. A specimen (R.D. Cobb s.n.) grown from seed collected from a plant parasitizing kudzu in 1958 and established on potato in Sacramento is in herbarium CDA, but the origin of this seed was not reported. A duplicate of the specimen submitted in October 2005 to the Botany Laboratory was sent to Mihai Costea, a specialist in *Cuscuta* systematics at the University of Guelph in Ontario Canada, who confirmed that it was *Cuscuta japonica*. At this point *C. japonica* itself received a Q-rating. In flower *C. japonica* is readily distinguished from the native North American species and *Cuscuta reflexa*. From our native species it is distinguished by its single style with two-lobed stigma. Native *Cuscuta* have two separate styles and unlobed stigmas. *Cuscuta reflexa* has a short style or no style at all, the two-lobed stigma is

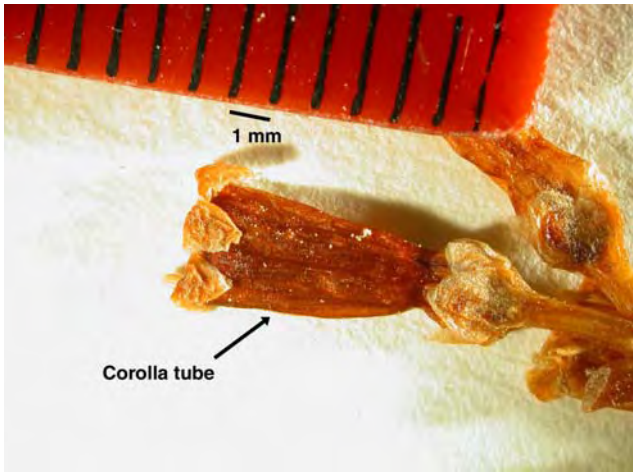
sessile or nearly so on the ovary, and the floral tube is longer than it is wide. In *Cuscuta japonica* the floral tube is wider than long or near parity. Sterile material is more problematic to identify. It was readily determined that the sterile specimens were not one of the native species. In the native taxa, the bracts subtending each node are elongated and free from the stem, while in *C. japonica* and *C. reflexa* the bracts are shortened into a small hood over the developing axillary bud and tightly appressed to the stem. These differences are illustrated in Figs. 1 and 2.

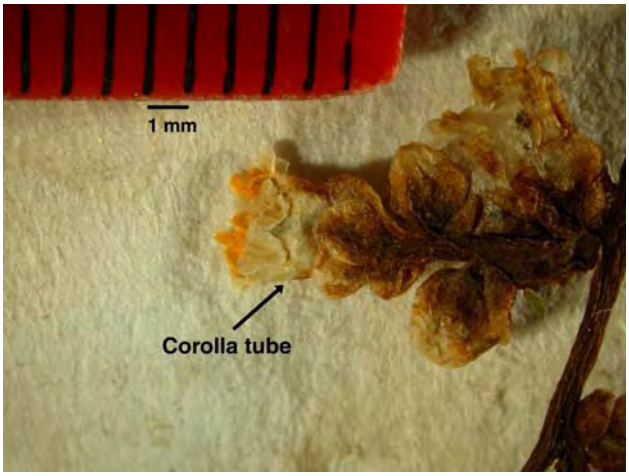




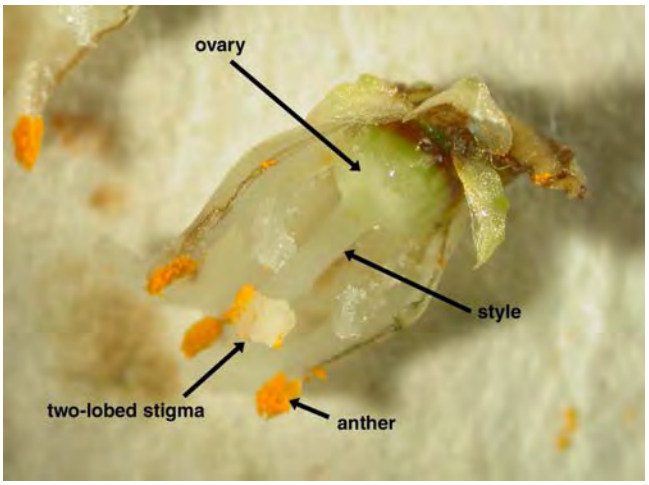
Figures. Left (Fig. 1) – free bract subtending the axillary bud of native North American *Cuscuta* spp.; Right (Fig. 2) – shortened bract forming a small hood over the axillary bud of *Cuscuta japonica*.

However, this characteristic was not able to differentiate *C. japonica* from *C. reflexa*. Figs. 3-6 illustrate *Cuscuta reflexa* and *C. japonica* floral parts.





Figures. Left (Fig. 3) – *Cuscuta reflexa* flower; Right (Fig. 4) – *Cuscuta japonica* flower. Note the relative shortness of the corolla tube in comparison to *Cuscuta reflexa*.



Figures. Left (Fig. 5) – *Cuscuta japonica* flowers in situ (photo by Fred Rinder, Fresno Co.); Right (Fig. 6) – *Cuscuta japonica* flower after dissection.

Beginning in spring of 2006 the Botany Lab began to regularly receive specimens of this giant *Cuscuta*. These came from numerous counties, but were concentrated in Sacramento, Fresno, Merced and Contra Costa. All these specimens received during the early season were sterile and could not be confirmed as *Cuscuta japonica* All specimens of giant dodder that were sterile were given the identification of *Cuscuta* cf. *japonica* and received a Q-rating as well.

Biology According to literature sources, *Cuscuta japonica* is an annual plant, that is, it lives, sets seed, and dies in a single season. It then germinates new individuals the following season and the life cycle is repeated. In California we have not yet seen seed form or mature on any individuals, and indeed, flowering occurs from about late October to mid-January in mild regions, leaving little time for seed to mature. If seed were to be formed and sexually reproducing populations established, difficulty of eradication or even control would be considerably increased. Control appears difficult in any case for the following reasons:

1) The plants grow rapidly and fragment easily. Small pieces are able to form haustoria and grow into large infestations.
2) In the absence of freezing weather the plants continue to grow indefinitely, not dying after a single season.
3) Small fragments are difficult to detect. Pulling material off a host is thus not likely to eliminate the infestation.
4) The plants do not desiccate rapidly. A specimen was left on a table in the Botany Laboratory for 3 weeks without a host. The stems became thinner, but when placed on a host rapidly formed new haustoria. This means that material can easily be transported alive without special treatment to prevent drying, and can form new infestations after being isolated for several weeks.
5) The plants become very large, and will cover entire trees. Removing all dodder material from an infested location is therefore difficult.
6) Wildlife, especially birds, move vegetative pieces into the tops of tall trees where infestations become established well beyond reach or even sight, making early detection almost impossible.

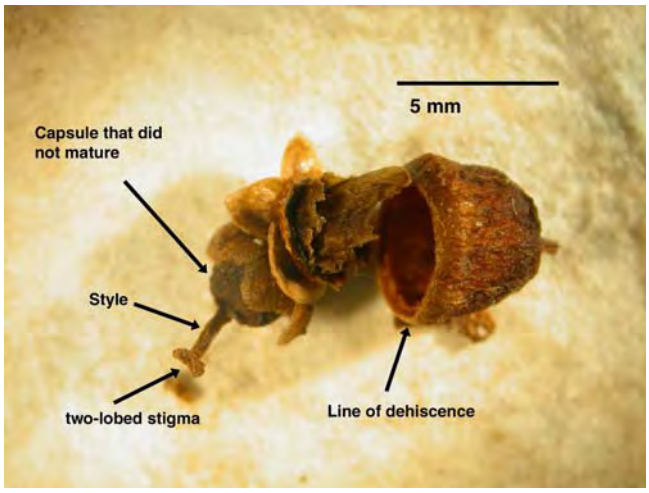
7) Human mediated dispersal appears responsible for most of the current infestations. Preventing purposeful movement will be very difficult unless voluntarily accomplished.

Reproductive Biology

Although control or eradication may be difficult, as outlined above, if this dodder remains moved only through vegetative means there is hope of interrupting the dispersal flow. However, if seed were to form and sexual populations established, successful eradication would become unlikely, and even control would be much more difficult. The possibility that the late season bloom will prevent seed set in northern California does not guarantee that seed will not set in far southern California, indeed, the most threatened areas have not yet had *Cuscuta japonica* detected there. These areas include the humid coastal zones of Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties where vegetative growth can continue year round and seed can form late into the winter season.

However, the likelihood that many or most of the *Cuscuta japonica* infestations in California are the result of human-mediated vegetative propagation suggests the possibility that these are largely one or a few clones and not different individuals. When specimens first arrived in the Botany Lab it was not known if *Cuscuta japonica* was self-fertile. If not self fertile, and the plants are mostly a single clone, or even regionally a single clone, seed production would be unlikely. A molecular test to determine how many clones are present in California awaits staff and materials, however, we decided to test directly whether these plants are self fertile, and if so, whether cross pollinations among specimens from different regions could enable seed set. Self-pollinations were performed in fall of 2005. A *Cuscuta japonica* plant, which was received with flowers already developed, was placed on a host in the Meadowview greenhouse and allowed to establish. Pollen was transferred from flowers in one inflorescence to flowers in another. After several weeks it became clear that seed was not going to form; the flowers died and shriveled, the ovary did not enlarge at all, indicating fertilization had not been effected. In fall of 2006, more specimens were being received and two from different regions, one from Contra Costa County and one from Sacramento County, both with fully formed flowers, were placed on a host. Once established (only a few days) cross pollinations in both directions were made. One inflorescence did not set seed, and indeed, it disappeared (for unknown reasons) from the host plant several days after the pollinations were made, but the second set seed on a large number of flowers. Eventually, most fertilized ovaries did not fully mature, but several did form filled seeds. Figure 7 shows the maturing fruits; Figure 8 the mature capsule and Figure 9 a mature seed. It would appear that seed set is indeed possible and that it is likely multiple clones comprise the infestations of this plant in California.

Figure 7. Artificially pollinated inflorescence of *Cuscuta japonica* with maturing fruits (capsules).



Figures. Left (Fig. 8) – Mature capsule. *Cuscuta japonica* capsules dehisce around their circumference (circumcissile). Note the unfertilized capsule on the left shows the elongated style, and two-lobed stigma characteristic of *C. japonica*. Each mature capsule contains from 1 to 4 seeds (also see Fig. 6); Right (Fig. 9) – A mature seed of *Cuscuta japonica*.

Adaptation Seed set does not guarantee sexual reproduction will occur. There are many factors that can influence survival between seed set and establishment of seedling individuals, none of which are specifically known for *Cuscuta japonica*. Moreover, it would appear that *Cuscuta japonica* is best adapted in humid climates. Not only is its native range a humid region, it is established as a pest in the most humid parts of the U.S. Within California, the Central Valley and San Francisco Bay Area, where *Cuscuta japonica* is established, are among the more humid regions in California, and it is possible that, although theoretically vulnerable, southern California, with its relatively dry air may not be optimum habitat for this taxon. In addition, without a seed bank, cold conditions may prevent this plant from maintaining large populations purely by overwintering vegetation. It is not likely that coastal or low Valley habitats get cold enough on a regular basis to completely eliminate the plant from sheltered or other protected microclimates, but a hard frost, similar to that in winter 2006-7 may go a long way toward holding down major spread.

Conclusions The most dangerous aspect of *Cuscuta japonica* is its parasitic habit and large size. It actually behaves less like a weed and more like a plant pathogen, especially in its ability to survive vegetatively without a host and to spread by fragments. It has a wide host range as far as current observations suggest. Only monocots and perhaps Polygonaceae seem to resist haustorial establishment. Several common host plants are major agricultural crops. It apparently parasitizes Rosaceae easily; *Malus* (apple) and *Prunus* (plums, cherries, almonds, apricots and others) are common hosts, with *Vitis* (grape), and *Citrus* (oranges, lemons etc.) also utilized. Undoubtedly, many other horticultural and agricultural plants are potential hosts. Its large size allows it, unlike any of the native dodders, to cover entire large plants and even full size trees. Figure 10 shows what can happen if *Cuscuta japonica* is allowed to grow uncontrolled. Observations by this laboratory have seen heavily infested trees that were near death, or dead. Cause and effect are not absolutely known, but the implication is that this parasite may have weakened those trees to the point where they could no longer survive.

Figure 10. The parasite *Cuscuta japonica* covering a 25 ft. tall tree at Grand & Branch Sts., Sacramento, in June 2006. Photo by Terra Irving, PPDC, CDFA.

Cuscuta japonica is believed by some to be a useful medicinal plant and this is the apparent source of our infestations; perhaps even those of the U.S. southeast can be traced largely to deliberate introductions as "alternative" medicine. The result is that *C. japonica* is now a pest in the U.S. southeast, and is becoming one in California. It has recently received considerable attention in the city of Houston where it has become established on the city's street trees, causing tree decline and death, as well as being unsightly. For more information and pictures from Houston, see http://www-aes.tamu.edu/mary/dodder/dodder.htm.

AQUARIUM AND POND PLANTS OF THE WORLD, EDITION 2.0

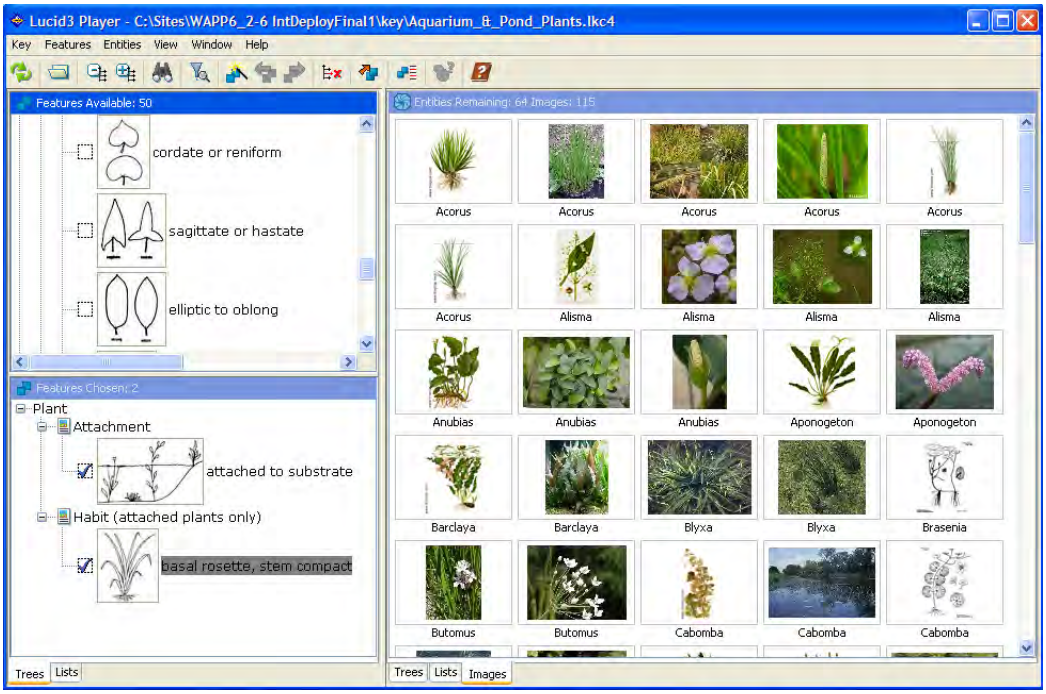
A major update to the first edition of a Lucid identification tool.

Prepared by J. Scher

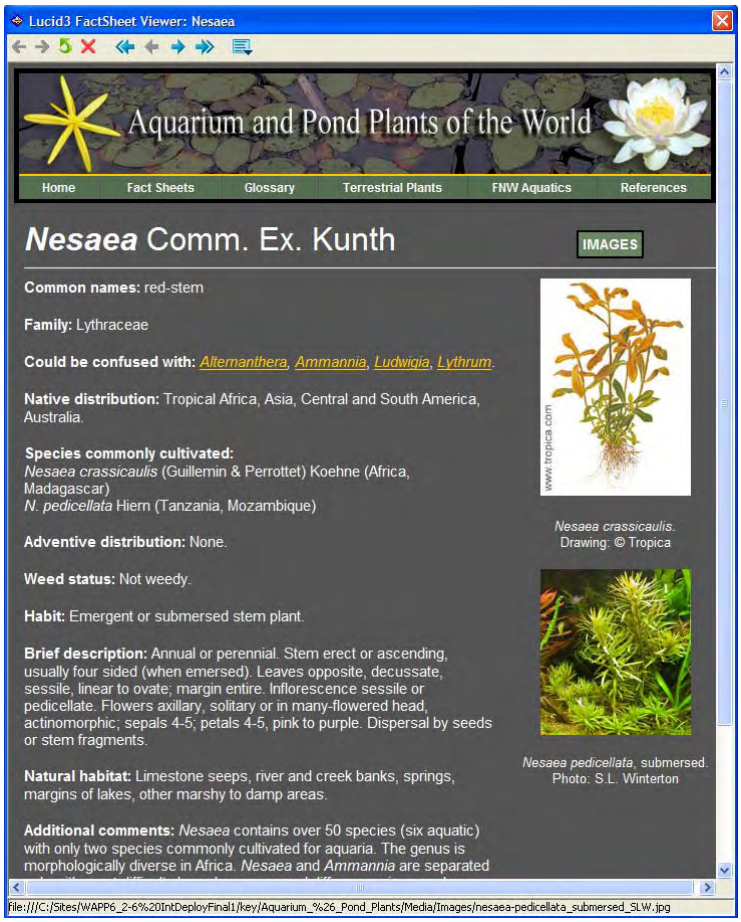
The movement of aquatic plants across international borders is of considerable quarantine concern. Owing to the strong competitiveness of many aquatic species, serious ecological consequences can result if they are released into waterways, where they often become dominant, displacing native species. The most common pathway for aquatic weeds into new areas is through discarded aquarium material. Many such plants have become serious environmental weeds in various countries, including water hyacinth (*Eichhornia crassipes*), Salvinia (*Salvinia molesta*), East Indian Hygrophila (*Hygrophila polysperma*), Cabomba (*Cabomba caroliniana*) and Asian Marshweed (*Limnophila sessiliflora*).

USDA-APHIS, PPQ is concerned with preventing the introduction of invasive aquatic weeds into the United States, and with slowing their dispersal once introduced. A key step in this effort is the correct identification of aquatic plants and plant parts by federal authorities at entry points, and by local managers once a weed is introduced but still containable. The sheer diversity and phenotypic plasticity of aquatic plants makes their identification difficult.

Aquarium and Pond Plants of the World (*APPW*), Edition 2.0 is an identification tool that was created to address this difficulty, specifically in distinguishing aquatic plants in the trade. *APPW* Edition 2.0 consists of a matrix-type computer-based interactive identification key, created using Lucid® version 3.4 software. Lucid keys are cross-platform (PC and Mac) and to use them, only freely downloadable Java software is needed. *APPW* also consists of many Html fact sheets, more than 900 images, and supporting information, for the purpose of identifying 141 genera of aquatic and semi-aquatic plants (and some algae) presently cultivated or collected around the world for the aquarium and pond plant trade.



APPW Edition 2.0 interactive key matrix in "image gallery" mode



APPW Edition 2.0 fact sheet for *Nesaea*

As part of a collaboration between CDFA and USDA/APHIS/PPQ/ Center for Plant Health Science and Technology (CPHST), during 2006, Julia Scher, a CPHST Identification Tool Developer based at the PPDC Seed Lab, worked closely with Shaun Winterton and received significant help from PPDC botanist Dean Kelch, on *APPW* Edition 2.0, which is a major update to *APPW*. This new edition substantially revised *APPW*; major changes and additions, of which there are many, include sixteen new taxa, new diagrammatic drawings to illustrate character states, a completely restructured interactive matrix, revised and consistently formatted taxon descriptions, and diagnostic remarks to help distinguish the U.S. federal noxious weed aquatic taxa.

APPWEdition 2.0 was published online on March 12, 2007, and is expected to be published as a CD-ROM by June. This tool is in the public domain and therefore completely free. Shaun Winterton, author of *APPW*, the first edition of this tool, was an Associate Insect Biosystematist (2003-2006) and Senior Insect Biosystematist (2006- 2007) at CDFA PPDC during development of this product. Shaun has a keen interest in aquatic plants and created *APPW* for CPHST while a Research Associate at North Carolina State University.

Winterton, S. (April 2004) Aquarium and Pond Plants of the World, Lucid v. 2.1, CD-ROM. North Carolina State University, Raleigh, NC, and USDA/APHIS/PPQ Center for Plant Health Science and Technology, Raleigh, NC; Lucid v 2.1 and v. 3.1, <http://www.lucidcentral.org/keys/appw/> [February 9, 2007]

SIGNIFICANT RECORDS IN PLANT PATHOLOGY

Phytophthora ramorum

2006 Sudden Oak Death project

Prepared by T. Tidwell, C. Blomquist

CDFA's Plant Pest Diagnostics Laboratory continued its SOD work plan activities of diagnostics and scientific support for California nurseries. The lab processed a total of 22,198 nursery samples, of which 202 tested positive for *Phytophthora ramorum* by culture, PCR, or both methods. (See table below)

Figure. Sudden oak death, *Phytophthora ramorum*, symptoms on rhododendron. Photo ©Joseph O'Brien, USDA Forest Service, www.forestryimages.org

Sample Type	# of samples submitted for testing	# of samples ELISA analysis	# of positive ELISA	# of samples isolated	# of positive isolations	# of samples PCR analysis	# of samples PCR positive
Nursery	22198	22198	1357	22198	140	1465	202
Forestry	753	733	369	753	126		
Misc.	341	341	338	341	64	381	370
Total	23292	23272	2064	23292	330	381	711

2006 Plant Pest Diagnostics Branch activities for *P. ramorum* included:

- Completed pathogenicity tests of *P ramorum* infecting *Osmanthus heterophyllus* and *O. fragrans*.
- Plant Pest Diagnostics Branch (PPDB) Laboratory hired 7 seasonal employees to process the SOD laboratory samples.
- Temporarily assigned 7 permanent employees to SOD project, including 3 exclusively for molecular testing, and 1 exclusively for ELISA testing
- Temporarily dedicated 8 laboratory rooms to accommodate SOD project for activities such as initial sample processing, DNA extraction, molecular sample testing, ELISA testing, culture plate reading, data entry, as well as general office and meeting space.
- PPDB Lab scientists gave numerous informational and training presentations to grower groups, nurseries, and county staff, *et al* on recognition of symptoms of *P. ramorum*.
- PPDB Lab scientists participated in various meetings, workshops, and training sessions with USDA to learn protocols and techniques.
- PPDB lab staff was called upon routinely to consult with County staff on specific samples and nurseries, instructions for re-sampling, soil sampling, etc.
- PPDB lab personnel successfully performed and passed provisional laboratory tests as part of the APHIS Provisional Laboratory Accreditation process for nested and quantitative PCR.

- PPDB collaborated with, and gave laboratory support to, several SOD projects with other scientists and agencies outside of CDFA, including the following:
    - Identification and characterization of a new *Phytophthora* species which causes a leaf spot in the nurseries on some SOD hosts. Publication of the description of *Phytophthora foliorum* with Kurt Lamour's lab at University of Tennessee in the journal, Mycological Research. *P. foliorum* is important because it can cross react in the nested PCR protocol for the detection of *P. ramorum*. Citation: Donahoo, R., Blomquist, C.L., Thomas, S.L., Moulton, J.K., Cooke, D.E.L., Lamour, K.H. (2006) *Phytophthora foliorum* sp. nov., a new species causing leaf blight of azalea. *Mycological Research* 110:1309-1322.
    - "SOD Busters" waste disposal research project in infested area (final year)
    - Processed samples for the Statewide Detection & Risk Modeling project with Ross Meetenmeyer's lab now at University of North Carolina.
    - Project with Steve Tjosvold with University of California Cooperative Extension (UCCE) involving seasonal timing of sampling activities for best chances of detection (second year).
    - Project with Frank Martin USDA, Mike Coffey UCR and others to test *P. ramorum* PCR-based diagnostics using field samples.
    - An article was published in Plant Health Progress with Steve Tjosvold, UCCE describing bud & branch infection of field-infected Camellia by *P. ramorum.* Tjosvold, S.A. Chambers, D.L., Thomas, S.L. and Blomquist, C.L. August 25, 2006. First report of *Phytopththora ramorum* infecting *Camellia* flower buds in North America.Online. Plant Health Progress doi: 10.1094/PHP-2006-0825-01-BR.
    - Project with Jim MacDonald and Lani Yakabe at UCD Plant Pathology involving management and disposition of P. *ramorum*-infested soil in nurseries.
    - Tested USFS samples obtained from ground checking of dying oaks spotted from airplane fly-overs.

Rice Disease Survey for 2006

Prepared by J. White, T. Tidwell

County	Pathogen	Common Name	Total
Butte	*Rhizoctonia oryzae-sativae*	Aggregate Sheath Spot	1
	Sclerotium oryzae	Stem Rot	13
	*negatives		13
Colusa	*Gibberella fujikuroi*	Bakanae	3
	Rhizoctonia oryzae-sativae	Aggregate Sheath Spot	1
	Sclerotium oryzae	Stem Rot	9
	Tilletia barclayana	Covered Smut	1
	*negatives		10
Glenn	*Gibberella fujikuroi*	Bakanae	1
	Rhizoctonia solani	Seedling Blight	4
	Sclerotium oryzae	Stem Rot	3
	*negatives		5
Sutter	*Sclerotium oryzae*	Stem Rot	5
	*negatives		9
Yolo	*Rhizoctonia solani*	Seedling Blight	3
	*negatives		14
Yuba	*Gibberella fujikuroi*	Bakanae	6
	Rhizoctonia oryzae-sativae	Aggregate Sheath Spot	1
	Sclerotium oryzae	Stem Rot	7
	*negatives		8

Total Detections	**117**

***Negatives represent negative detections of the following pathogens in each County:**

Alternaria padwickii	Stackburn
	Barley Stripe Mosaic
	Rice hoja blanca virus
Xanthomonas campestris pv. oryzae	Bacterial Blight
Cochliobolus miyabeanus	Brown Spot
Gibberella fujikuroi(=F. moniliforme)	Bakanae
Pyricularia grisea	Blast
Rhizoctonia oryzae-sativae	Aggregate Sheath Spot
Rhizoctonia solani	Seedling Blight
Sclerotium oryzae	Stem Rot
Tilletia barclayana	Covered Smut
Ustilaginoidea virens	False Smut
Any virus symptoms	

Tree Diseases & Parasites Identified for 2005-2006

Prepared by J. White, T. Tidwell

Host	Pathogen/Parasite	County	City
Abelia sp.	*Cuscuta* cf. *japonica*	Sacramento	Sacramento
Abies concolor	*Phytophthora ramorum*	Santa Clara	Los Gatos
Acer platanoides	*Uncinula bicornis*	Santa Barbara	Santa Barbara
Aesculus californica	*Ascochyta* sp.	Santa Cruz	La Selva Beach
Aesculus californica	*Ascochyta* sp.	Santa Cruz	Santa Cruz
Aesculus californica	*Ascochyta* sp.	Santa Cruz	Watsonville
Aloe striata	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Aralia sieboldii	*Cladosporium* sp.	San Luis Obispo	Nipomo
Aralia sieboldii	*Cladosporium* sp.	Santa Barbara	Santa Barbara
Aralia sp.	*Penicillium* sp.	San Luis Obispo	Nipomo
Araucaria bidwillii	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Arbutus menziesii	*Mycosphaerella arbuticola*	San Mateo	Millbrae
Betula sp.	*Melampsoridium betulinum*	Santa Cruz	Watsonville
Brahea armata	*Cladosporium* sp.	Santa Barbara	Santa Barbara
Buddleja sp.	*Cuscuta* cf. *japonica*	Alameda	Oakland
Buddleja sp.	*Cuscuta* cf. *japonica*	Fresno	Fresno
Buxus japonica	*Phytophthora* sp.	Santa Barbara	Isla Vista
Calocedrus decurrens	*Gymnosporangium libocedri*	Monterey	Salinas
Calocedrus decurrens	*Schizophyllum commune*	Colusa	Not listed
Cinnamomum camphora	*Fusicoccum* sp.	Sacramento	Sacramento
Cinnamomum camphora	*Phytophthora* sp.	Santa Barbara	Santa Maria
Citrus aurantifolia	*Colletotrichum acutatum*	San Bernardino	Rialto
Citrus aurantifolia	*Colletotrichum acutatum*	Solano	Dixon
Citrus aurantifolia	*Colletotrichum acutatum*	Stanislaus	Turlock
Citrus sinensis	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Citrus sp.	*Cuscuta* cf. *japonica*	Shasta	Redding
Citrus sp.	*Phytophthora citricola*	Solano	Vacaville
Citrus sp.	*Tristeza virus*	Ventura	Ventura
Cordyline australis	*Fusarium solani*	Santa Barbara	Santa Barbara
Cornus spp.	*Cylindrosporium* sp.	Riverside	San Jacinto
Cornus spp.	*Ramularia* sp.	Riverside	San Jacinto
Cupressus sempervirens	*Phytophthora* sp.	Santa Barbara	Guadalupe
Dracaena sp.	*Fusarium moniliforme*	San Luis Obispo	Nipomo
Euphorbia cotinifolia	*Phytophthora* sp.	Santa Cruz	Watsonville
Euphorbia sp.	*Melampsora monticola*	San Diego	San Diego
Ficus benjamina	*Pantoea agglomerans*	San Mateo	San Mateo
Ficus benjamina	*Phytophthora* sp.	Santa Barbara	Santa Barbara

Host	Pathogen/Parasite	County	City
Ficus benjamina	*Rhizobium rhizogenes*	Alameda	Sunol
Ficus spp.	*Fig Mosaic virus*	Yolo	Winters
Fraxinus sp.	*Cylindrosporium fraxini*	Humboldt	Eureka
Hetermomeles arbutifolia	*Entomosporium mespili*	Lake	Lower Lake
Hetermomeles arbutifolia	*Phytophthora ramorum*	Solano	Fairfield
Hetermomeles arbutifolia	*Phytophthora* sp.	San Diego	San Marcos
Hetermomeles arbutifolia	*Phytophthora* sp.	Santa Cruz	Watsonville
Hetermomeles arbutifolia	*Spilocea photinicola*	Riverside	Murrieta
Juglans hindsii	*Marssonina juglandis*	Butte	Richvale
Juglans sp.	*Marssonina juglandis*	Sacramento	Wilton
Juglans sp.	*Microstroma juglandis*	Humboldt	Eureka
Juglans sp.	*Microstroma juglandis*	Stanislaus	Modesto
Juglans sp.	*Pseudomonas syringae*	Stanislaus	Oakdale
Juniperus sp.	*Pestalotiopsis funerea*	San Luis Obispo	Arroyo Grande
Juniperus sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Lauris nobilis	*Phytophthora ramorum*	Humboldt	McKinleyville
Lauris nobilis	*Phytophthora ramorum*	San Mateo	San Mateo
Lauris nobilis	*Phytophthora ramorum*	Solano	Vallejo
Lauris nobilis	*Phytophthora ramorum*	Sonoma	Sonoma
Liquidambar sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Liquidambar styraciflua	*Cuscuta* cf. *japonica*	Sacramento	Sacramento
Liquidambar styraciflua	*Xylella fastidiosa*	Riverside	Riverside
Liquidambar styraciflua	*Xylella fastidiosa*	San Bernadino	Not listed
Lithocarpus densiflorus	*Cystotheca lanestris*	Mendocino	Fort Bragg
Lithocarpus densiflorus	*Phytophthora ramorum*	Humboldt	Not listed
Lithocarpus densiflorus	*Phytophthora ramorum*	Mendocino	Boonville
Lithocarpus densiflorus	*Phytophthora ramorum*	Mendocino	Fort Bragg
Lithocarpus densiflorus	*Phytophthora ramorum*	San Francisco	San Francisco
Lithocarpus densiflorus	*Phytophthora ramorum*	San Mateo	Pescadero
Lithocarpus densiflorus	*Phytophthora ramorum*	Santa Clara	Los Gatos
Magnolia sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Malus sp.	*Botryosphaeria ribis*	Humboldt	Eureka
Malus sp.	*Nectria galligena*	Humboldt	Eureka
Malus sp.	*Phytophthora* sp.	Humboldt	Eureka
Musa sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Myrtus communis	*Phytophthora* sp.	Santa Barbara	Carpinteria
Nandina domestica	*Colletotrichum gloeosporioides*	Riverside	Riverside
Nerium oleander	*Cuscuta japonica*	Fresno	Fresno
Nerium oleander	*Pseudomonas syringae*	San Luis Obispo	San Luis Obispo
Nerium oleander	*Xylella fastidiosa*	Riverside	Hemet
Nerium sp.	*Phoma exigua*	Marin	Novato

Host	Pathogen/Parasite	County	City
Nerium sp.	*Phoma exigua*	San Luis Obispo	Not listed
Nerium sp.	*Xylella fastidiosa*	San Diego	San Diego
Osmanthus fragrans	*Phytophthora ramorum*	Humboldt	McKinleyville
Osmanthus heterophyllus	*Phytophthora nemorosa*	Humboldt	Eureka
Osmanthus heterophyllus	*Phytophthora nemorosa*	Humboldt	McKinleyville
Osmanthus heterophyllus	*Phytophthora nemorosa*	Humboldt	Eureka
Persea americana	*Phytophthora* sp.	Orange	Irvine
Persea americana	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Phoenix canariensis	*Fusarium oxysporum*	State of Nevada	Las Vegas
Phoenix canariensis	*Gliocladium vermoeseni*	Santa Barbara	Santa Barbara
Phoenix canariensis	*Phomopsis* sp.	Santa Barbara	Santa Barbara
Pinus muricata	*Fusarium circinatum*	Marin	Point Reyes Station
Pinus radiata	*Fusarium circinatum*	Marin	Point Reyes Station
Pistacia chinensis	*Botrytis cinerea*	Mendocino	Redwood Valley
Pittosporum crassifolium	*Phytopthora* sp.	Santa Barbara	Carpinteria
Pittosporum tenuifolium	*Phytophthora* sp.	Santa Barbara	Carpinteria
Pittosporum undulatum	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Platanus racemosa	*Oidium* sp.	Sacramento	Sacramento
Platanus sp.	*Microsphaera penicillata*	San Luis Obispo	Arroyo Grande
Populus tremuloides	*Marssonina castagnei*	Plumas	Johnsville
Prunus avium	*Phloeosporella padi*	Stanislaus	Hickman
Prunus avium	*Tranzschelia* sp.	Humboldt	Eureka
Prunus cistena	*Peronospora* sp.	Riverside	San Jacinto
Prunus domestica	*Kabatiella prunicola*	Santa Cruz	Watsonville
Prunus domestica	*Pseudmonas syringae*	Sutter	Yuba City
Prunus domestica	*Rhizobium rhizogenes*	Humboldt	Hydesville
Prunus domestica	*Tranzschelia discolor*	Glenn	Fresno
Prunus dulcis	*Cuscuta japonica*	Sacramento	Sacramento
Prunus dulcis	*Kabatiella prunicola*	Merced	El Nido
Prunus persica	*Phytophthora* sp.	Butte	Gridley
Prunus sp.	*Cuscuta* cf. *japonica*	Shasta	Redding
Pseudotsuga mensiesii	*Phytophthora* sp.	Butte	Chico
Pseudotsuga mensiesii	*Phytophthora* sp.	Placer	Auburn
Punicaceae	*Nematospora coryli*	Riverside	Mecca
Pyrus calleryana	*Entomosporium mespili*	Santa Cruz	Watsonville
Pyrus sp.	*Erwinia amylovora*	San Luis Obispo	Paso Robles
Pyrus sp.	*Erwinia amylovora*	San Mateo	Menlo Park

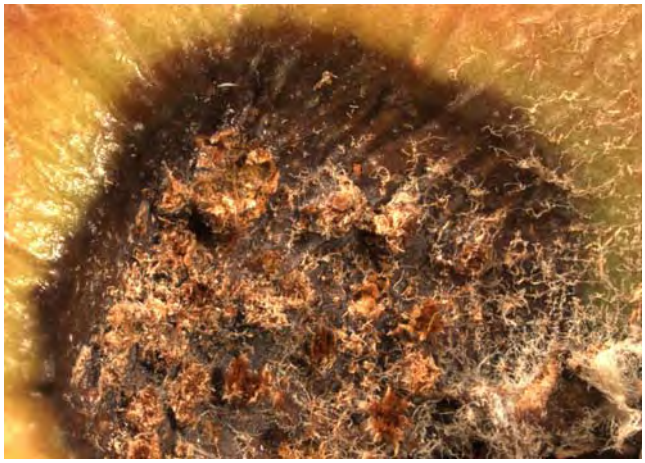
Host	Pathogen/Parasite	County	City
Quercus agrifolia	*Cuscuta* cf. *japonica*	Contra Costa	San Pablo
Quercus agrifolia	*Discula umbrinella*	Contra Costa	Concord
Quercus agrifolia	*Phytophthora ramorum*	Alameda	Oakland
Quercus agrifolia	*Phytophthora ramorum*	San Mateo	Portola Valley
Quercus agrifolia	*Phytophthora ramorum*	San Mateo	Hillsborough
Quercus agrifolia	*Phytophthora* sp.	Alameda	Oakland
Quercus agrifolia	*Sphaerotheca lanestris*	Contra Costa	Walnut Creek
Quercus agrifolia	*Sphaerotheca lanestris*	Riverside	Temecula
Quercus douglasii	*Phyllactinia guttata*	El Dorado	El Dorado Hills
Quercus douglasii	*Phytophthora* sp.	Sacramento	Sacramento
Quercus kelloggii	*Cylindrosporium kelloggii*	Yuba	Oregon House
Quercus lobata	*Discula umbrinella*	Sacramento	R. Murieta
Quercus lobata	*Sphaerotheca lanestris*	Santa Cruz	Watsonville
Quercus rubra	*Cystotheca lanestris*	Santa Clara	Palo Alto
Quercus rubra	*Quercus macrocarpa*	Sacramento	Rancho Murieta
Quercus rubra	*Sphaerotheca lanestris*	Sacramento	Rancho Murieta
Quercus sp.	*Ascochyta* sp.	San Francisco	Not listed
Quercus sp.	*Cystotheca lanestris*	San Francisco	Not listed
Quercus sp.	*Cystotheca lanestris*	San Luis Obispo	Arroyo Grande
Quercus sp.	*Cystotheca lanestris*	Yolo	Davis
Quercus sp.	*Discula quercina*	San Francisco	Not listed
Quercus sp.	*Microsphaera* sp.	San Luis Obispo	Arroyo Grande
Quercus sp.	*Phloeospora* sp.	Alameda	Castro Valley
Quercus sp.	*Phyllactinia guttata*	Sacramento	Orangevale
Quercus sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Quercus sp.	*Sphaerotheca lanestris*	Contra Costa	Richmond
Quercus suber	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Rhamnus alaternus	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Rhamnus californica	*Phytophthora cactorum*	Los Angeles	Azusa
Rhamnus californica	*Phytophthora ramorum*	Alameda	Oakland
Rhamnus californica	*Phytophthora* sp.	Santa Clara	San Martin
Rhus laurina	*Cuscuta japonica*	Los Angeles	405 Freeway
Rhus sp.	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Ribes sp. (Alternate Host)	*Cronartium ribicoloa*	San Francisco	San Francisco
Rosa sp.	*Cuscuta japonica*	Fresno	Fresno
Rubus sp.	*Cuscuta* cf. *japonica*	Contra Costa	El Cerrito
Salix sp.	*Cuscuta* cf. *japonica*	Contra Costa	El Cerrito
Salix sp.	*Melampsora epitea*	Sonoma	Sebastopol
Sambucus sp.	*Cuscuta* cf. *japonica*	Contra Costa	El Cerrito
Schefflera actinophylla	*Colletotrichum gloeosporioides*	San Diego	Valley Center
Schinus molle	*Phytophthora* sp.	Santa Barbara	Santa Barbara
Sequoia sempervirens	*Phytophthora ramorum*	San Mateo	Pescadero

Host	Pathogen/Parasite	County	City
Syringa vulgaris	*Ascochyta syringae*	San Luis Obispo	Arroyo Grande
Thuja plicata	*Phytophthora* sp.	Santa Barbara	Santa Maria
Tupidanthis calyptratus	*Alternaria panax*	Santa Barbara	Carpinteria
Ulmus americana	*Ophiostoma ulmi*	Sacramento	Sacramento
Ulmus chinenses	*Ophiostoma ulmi*	Sacramento	Sacramento
Ulmus parvifolia	*Botryodiplodia theobromae*	Sacramento	Sacramento
Ulmus parvifolia	*Gloeosporium ulmicola*	Alameda	Livermore
Ulmus parvifolia	*Gloeosporium ulmicola*	San Mateo	Redwood City
Ulmus procera	*Ophiostoma ulmi*	Napa	St. Helena
Ulmus procera	*Ophiostoma ulmi*	Sacramento	Sacramento
Ulmus procera	*Ophiostoma ulmi*	Santa Clara	Palo Alto
Umbellularia californica	*Phytophthora nemorosa*	Alameda	Berkeley
Umbellularia californica	*Phytophthora nemorosa*	Alameda	Oakland
Umbellularia californica	*Phytophthora nemorosa*	Humboldt	Mckinleyville
Umbellularia californica	*Phytophthora nemorosa*	Humboldt	Orleans
Umbellularia californica	*Phytophthora nemorosa*	Humboldt	Redway
Umbellularia californica	*Phytophthora nemorosa*	Humboldt	Whitethorn
Umbellularia californica	*Phytophthora nemorosa*	Mendocino	Mendocino
Umbellularia californica	*Phytophthora nemorosa*	San Mateo	Millbrae
Umbellularia californica	*Phytophthora nemorosa*	San Mateo	Woodside
Umbellularia californica	*Phytophthora nemorosa*	Sonoma	Petaluma
Umbellularia californica	*Phytophthora pseudosyringae*	Alameda	Oakland
Umbellularia californica	*Phytophthora pseudosyringae*	Alameda	Berkeley
Umbellularia californica	*Phytophthora pseudosyringae*	Contra Costa	Not listed
Umbellularia californica	*Phytophthora pseudosyringae*	Humboldt	Garberville
Umbellularia californica	*Phytophthora pseudosyringae*	Humboldt	Orleans
Umbellularia californica	*Phytophthora pseudosyringae*	Humboldt	Whitethorn
Umbellularia californica	*Phytophthora pseudosyringae*	Mendocino	Leggett
Umbellularia californica	*Phytophthora pseudosyringae*	Sonoma	Not listed
Umbellularia californica	*Phytophthora ramorum*	Contra Costa	El Sobrante
Umbellularia californica	*Phytophthora ramorum*	Humboldt	Eureka
Umbellularia californica	*Phytophthora ramorum*	Marin	Woodacre
Umbellularia californica	*Phytophthora ramorum*	Marin	Novato
Umbellularia californica	*Phytophthora ramorum*	Mendocino	Booneville
Umbellularia californica	*Phytophthora ramorum*	Mendocino	Fort Bragg
Umbellularia californica	*Phytophthora ramorum*	Mendocino	Mendocino
Umbellularia californica	*Phytophthora ramorum*	San Mateo	Burlingame
Umbellularia californica	*Phytophthora ramorum*	San Mateo	Hillsborough
Umbellularia californica	*Phytophthora ramorum*	San Mateo	Millbrae
Umbellularia californica	*Phytophthora ramorum*	San Mateo	Woodside
Umbellularia californica	*Phytophthora ramorum*	Santa Clara	Los Altos
Umbellularia californica	*Phytophthora ramorum*	Santa Clara	Los Gatos
Umbellularia californica	*Phytophthora ramorum*	Solano	Fairfield

Host	Pathogen/Parasite	County	City
Umbellularia californica	*Phytophthora ramorum*	Sonoma	Glen Ellen
Umbellularia californica	*Phytophthora ramorum*	Sonoma	Guerneville
Umbellularia californica	*Phytophthora ramorum*	Sonoma	Occidental
Umbellularia californica	*Phytophthora ramorum*	Sonoma	Petaluma
Viburnum davidii	*Colletotrichum* sp.	Santa Cruz	La Selva Beach
Vitis sp.	*Cuscuta japonica*	Yuba	Not listed

Selected Tree Disease and Parasite Photographs

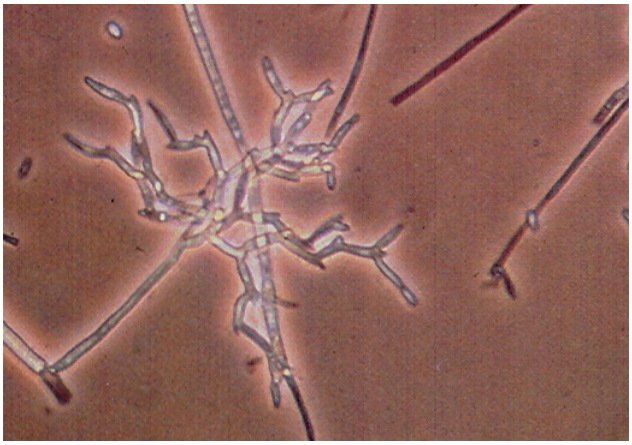
Cedar-Apple Rust, *Gymnosporangium juniperi-virginianae*: Heteroecious rust fungus exhibiting stages of development on more than one host. Alternate hosts are *Juniperus sp*. with the telial state (gall) and *Malus sp.* fruit and leaves with the aecial state (lesions).



Cedar-Apple Rust, *Gymnosporangium juniperi-virginianae*, aecia and aeciospores on *Malus* sp. (Photomicrograph by C. Blomquist).

Japanese Dodder, *Cuscuta japonica*, on *Nerium* sp.

Leaf blight, *Ascochyta* sp., on *Aesculus californica.*



Fusarium circinatum, in vitro polyphialide sporophores (Photomicrograph by T. Tidwell)

Diamond Scale fungus, *Sphaerodothus neowashingtoniae*, on Palm.

Pine Pitch Canker, *Fusarium circinatum*, on *Pinus muricata.* Main stem canker exhibiting resin-soaked internal wood

SIGNIFICANT RECORDS IN NEMATOLOGY

California Statewide Nematode Survey Project for 2006

Prepared by K. Dong, J. Chitambar, S. Subbotin, M. Alzubaidy,
M. Luque-Williams, J. Romero, K. Kosta, R. Luna

The vast diversity of crops cultivated in California readily provides a wide range of environments that favor many agricultural pests including plant parasitic nematodes. Such pests, whether domestic and exotic, have the potential to greatly reduce crop productivity, and adversely impact California economy and way of life. The Nematology Laboratory, Plant Pest Diagnostics Branch (PPDB) and Pest Detection and Eradication Program Branch (PDEP) of California Department of Food and Agriculture (CDFA) conducted a statewide nematode survey project that commenced spring 2005 and continued through 2006. The project was cooperative with the US Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) and funded by the National Cooperative Agricultural Pest Survey (CAPS) Program. The objective of this project was to obtain current information on the occurrence and distribution of economically harmful plant parasitic nematodes in the major cropping and nursery production areas of California. The target nematode species surveyed within California included 22 species listed below:

White tip of rice nematode, *Aphelenchoides besseyi*
Wheat seed gall nematode, *Anguina tritici*
Rice stem nematode, *Ditylenchus angustus*
Potato rot nematode, *Ditylenchus destructor*
Onion stem/bulb nematode, *Ditylenchus dipsaci*
Potato cyst nematode, *Globodera pallida*
Golden nematode, *Globodera rostochiensis*
Cereal cyst nematode, *Heterodera avenae*
Soybean cyst nematode, *Heterodera glycines*
Mediterranean cereal cyst nematode, *Heterodera latipons*
British root-knot nematode *Meloidogyne artiellia*
Columbia root-knot nematode, *Meloidogyne chitwoodi*
False Columbia root-knot nematode, *Meloidogyne fallax*
Northern root-knot nematode, *Meloidogyne hapla*
Javanese root-knot nematode, *Meloidogyne javanica*
Pecan root-knot nematode, *Meloidogyne partityla*
False root-knot nematode, *Nacobbus aberrans*
Burrowing nematode, *Radopholus similis*
Reniform nematode, *Rotylenchulus reniformis*
Dagger nematodes, *Xiphinema* spp. (*bakeri, coxi, diversicaudatum*)

Sixteen species in the above list have never been detected in California's agricultural production sites, namely, the wheat seed gall nematode (*Anguina tritici*) rice stem nematode (*Ditylenchus angustus*), golden nematode (*Globodera rostochiensis*), potato cyst nematode (*G. pallida*), three cyst nematode species (*Heterodera avenae*, *H. glycines* and *H. latipons*), three root-knot nematode species (*Meloidogyne artiellia*, *M. fallax* and *M. partityla*), false root-knot nematode (*Nacobbus*

aberrans), reniform nematode (*Rotylenchulus reniformis*) and three species of dagger nematode (*Xiphinema bakeri, X. diversicaudatum and X. coxi*). These exotic nematode species could cause devastating losses to agricultural production and urban landscapes if they became established in California. Early detection of these pests is crucial for the eradication of incipient infestations. In addition, the survey also included economically important species, which are known to occur however, with a more or less limited distribution within California, namely, the white tip of rice nematode (*Aphelenchoides besseyi*), potato rot nematode (*Ditylenchus destructor*), stem and bulb nematode (*Ditylenchus dipsaci*), and stubby root nematode (*Paratrichodorus spp*), and three species of root-knot nematodes (*Meloidogyne chitwoodi, M. hapla, M. javanica*). The survey provided information on the occurrence and distribution of target exotic and non-exotic nematode species within the State. This information enables 1) the implementation of appropriate eradication and regulatory management strategies, 2) California growers to export agricultural commodities, 3) alert states to new pathways of preventation/management, given the detection of exotic nematode species, and 4) expand and strengthen existing databases at CDFA and National Agricultural Pest Information Service (NAPIS).

Major Hosts

Twenty-four major plant hosts were selected for the survey based on the host ranges of the target nematode species and the cultivation of the plants in California (Table 1). Acreages and field locations of selected host plants were determined per county from Agricultural Commissioners' pesticide permit records. Information obtained for each sampled field included, physical address of site, global positioning system (GPS) coordinates, crop cultivated, cropping history, pesticide use history and date of last fumigation. Only non-fumigated fields were sampled in the survey.

Sampling

A minimum of 20 composite samples per host per county was collected. For counties with large production acreage, at least, 25 composite samples per host were recommended. Sampling was also encouraged in those counties not listed but known to be minor producers of survey plants. Field samples from plant hosts not listed in Table 1, nevertheless, cultivated as important crops in a given county, were also included in the statewide survey.

Sampling was performed near crop maturity in late summer/fall or during harvest or post harvest, depending on the crop. Soil, root, tuber and stem/foliage samples were collected from commercial fields, rows, and orchard plants depending on the target pest. For field and row crops, a composite sample comprised of 15 subsamples collected on a 120 x 120 ft grid, (50 paces) per 2 hectare unit. For fields less than 2 hectares, 15 subsamples were collected on a 85 x 85 ft grid (35 paces). For fields exceeding 2 hectares, more than one unit was sampled per field, depending on the total number of fields/acreage to be sampled within a county. A subsample comprised 50 ml soil and 20 ml feeder roots thereby, yielding a total sample volume of approximately 750 ml soil plus roots. Two tubers or bulbs and approximately, 100 ml stem and foliage were collected per subsample. Orchard trees samples comprised soil and roots collected from 10 randomly selected trees per 2 hectare or less unit. Field grown nursery stock was sampled on a 40 x 40 ft grid per acre with a collection of approximately, 50 ml soil and 30 ml roots per subsample or 800 ml total sample size. Nursery plants in containers, flats or fields, were sampled at 10 x 10 ft bench or frame space

according to guidelines established in CDFA Nursery Integrated Pest Manual (NIPM item 7.1). Total soil and plant sample volumes were sent to the Laboratory for nematode extraction.

Nematode Diagnosis

Nematodes were extracted from soil samples by gravity sieving, sugar centrifugation, and mist extraction techniques. Nematodes were extracted from plant tissue samples by chopping and mist extraction techniques. As a result, each sample yielded three to four separate test suspensions for nematode analyses: 1) direct microscopic examination of 250-µm pore sieve residue for cysts and large vermiform plant parasitic nematodes, 2) resultant nematode suspension from sugar centrifugation for the extraction of sluggishly motile and other plant parasitic nematodes, 3) resultant nematode suspension from mist extraction for motile and endoparasitic root and soil nematodes and 4) resultant suspension from mist extraction for above ground or tuber plant parasitic nematodes.

Plant parasitic nematodes were identified using morphological and DNA analyses. Morphological identifications were made of water-mounted and glycerin-mounted nematode specimens, using scanning and compound light microscopes. Populations of certain nematode species were increased on carrot callus or potted tomato plants for further study as needed.

Second stage larvae of *Meloidogyne* spp. and *Heterodera* spp. initially identified and confirmed using a dissection microscope at a magnification of 250X, were further identified to the species level based on the size of DNA bands analyzed using PCR-RFLP tests. A minimum of 5 infective juveniles was analyzed from each sample for PCR diagnoses. In diagnostic tests for *Meloidogyne* spp. tests, the PCR amplification was conducted with primer set located in the COII and 16S ribosomal mitochondrial genes respectively (Powers and Harris, 1993; Stanton, *et al*., 1997). The C2F3 primer (5' GGTCAATGTTCAGAAATTTGTGG 3') from Powers was chosen as up-stream primer, and the MRH106 from Stanton was used as down-stream primer (5' AATTTCTAAAGACTTTTCTTAGT 3'). The root-knot nematode species identifications were made by the size of amplification PCR (or PCR-RFLP) products. *M. arenaria* will develop a ~1,300bp product. The amplification products of approximately 1,800bp were further digested with *Hinf*I: *M. javanica* will not be digested; *M. incognita* will produce the 1400bp and 400bp fragments. For some *Meloidogyne* species when the amplification products were about 650bp, the PCR products were subjected to a *Dra*I digestion: if the digestion products were 258bp, 119bp, 40bp, 18bp, and 156bp, the species was *M. chitwoodi*. If the digestion products were 246bp, 198bp, 51bp and 103bp, the species was *M. hapla*. Since

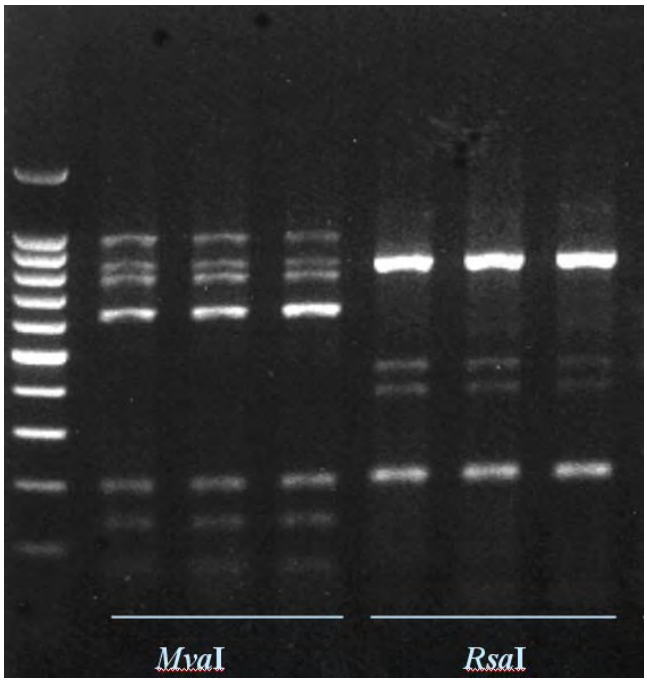


Figure. Unique restriction profiles of the ITS-rRNA generated by two enzymes for the sugar beet cyst nematode *Heterodera schachtii*.

both *M. chitwoodi* and *M. hapla* were target species in this CAPS survey, an IGS region PCR test was further conducted to confirm the species (Wishart, *et al*., 2002). In addition to the PCR tests, when root galls were available in some samples, *Meloidogyne* adult females were isolated for morphological and isozyme analyses as supplementary techniques for identification.

The ITS1 and ITS2 regions were used to differentiate species of *Heterodera* (Subbotin, *et. al*., 2000). Most *Heterodera* spp. yielded a single fragment of approximately 1060bp from the primer pair AB 28 (ATATGCTTAAGTTCAGCGGGT) and TW 81 (GTTTCCGTAGGTGAACCTGC). Only *H. schachtii* was detected in this survey, the PCR products were digested with restriction enzyme *MvaI* and the results from *H. schachtii* were seven fragments of 1010bp, 840bp, 760bp, 630bp, 220bp, 150bp, and 80bp.

Results

A total of 2,159 CAPS survey samples were processed and diagnosed in 2006. In addition, 711 nematode samples from the CDFA's Nematode Control program, 881 Nursery Nematode Certification program samples and 422 Quarantine Phytosanitary samples of commodities for export collected from major agriculture crop and fruit trees cultivated in California's agricultural soils in 2006 were also included into the overall survey results. Seventy-eight nematode genus/species were detected in the 2006 survey (Table 2). Only five of the target nematode species, namely, *Ditylenchus dipsaci*, *Meloidogyne chitwoodi*, *M. hapla*, *M. javanica* and *Paratrichodorus* spp., already known to be present in California's agricultural production sites, were detected in the 2006 CAPS survey. Table 3 lists the plant hosts associated with these species in 2006, as well as the counties wherein the species have been detected according to CDFA-Nematology pest detection records 1989-2006. Table 4 and 5 list the 2006 survey results of plant parasitic nematodes associated with host plants and counties accordingly.

Few "B" rated nematode species were detected in this survey (Table 2), for instance, the Columbia root knot nematode *Meloidogyne chitwoodi* was detected in Siskiyou County on potato. The California dagger nematode *Xiphinema index* was found in Butte, Napa, San Diego, Sonoma, and Tulare counties. The Citrus Sheath nematode, *Hemicycliophora arenaria*, an "A" rated pest was detected in a lemon orchard in Imperial County. The nematode species is very limited in its distribution within the State and is currently contained or held within the infested areas. A "Q" rating was given to few *Heterodera* sp. and *Meloidogyne* sp. (Table. 2) pending complete diagnoses of the species. Those species are currently under further study. No other "A" or "Q" rated nematode species were detected in 2006, however the White-tip of rice nematode, *Aphelenchoides besseyi*, has been detected on paddy rice in Butte, Sutter and Yolo counties in 1997-2005 (CDFA-Nematology pest detection records).

Table 1. List of plant hosts sampled for the detection of CAPS survey target nematode species.

Major plant hosts	**Target nematode species associated**
Alfalfa	*Ditylenchus dipsaci, Meloidogyne artiellia, M. fallax, M. hapla*
Apricot	*Meloidogyne javanica, Xiphinema* spp.
Barley	*Heterodera latipons, Meloidogyne artiellia, M. chitwoodi*
Bean (common)	*Heterodera glycines*
Broccoli	*Meloidogyne artiellia*
Cabbage	*Meloidogyne artiellia, Naccobus aberrans, Xiphinema spp.*
Carrot	*Meloidogyne fallax, Naccobus aberrans, Radopholus similis, Rotylenchulus reniformis*
Cauliflower	*Meloidogyne artiellia, Naccobus aberrans*
Cherry	*Meloidogyne javanica*
Citrus	*Radopholus similis, Rotylenchulus reniformis*
Cotton	*Rotylenchulus reniformis*
Cucumber	*Naccobus aberrans*
Daffodil/Narcissus	*Ditylenchus dipsaci*
Grape	*Meloidogyne javanica, Rotylenchulus reniformis, Xiphinema* spp.
Oats	*Ditylenchus dipsaci, Heterodera avenae*
Onion	*Ditylenchus dipsaci, Rotylenchulus reniformis*
Garlic[a]	*Ditylenchus dipsaci, Rotylenchulus reniformis*
Peach	*Meloidogyne javanica, Xiphinema* spp.
Plums	*Meloidogyne javanica*
Potato	*Ditylenchus destructor, Globodera pallida, G. rostochiensis, Meloidogyne chitwoodi, M. fallax, Naccobus aberrans*
Rice (paddy)	*Aphelenchoides besseyi, Ditylenchus angustus*
Rose	*Xiphinema* spp.
Sugarbeet	*Heterodera latipons*
Strawberry[a]	*Meloidogyne hapla, Radopholus similis*
Walnut/pecans	*Meloidogyne partityla*
Wheat	*Anguina tritici, Heterodera avenae, Meloidogyne chitwoodi, M. fallax*

[a]Host plants included in CDFA's Quarantine Phytosanitary certification program

Table 2. Nematode species detected in the 2006 CAPS survey. Number of Detections include CDFA's Nematode Certification and Nematode control program data for 2006.

Nematode Species	Number of Detections	CA Pest Rating
Criconema sp.	21	D
Criconemella curvata	1	D
Criconemella sp.	34	D
Ditylenchus dipsaci	10	C
Gracilacus idalimus	1	D
Gracilacus sp.	1	D
Helicotylenchus digonicus	5	D
Helicotylenchus dihystera	48	D
Helicotylenchus pseudorobustus	25	D
Helicotylenchus solani	1	D
Helicotylenchus paragirus	12	D
Helicotylenchus sp.	27	D
Hemicriconemoides californianus	2	D
Hemicriconemoides chitwoodi	2	D
Hemicriconemoides sp.	3	D
Hemicycliophora arenaria	3	A
Hemicycliophora biosphaera	1	D
Hemicycliophora sp.	18	D
Hemicycliophora striatula	1	D
Heterodera schachtii	88	C
Heterodera sp.[a]	1	Q
Hirschmanniella belli	2	D
Hirschmanniella sp.	4	D
Longidorus africanus	3	C
Meloidogyne arenaria	8	C
Meloidogyne chitwoodi	1	B
Meloidogyne hapla	27	C
Meloidogyne incognita	43	C
Meloidogyne javanica	23	C
Meloidogyne sp.[a]	6	Q
Merlinius brevidens	42	D
Merlinius microdorus	1	D
Merlinius sp.	2	D
Mesocriconema xenoplax[b]	392	D
Ogma sp.	3	D
Paratrichodorus minor	2	D
Paratrichodorus sp.	22	D
Paratylenchus baldaccii	3	D
Paratylenchus bukowinensis	57	D

[a]Species under further study; temporary rating assigned for incomplete identification.
[b]formerly *Macroposthonia.*

Table 2 (continued)

Nematode Species	Number of Detections	CA Pest Rating
Paratylenchus dianthus	1	D
Paratylenchus hamatus	127	D
Paratylenchus holdemani	1	D
Paratylenchus italiensis	1	D
Paratylenchus lepidus	4	D
Paratylenchus nanus	1	D
Paratylenchus neoamblycephalus	21	D
Paratylenchus similes	3	D
Paratylenchus sp.	52	D
Pratylenchus brachyurus	9	C
Pratylenchus neglectus	185	D
Pratylenchus penetrans	19	C
Pratylenchus scribneri	28	D
Pratylenchus sp.	16	D
Pratylenchus thornei	79	D
Pratylenchus vulnus	83	C
Quinisulcius capitatus	7	D
Rotylenchulus parvus	1	C
Rotylenchus robustus	1	D
Scutellonema brachyurus	4	D
Scutellonema clathricaudatum	2	D
Scutellonema conicephalum	4	D
Tylenchorhynchus agri	1	D
Tylenchorhynchus annulatus	1	D
Tylenchorhynchus aspericutis	2	D
Tylenchorhynchus ebriensis	1	D
Tylenchorhynchus elegans	9	D
Tylenchorhynchus goldeni	5	D
Tylenchorhynchus mashhoodi	38	D
Tylenchorhynchus microconus	3	D
Tylenchorhynchus nudus	1	D
Tylenchorhynchus oleraceae	3	D
Tylenchorhynchus penniseti	1	D
Tylenchorhynchus punensis	1	D
Tylenchorhynchus sp.	128	D
Tylenchulus semipenetrans	142	C
Xiphinema americanum	291	C
Xiphinema index	15	B
No Plant Parasitic Nematode Found	2712	
Total Survey Sample Detections	4947	

Table 3. List of 2006 CAPS survey target nematode species detected in California's agricultural production soils, also including CDFA Nematology pest detection records data 1989-2006.

Common Name	Species	Counties	Pest Rating	Associated Host (2006)
White Tip of Rice Nematode	*Aphelenchoides besseyi*	Butte, Sutter, Yolo	A	-
Potato Rot Nematode	*Ditylenchus destructor*	Contra Costa, Humboldt, Los Angeles, Marin, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Cruz	B	-
Stem and Bulb Nematode	*Ditylenchus dipsaci*[a]	Alameda, Alpine, Calaveras, Contra Costa, Del Norte, Fresno, Glenn, Humboldt, Imperial, Kern, Kings, Lassen, Los Angeles[b], Madera, Marin, Mendocino, Merced, Modoc, Monterey, Napa, Orange, Plumas, Riverside, Sacramento, San Benito, San Diego, San Joaquin, San Luis Obispo, San Mateo, San Bernardino, Santa Clara, Santa Cruz, Siskiyou, Sonoma, Stanislaus	C	Alfalfa
Northern Root-Knot Nematode	*Meloidogyne hapla*[a]	Alameda, Colusa, Contra Costa, Fresno[b], Glenn[b], Imperial, Kern[b], Los Angeles[b], Marin, Tehama, Yolo, Sutter, Solano, Merced[b], Modoc[b], Monterey[b], Orange, Riverside, San Bernardino, San Diego, San Francisco, San Joaquin, Santa Barbara, Santa Clara, Santa Cruz, Shasta[b], Stanislaus, Tulare[b], Ventura	C	Alfalfa, long, bean, potato
Javanese Root-Knot Nematode	*Meloidogyne javanica*[a]	Contra Costa, Fresno, Glenn, Imperial, Kern, Kings, Los Angeles, Madera, Merced, Napa, Orange, Riverside, San Bernardino, San Diego[b], San Joaquin[b], Stanislaus[b], Sutter[b], Tulare[b], Ventura, Yolo[b]	C	Bean, lima bean, grape, peach, tomato,
Columbia Root-Knot Nematode	*Meloidogyne chitwoodi*[a]	Modesto, Monterey, Shasta, Siskiyou[b], Tulare, Tuolumne	B	Potato
Stubby Root Nematode	*Paratrichodorus* spp.[a]	Widespread throughout California (including, Fresno, Imperial, Kern, Kings, Merced, Placer, San Joaquin, Shasta, Tulare counties)[c]	D	Alfalfa, apricot, cherry, lemon, orange, plum, potato, strawberry, walnut

[a]Target nematode species detected; [b]Counties positive for target nematode species.

Table 4. Plant parasitic nematode species associated with agriculture crops, fruit trees and vegetables in California: 2006 CAPS Survey. Note: Total Diagnostics include "no plant parasitic nematode found", negative and positive detections of nematode species.
*formerly *Macroposthonia*

Host	Total Diagnostics	Nematode Species	Number of Detections
Alfalfa	249	No plant parasitic nematode found	72
		Criconemella sp.	2
		Ditylenchus dipsaci	10
		Helicotylenchus dihystera	3
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	3
		Meloidogyne hapla	16
		Merlinius brevidens	15
		*Mesocriconema xenoplax**	22
		Paratrichodorus sp	3
		Paratylenchus bukowinensis	2
		Paratylenchus hamatus	2
		Paratylenchus sp.	1
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	25
		Pratylenchus thornei	15
		Tylenchorhynchus goldeni	1
		Tylenchorhynchus mashhoodi	14
		Tylenchorhynchus penniseti	1
		Tylenchorhynchus sp.	30
		Xiphinema americanum	10
Almond	14	No plant parasitic nematode found	14
Apricot	189	No plant parasitic nematode found	13
		Criconemella sp.	12
		Helicotylenchus dihystera	6
		Helicotylenchus paragirus	7
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	3
		Merlinius microdorus	1
		*Mesocriconema xenoplax**	38
		Paratrichodorus sp.	2
		Paratylenchus sp.	14
		Paratylenchus bukowinensis	23
		Paratylenchus hamatus	9
		Paratylenchus lepidus	1
		Paratylenchus neoamblycephalus	3
		Pratylenchus neglectus	4
		Pratylenchus penetrans	2
		Pratylenchus thornei	1
		Pratylenchus vulnus	11

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Apricot (continued)		*Scutellonema clathricaudatum*	2
		Scutellonema conicephalum	1
		Tylenchorhynchus mashhoodi	2
		Tylenchorhynchus nudus	1
		Tylenchorhynchus sp.	9
		Xiphinema americanum	23
Barley	82	No plant parasitic nematode found	56
		Helicotylenchus pseudorobustus	1
		Heterodera schachtii	2
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	16
		Tylenchorhynchus mashhoodi	3
		Tylenchorhynchus sp.	3
Bean	73	No plant parasitic nematode found	20
		Helicotylenchus dihystera	9
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	1
		Meloidogyne incognita	1
		Meloidogyne javanica	13
		Pratylenchus sp.	3
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	8
		Pratylenchus vulnus	2
		Quinisulcius capitatus	7
		Xiphinema americanum	7
Broccoli	93	No plant parasitic nematode found	41
		Heterodera schachtii	37
		Merlinius brevidens	3
		Pratylenchus neglectus	1
		Tylenchorhynchus sp.	6
		Tylenchorhynchus goldeni	3
		Tylenchorhynchus mashhoodi	1
		Tylenchorhynchus oleraceae	1
Brussels Sprouts	1	No plant parasitic nematode found	1
Cabbage	41	No plant parasitic nematode found	11
		Heterodera schachtii	29
		Tylenchorhynchus sp.	1
Carrot	80	No plant parasitic nematode found	73
		Criconemella sp.	1
		Merlinius brevidens	1
		Pratylenchus neglectus	1
		Tylenchorhynchus sp.	4

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Cauliflower	38	No plant parasitic nematode found	14
		Helicotylenchus solani	1
		Heterodera schachtii	19
		Pratylenchus neglectus	2
		Tylenchorhynchus oleraceae	1
		Tylenchorhynchus sp.	1
Cherry	167	No plant parasitic nematode found	6
		Criconemella sp.	3
		Helicotylenchus sp.	1
		Helicotylenchus paragirus	8
		Helicotylenchus dihystera	1
		Helicotylenchus pseudorobustus	1
		*Mesocriconema xenoplax**	20
		Paratrichodorus sp.	5
		Paratylenchus bukowinensis	9
		Paratylenchus hamatus	3
		Paratylenchus lepidus	1
		Paratylenchus sp.	6
		Pratylenchus neglectus	6
		Pratylenchus penetrans	6
		Pratylenchus thornei	10
		Pratylenchus vulnus	19
		Scutellonema conicephalum	1
		Tylenchorhynchus agri	1
		Tylenchorhynchus elegans	8
		Tylenchorhynchus mashhoodi	6
		Tylenchorhynchus microconus	3
		Tylenchorhynchus sp.	6
		Xiphinema americanum	37
Chinese cabbage	1	No plant parasitic nematode found	1
Citrus	76	No plant parasitic nematode found	1
		Criconema sp.	14
		Criconemella sp.	2
		Paratrichodorus sp.	1
		Paratylenchus baldaccii	2
		Paratylenchus dianthus	1
		Paratylenchus similes	2
		Paratylenchus holdemani	1
		Pratylenchus neglectus	2
		Pratylenchus vulnus	1
		Tylenchulus semipenetrans	36
		Xiphinema americanum	13

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Cotton	131	No plant parasitic nematode found	103
		Helicotylenchus digonicus	2
		Helicotylenchus pseudorobustus	3
		Longidorus africanus	2
		Meloidogyne incognita	5
		*Mesocriconema xenoplax**	4
		Paratylenchus bukowinensis	2
		Pratylenchus brachyurus	1
		Pratylenchus thornei	2
		Tylenchorhynchus mashhoodi	6
		Xiphinema americanum	1
Dried Plum	31	No plant parasitic nematode found	4
		*Mesocriconema xenoplax**	22
		Paratylenchus sp.	2
		Xiphinema americanum	3
Garlic	221	No plant parasitic nematode found	215
		Pratylenchus penetrans	6
Grape	851	No plant parasitic nematode found	590
		Criconemella sp.	1
		Gracilacus idalimus	1
		Helicotylenchus dihystera	8
		Helicotylenchus sp.	5
		Hemicriconemoides californianus	2
		Hemicriconemoides sp.	1
		Heterodera sp.	1
		Meloidogyne arenaria	8
		Meloidogyne incognita	28
		Meloidogyne javanica	3
		Meloidogyne sp.	4
		*Mesocriconema xenoplax**	44
		Paratylenchus hamatus	11
		Paratylenchus sp.	1
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	31
		Pratylenchus penetrans	1
		Pratylenchus scribneri	28
		Pratylenchus thornei	12
		Pratylenchus vulnus	3
		Rotylenchus robustus	1
		Tylenchorhynchus oleraceae	1
		Tylenchorhynchus punensis	1
		Tylenchorhynchus sp.	14

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Grape (continued)		*Xiphinema americanum*	36
		Xiphinema index	14
Grapefruit	24	No plant parasitic nematode found	6
		Hemicycliophora arenaria	1
		Tylenchulus semipenetrans	15
		Xiphinema americanum	2
Green Onion	2	No plant parasitic nematode found	2
Lemon	43	No plant parasitic nematode found	13
		Criconema sp.	2
		Hemicycliophora arenaria	2
		Hemicycliophora biosphaera	1
		Paratrichodorus sp.	2
		Tylenchulus semipenetrans	19
		Xiphinema americanum	4
Lima bean	8	No plant parasitic nematode found	0
		Helicotylenchus dihystera	1
		Meloidogyne javanica	2
		Merlinius sp.	2
		Pratylenchus neglectus	2
		Xiphinema americanum	1
Long Bean	25	No plant parasitic nematode found	12
		Criconemella sp.	1
		Meloidogyne hapla	2
		Meloidogyne incognita	3
		*Mesocriconema xenoplax**	4
		Paratylenchus lepidus	1
		Pratylenchus neglectus	1
		Tylenchorhynchus sp.	1
Mandarin	3	No plant parasitic nematode found	0
		Criconema sp.	1
		Tylenchulus semipenetrans	1
		Xiphinema americanum	1
Nectarine	37	No plant parasitic nematode found	3
		Helicotylenchus digonicus	1
		Helicotylenchus dihystera	2
		Helicotylenchus pseudorobustus	2
		Hemicycliophora striatula	1
		Meloidogyne incognita	1
		Paratylenchus bukowinensis	1
		Paratylenchus hamatus	7
		Pratylenchus neglectus	2
		Pratylenchus vulnus	6

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Nectarine (continued)		*Tylenchorhynchus aspericutis*	2
		Tylenchorhynchus sp.	2
		Xiphinema americanum	7
Oat	100	No plant parasitic nematode found	35
		Merlinius brevidens	9
		*Mesocriconema xenoplax**	2
		Paratylenchus similes	1
		Pratylenchus neglectus	21
		Pratylenchus thornei	10
		Tylenchorhynchus sp.	22
Onion	76	No plant parasitic nematode found	69
		Helicotylenchus dihystera	1
		Pratylenchus neglectus	1
		Tylenchorhynchus sp.	5
Orange	121	No plant parasitic nematode found	16
		Criconema sp.	1
		Criconemella sp.	1
		Helicotylenchus dihystera	1
		Longidorus africanus	1
		*Mesocriconema xenoplax**	4
		Ogma sp.	3
		Paratrichodorus sp.	1
		Pratylenchus neglectus	1
		Tylenchulus semipenetrans	69
		Xiphinema americanum	23
Peach	164	No plant parasitic nematode found	24
		Criconema sp.	1
		Criconemella sp.	2
		Helicotylenchus dihystera	3
		Hemicycliophora sp.	2
		Meloidogyne incognita	1
		Meloidogyne javanica	1
		Meloidogyne sp.	1
		*Mesocriconema xenoplax**	24
		Paratylenchus bukowinensis	1
		Paratylenchus hamatus	54
		Paratylenchus nanus	1
		Paratylenchus sp.	10
		Pratylenchus neglectus	5
		Pratylenchus penetrans	3
		Pratylenchus sp.	1
		Pratylenchus vulnus	8

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Peach (continued)		*Scutellonema brachyurus*	3
		Tylenchorhynchus ebriensis	1
		Tylenchorhynchus mashhoodi	2
		Tylenchorhynchus sp.	3
		Tylenchulus semipenetrans	1
		Xiphinema americanum	12
Plum	154	No plant parasitic nematode found	11
		Criconemella sp.	1
		Helicotylenchus dihystera	3
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	2
		*Mesocriconema xenoplax**	52
		Paratrichodorus minor	2
		Paratrichodorus sp.	1
		Paratylenchus bukowinensis	15
		Paratylenchus hamatus	17
		Paratylenchus lepidus	1
		Paratylenchus neoamblycephalus	1
		Paratylenchus sp.	12
		Pratylenchus neglectus	2
		Pratylenchus penetrans	1
		Pratylenchus vulnus	3
		Scutellonema brachyurus	1
		Scutellonema conicephalum	2
		Tylenchorhynchus annulatus	1
		Tylenchorhynchus elegans	1
		Tylenchorhynchus sp.	2
		Xiphinema americanum	22
Pomegranate	7	No plant parasitic nematode found	2
		Tylenchorhynchus sp.	5
Potato	146	No plant parasitic nematode found	108
		Meloidogyne chitwoodi	1
		Meloidogyne hapla	9
		Paratrichodorus sp.	4
		Pratylenchus neglectus	24
Prune	252	No plant parasitic nematode found	20
		Criconemella curvata	1
		Criconemella sp.	3
		Helicotylenchus digonicus	2
		Helicotylenchus dihystera	5
		Helicotylenchus pseudorobustus	10
		Helicotylenchus sp.	1

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Prune (continued)		*Hemicycliophora sheri*	5
		Hemicycliophora sp.	11
		Merlinius brevidens	1
		*Mesocriconema xenoplax**	72
		Paratylenchus baldaccii	1
		Paratylenchus neoamblycephalus	17
		Paratylenchus bukowinensis	3
		Paratylenchus hamatus	16
		Paratylenchus sp.	5
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	1
		Pratylenchus thornei	8
		Pratylenchus vulnus	7
		Pratylenchus sp.	2
		Tylenchorhynchus mashhoodi	2
		Tylenchorhynchus sp.	1
		Xiphinema americanum	57
Raspberry	8	No plant parasitic nematode found	8
Rice	73	No plant parasitic nematode found	65
		Hirschmanniella belli	2
		Hirschmanniella sp.	4
		Pratylenchus neglectus	2
Rose	8	No plant parasitic nematode found	7
		Tylenchorhynchus sp.	1
Snap beans	1	No plant parasitic nematode found	0
		Heterodera schachtii	1
Strawberry	878	No plant parasitic nematode found	876
		Paratrichodorus sp.	2
Sugar beets	103	No plant parasitic nematode found	84
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	3
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	3
		Rotylenchulus parvus	1
		Tylenchorhynchus mashhoodi	2
		Tylenchorhynchus sp.	5
		Xiphinema americanum	3
Tangerine	5	No plant parasitic nematode found	1
		Tylenchulus semipenetrans	1
		Xiphinema americanum	2
		Xiphinema index	1

Table 4 (continued).

Host	Total Diagnostics	Nematode Species	Number of Detections
Tomato	108	No plant parasitic nematode found	39
		Criconemella sp.	1
		Helicotylenchus dihystera	3
		Helicotylenchus sp.	6
		Meloidogyne incognita	4
		Meloidogyne javanica	4
		Meloidogyne sp.	1
		Merlinius brevidens	3
		*Mesocriconema xenoplax**	2
		Pratylenchus brachyurus	2
		Pratylenchus neglectus	16
		Pratylenchus sp.	7
		Pratylenchus thornei	16
		Tylenchorhynchus goldeni	1
		Xiphinema americanum	3
Walnut	173	No plant parasitic nematode found	12
		Criconemella sp.	4
		Gracilacus sp.	1
		Helicotylenchus dihystera	2
		Helicotylenchus pseudorobustus	2
		Helicotylenchus sp.	2
		Hemicriconemoides chitwoodi	2
		Hemicriconemoides sp.	2
		*Mesocriconema xenoplax**	82
		Paratrichodorus sp.	1
		Paratylenchus italiensis	1
		Paratylenchus hamatus	6
		Paratylenchus sp.	3
		Pratylenchus neglectus	1
		Pratylenchus sp.	2
		Pratylenchus thornei	2
		Pratylenchus vulnus	23
		Tylenchorhynchus sp.	1
		Xiphinema americanum	24
Wheat	89	No plant parasitic nematode found	62
		Helicotylenchus pseudorobustus	1
		Merlinius brevidens	10
		Paratylenchus bukowinensis	1
		Pratylenchus neglectus	7
		Pratylenchus thornei	3
		Tylenchorhynchus sp.	5

Table 5. Distribution of plant parasitic nematode species detected in California counties in the 2006 CAPS survey.
*formerly *Macroposthonia*

County	Total Diagnostics	Nematode species	Number of Detections
Alameda	6	No plant parasitic nematode found	6
Butte	167	No plant parasitic nematode found	25
		Criconemella curvata	1
		Criconemella sp.	2
		Helicotylenchus dihystera	3
		Helicotylenchus pseudorobustus	3
		Merlinius brevidens	1
		*Mesocriconema xenoplax**	60
		Paratylenchus bukowinensis	1
		Paratylenchus hamatus	5
		Paratylenchus neoamblycephalus	16
		Pratylenchus thornei	7
		Pratylenchus vulnus	14
		Tylenchorhynchus mashhoodi	1
		Tylenchorhynchus sp.	1
		Xiphinema americanum	23
		Xiphinema index	4
Colusa	51	No plant parasitic nematode found	29
		Hirschmanniella belli	2
		Hirschmanniella sp.	4
		Merlinius brevidens	3
		Pratylenchus neglectus	2
		Pratylenchus thornei	11
Fresno	429	No plant parasitic nematode found	136
		Criconemella sp.	16
		Helicotylenchus dihystera	7
		Helicotylenchus pseudorobustus	2
		Helicotylenchus sp.	2
		Meloidogyne hapla	4
		Meloidogyne incognita	4
		Merlinius microdorus	1
		*Mesocriconema xenoplax**	78
		Paratrichodorus minor	2
		Paratrichodorus sp.	4
		Paratylenchus bukowinensis	25
		Paratylenchus hamatus	13
		Paratylenchus lepidus	3
		Paratylenchus neoamblycephalus	3
		Paratylenchus sp.	18
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	9

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Fresno (continued)		*Pratylenchus vulnus*	18
		Scutellonema brachyurus	1
		Scutellonema clathricaudatum	2
		Scutellonema conicephalum	4
		Tylenchorhynchus elegans	1
		Tylenchorhynchus mashhoodi	3
		Tylenchorhynchus nudus	1
		Tylenchorhynchus sp.	13
		Tylenchulus semipenetrans	21
		Xiphinema americanum	37
Glenn	157	No plant parasitic nematode found	86
		Helicotylenchus dihystera	1
		Helicotylenchus pseudorobustus	7
		Helicotylenchus sp.	1
		Hemicycliophora sp.	6
		Meloidogyne hapla	1
		Merlinius brevidens	4
		*Mesocriconema xenoplax**	16
		Paratylenchus hamatus	6
		Pratylenchus brachyurus	1
		Pratylenchus thornei	3
		Tylenchorhynchus mashhoodi	3
		Tylenchorhynchus penniseti	1
		Tylenchorhynchus sp.	1
		Tylenchulus semipenetrans	1
		Xiphinema americanum	19
Humboldt	5	No plant parasitic nematode found	0
		Criconemella sp.	1
		Helicotylenchus dihystera	1
		Paratylenchus neoamblycephalus	1
		Pratylenchus vulnus	1
		Xiphinema americanum	1
Imperial	193	No plant parasitic nematode found	102
		Helicotylenchus dihystera	1
		Hemicycliophora arenaria	3
		Hemicycliophora biosphaera	1
		Longidorus africanus	3
		Merlinius brevidens	4
		*Mesocriconema xenoplax**	4
		Paratrichodorus sp.	2
		Pratylenchus brachyurus	2
		Pratylenchus neglectus	3

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Imperial (continued)		*Pratylenchus thornei*	16
		Rotylenchulus parvus	1
		Tylenchorhynchus mashhoodi	4
		Tylenchorhynchus sp.	35
		Tylenchulus semipenetrans	3
		Xiphinema americanum	9
Kern	534	No plant parasitic nematode found	461
		Criconemella sp.	1
		Helicotylenchus dihystera	1
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	4
		Meloidogyne hapla	1
		Meloidogyne incognita	3
		Meloidogyne sp.	2
		Merlinius brevidens	5
		*Mesocriconema xenoplax**	2
		Paratrichodorus sp.	3
		Paratylenchus hamatus	4
		Paratylenchus sp.	1
		Pratylenchus brachyurus	1
		Pratylenchus neglectus	3
		Pratylenchus penetrans	2
		Pratylenchus scribneri	1
		Pratylenchus thornei	3
		Pratylenchus vulnus	6
		Tylenchorhynchus goldeni	1
		Tylenchorhynchus mashhoodi	4
		Tylenchorhynchus sp.	6
		Tylenchulus semipenetrans	4
		Xiphinema americanum	14
Kings	203	No plant parasitic nematode found	106
		Criconemella sp.	1
		*Mesocriconema xenoplax**	16
		Paratrichodorus sp.	3
		Paratylenchus bukowinensis	3
		Paratylenchus hamatus	16
		Paratylenchus sp.	5
		Pratylenchus neglectus	3
		Pratylenchus penetrans	1
		Pratylenchus sp.	1
		Pratylenchus thornei	1
		Pratylenchus vulnus	6

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Kings (continued)		*Tylenchorhynchus annulatus*	1
		Tylenchorhynchus elegans	7
		Tylenchorhynchus mashhoodi	5
		Tylenchorhynchus microconus	2
		Tylenchorhynchus sp.	8
		Xiphinema americanum	18
Lake	39	No plant parasitic nematode found	33
		Helicotylenchus sp.	3
		Tylenchorhynchus sp.	3
Lassen	77	No plant parasitic nematode found	77
Los Angeles	167	No plant parasitic nematode found	61
		Ditylenchus dipsaci	10
		Helicotylenchus digonicus	1
		Helicotylenchus dihystera	2
		Helicotylenchus pseudorobustus	2
		Hemicycliophora striatula	1
		Meloidogyne hapla	6
		Meloidogyne incognita	2
		*Mesocriconema xenoplax**	20
		Paratylenchus bukowinensis	1
		Paratylenchus hamatus	19
		Pratylenchus neglectus	17
		Pratylenchus penetrans	2
		Pratylenchus vulnus	7
		Tylenchorhynchus aspericutis	2
		Tylenchorhynchus mashhoodi	1
		Tylenchorhynchus sp.	2
		Xiphinema americanum	11
Madera	124	No plant parasitic nematode found	74
		Helicotylenchus dihystera	1
		Meloidogyne areneria	5
		*Mesocriconema xenoplax**	10
		Paratylenchus bukowinensis	4
		Paratylenchus neoamblycephalus	1
		Paratylenchus sp.	5
		Pratylenchus neglectus	1
		Pratylenchus vulnus	1
		Tylenchorhynchus punensis	1
		Tylenchorhynchus sp.	18
		Xiphinema americanum	3
Merced	376	No plant parasitic nematode found	334
		Helicotylenchus pseudorobustus	4

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Merced (continued)		*Helicotylenchus* sp.	5
		Meloidogyne hapla	3
		Meloidogyne incognita	5
		Meloidogyne sp.	3
		Paratrichodorus sp.	2
		Pratylenchus neglectus	6
		Pratylenchus sp.	4
		Tylenchorhynchus mashhoodi	4
		Tylenchorhynchus sp.	4
		Xiphinema americanum	2
Modoc	45	No plant parasitic nematode found	23
		Meloidogyne hapla	4
		Pratylenchus neglectus	18
Mono	69	No plant parasitic nematode found	69
Monterey	95	No plant parasitic nematode found	43
		Criconemella sp.	1
		Helicotylenchus solani	1
		Heterodera schachtii	35
		Merlinius brevidens	6
		Paratylenchus bukowinensis	1
		Pratylenchus neglectus	7
		Tylenchorhynchus sp.	1
Napa	45	No plant parasitic nematode found	4
		Helicotylenchus dihystera	2
		Helicotylenchus sp.	1
		Hemicriconemoides sp.	1
		*Mesocriconema xenoplax**	20
		Paratylenchus hamatus	2
		Paratylenchus sp.	1
		Tylenchorhynchus sp.	3
		Xiphinema americanum	8
		Xiphinema index	3
Placer	41	No plant parasitic nematode found	1
		Criconema sp.	16
		Criconemella sp.	2
		Paratrichodorus sp.	1
		Paratylenchus holdemani	1
		Pratylenchus neglectus	2
		Pratylenchus vulnus	1
		Tylenchulus semipenetrans	11
		Xiphinema americanum	8

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Riverside	87	No plant parasitic nematode found	20
		Helicotylenchus sp.	1
		Meloidogyne arenaria	1
		Meloidogyne incognita	2
		Merlinius brevidens	4
		*Mesocriconema xenoplax**	4
		Paratylenchus hamatus	5
		Paratylenchus sp.	3
		Pratylenchus neglectus	10
		Pratylenchus penetrans	2
		Pratylenchus vulnus	1
		Tylenchorhynchus mashhoodi	1
		Tylenchorhynchus sp.	2
		Tylenchulus semipenetrans	19
		Xiphinema americanum	12
Sacramento	6	No plant parasitic nematode found	6
San Bernardino	64	No plant parasitic nematode found	18
		Criconema sp.	3
		Criconemella sp.	1
		Helicotylenchus digonicus	2
		*Mesocriconema xenoplax**	2
		Pratylenchus neglectus	4
		Tylenchorhynchus mashhoodi	3
		Tylenchorhynchus sp.	5
		Tylenchulus semipenetrans	25
		Xiphinema americanum	1
San Diego	39	No plant parasitic nematode found	3
		Helicotylenchus dihystera	2
		Heterodera sp.	1
		Meloidogyne javanica	1
		Ogma sp.	3
		Pratylenchus brachyurus	1
		Tylenchulus semipenetrans	16
		Xiphinema americanum	11
		Xiphinema sp.	1
San Joaquin	402	No plant parasitic nematode found	278
		Helicotylenchus dihystera	7
		Helicotylenchus paragirus	12
		Helicotylenchus sp.	1
		Meloidogyne javanica	4
		*Mesocriconema xenoplax**	20
		Paratrichodorus sp.	4

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
San Joaquin (continued)		*Paratylenchus bukowinensis*	12
		Paratylenchus lepidus	1
		Paratylenchus sp.	9
		Pratylenchus brachyurus	3
		Pratylenchus neglectus	12
		Pratylenchus penetrans	3
		Pratylenchus thornei	11
		Pratylenchus vulnus	3
		Quinisulcius capitatus	1
		Tylenchorhynchus goldeni	1
		Tylenchorhynchus mashhoodi	3
		Xiphinema americanum	17
San Luis Obispo	40	No plant parasitic nematode found	1
		Heterodera schachtii	35
		Pratylenchus neglectus	1
		Tylenchorhynchus mashhoodi	1
		Tylenchorhynchus oleraceae	2
Santa Barbara	45	No plant parasitic nematode found	22
		Heterodera schachtii	13
		Meloidogyne hapla	5
		Pratylenchus neglectus	1
		Tylenchorhynchus goldeni	3
		Tylenchorhynchus sp.	1
Shasta	245	No plant parasitic nematode found	202
		Criconemella sp.	1
		Helicotylenchus dihystera	2
		Meloidogyne hapla	2
		Merlinius brevidens	3
		*Mesocriconema xenoplax**	10
		Paratrichodorus sp.	2
		Paratylenchus bukowinensis	2
		Pratylenchus neglectus	3
		Pratylenchus penetrans	7
		Pratylenchus thornei	1
		Pratylenchus vulnus	1
		Tylenchorhynchus oleraceae	1
		Tylenchorhynchus sp.	3
		Xiphinema americanum	5
Siskiyou	138	No plant parasitic nematode found	108
		Meloidogyne chitwoodi	1
		Pratylenchus neglectus	29

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Solano	97	No plant parasitic nematode found	72
		Helicotylenchus dihystera	1
		Helicotylenchus sp.	1
		Paratylenchus hamatus	2
		Pratylenchus neglectus	5
		Pratylenchus thornei	2
		Tylenchorhynchus sp.	7
		Xiphinema americanum	7
Sonoma	64	No plant parasitic nematode found	11
		Gracilacus idalimus	1
		Helicotylenchus dihystera	3
		Hemicriconemoides californianus	2
		Meloidogyne arenaria	2
		*Mesocriconema xenoplax**	14
		Paratylenchus hamatus	1
		Pratylenchus neglectus	5
		Pratylenchus thornei	11
		Rotylenchus robustus	1
		Xiphinema americanum	8
		Xiphinema index	5
Stanislaus	83	No plant parasitic nematode found	9
		Helicotylenchus dihystera	8
		Helicotylenchus pseudorobustus	1
		Helicotylenchus sp.	3
		Meloidogyne javanica	15
		Merlinius sp.	2
		*Mesocriconema xenoplax**	12
		Paratylenchus sp.	3
		Pratylenchus neglectus	14
		Pratylenchus sp.	5
		Quinisulcius capitatus	6
		Xiphinema americanum	5
Sutter	78	No plant parasitic nematode found	21
		Helicotylenchus dihystera	3
		Hemicycliophora sp.	3
		Meloidogyne javanica	1
		Meloidogyne sp.	1
		*Mesocriconema xenoplax**	18
		Paratylenchus hamatus	18
		Paratylenchus nanus	1
		Paratylenchus sp.	1
		Pratylenchus sp.	3

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Sutter (continued)		*Tylenchorhynchus mashhoodi*	2
		Xiphinema americanum	6
Tehama	225	No plant parasitic nematode found	138
		Criconemella sp.	4
		Helicotylenchus digonicus	2
		Helicotylenchus dihystera	1
		Helicotylenchus pseudorobustus	2
		Hemicycliophora sheri	5
		*Mesocriconema xenoplax**	24
		Paratylenchus baldaccii	1
		Paratylenchus bukowinensis	1
		Paratylenchus hamatus	5
		Paratylenchus italiensis	1
		Paratylenchus sp.	3
		Pratylenchus neglectus	2
		Pratylenchus thornei	3
		Pratylenchus vulnus	12
		Xiphinema americanum	21
Tulare	240	No plant parasitic nematode found	70
		Criconemella sp.	3
		Helicotylenchus dihystera	2
		Helicotylenchus pseudorobustus	3
		Helicotylenchus sp.	3
		Meloidogyne hapla	1
		Meloidogyne incognita	3
		Meloidogyne javanica	1
		*Mesocriconema xenoplax**	40
		Paratrichodorus sp.	1
		Paratylenchus baldaccii	2
		Paratylenchus bukowinensis	7
		Paratylenchus dianthus	1
		Paratylenchus hamatus	19
		Paratylenchus similes	3
		Pratylenchus neglectus	2
		Pratylenchus penetrans	1
		Pratylenchus sp.	3
		Pratylenchus thornei	1
		Pratylenchus vulnus	8
		Scutellonema brachyurus	3
		Tylenchorhynchus agri	1
		Tylenchorhynchus ebriensis	1
		Tylenchorhynchus elegans	1

Table 5 (continued).

County	Total Diagnostics	Nematode species	Number of Detections
Tulare (continued)		*Tylenchorhynchus mashhoodi*	1
		Tylenchorhynchus microconus	1
		Tylenchorhynchus sp.	6
		Tylenchulus semipenetrans	23
		Xiphinema americanum	27
		Xiphinema index	2
Ventura	41	No plant parasitic nematode found	10
		Criconema sp.	1
		Heterodera schachtii	5
		Tylenchulus semipenetrans	19
		Xiphinema americanum	6
Yolo	215	No plant parasitic nematode found	55
		Criconemella sp.	1
		Helicotylenchus sp.	2
		Hemicriconemoides chitwoodi	2
		Hemicriconemoides sp.	2
		Merlinius brevidens	12
		Meloidogyne incognita	24
		Meloidogyne javanica	1
		*Mesocriconema xenoplax**	22
		Paratylenchus sp.	2
		Pratylenchus neglectus	29
		Pratylenchus scribneri	27
		Pratylenchus thornei	9
		Pratylenchus vulnus	4
		Tylenchorhynchus mashhoodi	2
		Tylenchorhynchus sp.	9
		Xiphinema americanum	12
Yuba	15	No plant parasitic nematode found	13
		Criconema sp.	1
		Paratylenchus hamatus	1

Annual Report of the Nematology Laboratory for 2006

Prepared by J. Chitambar, K. Dong, S. Subbotin, R. Luna

The Nematology Laboratory of the Plant Pest Diagnostics Branch (PPDB) provides diagnostic support for the protection of California's agricultural industry against economically important plant parasitic nematodes associated with plant disease. Based largely on the nematode diagnostic support provided by the Laboratory, government agencies are able to:

- Provide nursery certification and standards of pest cleanliness.
- Prevent the introduction and spread of regulatory significant pests.
- Provide phytosanitary certification of foreign export commodities.

Laboratory Staff

The Nematology Laboratory comprises three Nematologists, one Agricultural Biological Technician and a support staff of seven Scientific Aides. Dr. Sergei Subbotin joined the Laboratory as Associate Plant Nematologist in fall 2006. Scientific Aides comprise mainly of graduate and post-graduate students in Nematology or other biological science from the University of California, Davis.

Role and responsibilities

The role and responsibilities of the State nematologists are mainly four-fold:

- Identification of plant parasitic nematodes in regulatory and survey samples. Diagnosis of nematode related agricultural problems.
- Professional consultations provided to state, federal, university, industry, commercial and private agency personnel.
- Training in nematode sampling, processing, and preliminary identifications provided to county and state personnel.
- Research in nematode taxonomy, methodologies, and other areas of regulatory nematology.

The Agricultural Biological Technician is responsible for the effective and timely management of the support staff, sample processing, data management and other related operations of the Laboratory.

Regulatory sample processing

In order to meet the diagnostic responsibilities, the Laboratory support staff under the direct guidance of the biological technician, processes plant and soil samples that are routinely collected and sent to the Nematology Laboratory by County Agricultural and State personnel. Plant parasitic nematodes are microscopic and inhabit above and below ground plant parts as well as rhizosphere soil of plants, depending on the species and biology of the nematode involved. These samples are designated to Quarantine, Nursery, Commercial or Dooryard (residential) programs, and are sent as non-processed "raw" samples, or as processed samples of nematode suspensions preserved in two and one-half percent formaldehyde solution contained in vials. Approximately six counties have nematode sample processing facilities and personnel trained and certified by the State Nematology

Laboratory. The State Laboratory uses a combination of several scientific tests or procedures to extract nematodes from infested samples. Each of these procedures involves the use of large volumes of water, as nematodes are essentially aquatic animals requiring moisture for activity. The number of tests involved in extracting and preparing a collection of nematodes in clear water suspension for diagnostic evaluation is indication of the fact that the workload of the Nematology Sample Processing Laboratory cannot be entirely based on the number of samples processed.

During 2006 at total of 7,912 samples were diagnosed at the Laboratory. A breakdown of sample type per program is presented in Table 1. The bulk of quarantine samples include those entering the State through the External Quarantine for Burrowing and Reniform Nematodes program and those exported to other countries through the Quarantine Phytosanitary Certification Program. Samples in the former sub-program comprise collections made mainly from indoor decorative foliage plants sold at nurseries, while samples in the latter sub-program consists of mainly plant seeds processed and examined for targeted nematode species not wanted by importing countries. Most nursery samples of plants for sale by the grower comprised garlic (220 seed bulb samples), strawberries (879 foliage and root samples), grape and stone fruits (711 root and soil samples) collected through the State's Registration and Certification, and Nematode Control programs.

Special surveys

1. Statewide Nematode Survey:
This survey commenced in spring 2005 and continued through 2006. The project was funded by the National Cooperative Agricultural Pest Survey (CAPS) of the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS), and commonly known as the CAPS survey. The operational responsibilities of the project (sample collection) were conducted by the Pest Detection and Eradication Program Branch (PDEP), while survey planning, sample processing and nematode diagnostics were conducted by the Nematology Laboratory, PPDB, of the California Department of Food and Agriculture (CDFA).

In 2006, 2,159 soil, root and foliage samples were processed by the Laboratory for the detection of 22 exotic and economically important target plant parasitic species. Each sample included at least 4 different nematode extraction procedures or tests thereby, resulting in a total of 8,636 tests. Nematode identifications were accomplished using morphological and molecular procedures. A separate report on the CAPS survey details the results of the project. With the exception of few target plant parasitic species already known in California, none of the target exotic species have been detected to date in the State's agricultural production sites.

2. Potato Cyst Nematode Survey:
This survey commenced in fall 2006 and continues through spring 2008. The survey is in response to a request by the national potato industry to USDA for a nationwide survey per state following the detection of the potato cyst nematode, *Globodera pallida*, in a potato field in Idaho. The Idaho find marks the first occurrence of the high-risk nematode species in the United States and USDA holds a federal quarantine against the pest. The project is funded by USDA-APHIS, and is commonly known as the PCN survey. Sample collection was conducted by PDEP, while sample processing and nematode diagnostics were conducted by the Nematology Laboratory.

Survey of California's potato fields was based on 2006 acreage to seed and commercial production potatoes. In 2006, 39,618 acres in 642 fields were cultivated to production potatoes while seed potatoes were grown on 661 acres in 24 fields. According to the sampling protocol established by USDA, ten percent perimeter acreage of each field was sampled for both types of potato. Only ten percent of all production fields per county were sampled whereas, all seed fields, or 100 percent, were sampled per county. Four samples were collected per acre and each sample comprised five pounds of soil, thereby, totaling more than1,300 potato soil samples for the survey. 674 samples were processed and diagnosed in 2006.

To accommodate the processing needs for both PCN and CAPS surveys, an additional nematology laboratory was constructed in the annex building adjacent to the main Nematology Laboratory at PPDB. Samples were processed for the extraction of nematode cysts using a combination of the gravity sieving and sugar centrifugation techniques.

No potato cyst nematodes or cyst nematodes of any other species group were found in samples processed and diagnosed in 2006.

Significant detections

Three "A" rated quarantine species were detected and included, the Awl nematode, *Dolichodorus heterocephalus* on imported *Ficus benjamina* in San Diego county, the Reniform nematode, *Rotylenchulus reniformis* on imported *Phoenix roebelenii* in San Joaquin County and the Citrus Sheath nematode, *Hemicycliophora arenaria* on lemon and grapefruit commercially grown in Imperial county. The Awl and Reniform nematode species are not established in California's agricultural soils. The Citrus Sheath nematode has been found in limited regions of Imperial County and is contained in those regions.

Two "B" rated nematode species, namely, the Columbia root-knot nematode, *Meloidogyne chitwoodi* and the Dagger nematode, *Xiphinema index* were detected. The former species was detected on commercially grown potato in Siskiyou County and the latter species was detected on commercially grown grape in Napa, Sonoma and Tulare counties. Both species are limited in their distribution within California and are potential economic threats to grape and potato industries.

A single detection of *Pratylenchus* sp. was given a "Q" rating based on an incomplete identification. The species was detected on quarantine imported *Ficus benjamina* in San Diego County and is currently under further diagnostic study.

Table 1. Total number of samples per program received by the Nematology Laboratory in 2006.

Nematode Detection Program	No. of samples
Quarantine (*total*)	**3,201**
Incoming External Quarantine	2,687
Border Station Interceptions	91
Export Phytosanitary Certification	422
Other	1
Nursery *(total)*	**1,845**
Registration and Certification	1,101
Nematode Control	711
Commerical	**2,833**
(Includes CAPS and PCN surveys)	
Dooryard/Residential	**33**
TOTAL	**7,912**

DETECTION / INTERCEPTION TABLES

ENTOMOLOGY

A, B & Q RATED DETECTIONS

Order	Family	Scientific Name		County	Total
Acari	Acaridae	*Tyrophagus* sp.	Q	Sonoma	1
Acari	Tenuipalpidae	*Brevipalpus* sp.	Q	Tulare	1
Acari	Tydeidae	*Lorryia* sp.	Q	Contra Costa	1
Coleoptera	Anobiidae	*Stegobium* sp.	Q	Shasta	1
Coleoptera	Anthribidae	*Araecerus coffeae*	B	Orange	1
Coleoptera	Bostrichidae	*Micrapate labialis*	Q	Orange	1
Coleoptera	Cerambycidae	*Icosium tomentosum*	Q	Orange	1
Coleoptera	Cerambycidae	*Monochamus alternatus*	Q	Sacramento	1
Coleoptera	Cerambycidae	*Phoracantha* sp.	B	Alameda	1
Coleoptera	Cerambycidae	*Phoracantha* sp.	B	Butte	1
Coleoptera	Chrysomelidae	*Cerotoma trifurcata*	A	Los Angeles	1
Coleoptera	Chrysomelidae	*Chrysolina bankii*	Q	San Mateo	4
Coleoptera	Chrysomelidae	*Chrysolina* sp.	Q	San Mateo	1
Coleoptera	Chrysomelidae	*Chrysophtharta m-fuscum*	B	Los Angeles	1
Coleoptera	Chrysomelidae	*Chrysophtharta m-fuscum*	B	Orange	1
Coleoptera	Chrysomelidae	*Chrysophtharta m-fuscum*	B	Riverside	1
Coleoptera	Chrysomelidae	*Chrysophtharta m-fuscum*	B	San Bernadino	1
Coleoptera	Chrysomelidae	*Chrysophtharta m-fuscum*	B	San Diego	2
Coleoptera	Chrysomelidae	*Chrysophtharta* sp.	B	Orange	2
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Contra Costa	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Napa	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	San Bernadino	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	San Diego	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	San Mateo	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Santa Clara	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Alameda	2
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Sacramento	2
Coleoptera	Curculionidae	*Diaprepes abbreviatus*	A	Los Angeles	52
Coleoptera	Curculionidae	*Diaprepes abbreviatus*	A	Orange	111
Coleoptera	Curculionidae	*Diaprepes abbreviatus*	A	San Diego	182
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Colusa	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Fresno	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Madera	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Merced	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Sacramento	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Tehama	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Ventura	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Yolo	1

Order	Family	Scientific Name		County	Total
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Butte	2
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Tulare	2
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Alameda	1
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Mateo	2
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Sacramento	3
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Diego	4
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Bernadino	5
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Los Angeles	16
Coleoptera	Scarabaeidae	*Protaetia orientalis*	A	San Joaquin	1
Coleoptera	Scarabaeidae	*Serica* sp.	Q	Trinity	1
Coleoptera	Scolytidae	*Hylurgus ligniperda*	Q	Riverside	1
Coleoptera	Scolytidae	*Hylurgus ligniperda*	Q	San Diego	1
Coleoptera	Scolytidae	*Hylurgus ligniperda*	Q	Ventura	1
Coleoptera	Scolytidae	*Orthotomicus erosus*	Q	Kings	1
Coleoptera	Scolytidae	*Scolytus schevyrevi*	B	Kern	1
Coleoptera	Scolytidae	*Scolytus schevyrevi*	B	Sacramento	1
Coleoptera	Scolytidae	*Scolytus schevyrevi*	B	San Bernadino	1
Coleoptera	Scolytidae	*Scolytus schevyrevi*	B	San Diego	1
Diptera	Agromyzidae	*Liriomyza* sp.	Q	Santa Barbara	1
Diptera	Cecidomyiidae	*Dasineura rhodophaga*	B	Santa Barbara	1
Diptera	Phoridae	*Megaselia* sp.	Q	San Francisco	1
Diptera	Stratiomyidae	*Inopus rubriceps*	B	Alameda	1
Diptera	Stratiomyidae	*Inopus rubriceps*	B	Contra Costa	1
Diptera	Tephritidae	*Anastrepha ludens*	A	Orange	1
Diptera	Tephritidae	*Anastrepha ludens*	A	Los Angeles	8
Diptera	Tephritidae	*Anastrepha obliqua*	A	Orange	1
Diptera	Tephritidae	*Anastrepha* sp.	A	Sacramento	1
Diptera	Tephritidae	*Bactrocera correcta*	A	Alameda	1
Diptera	Tephritidae	*Bactrocera correcta*	A	Fresno	1
Diptera	Tephritidae	*Bactrocera correcta*	A	Sacramento	1
Diptera	Tephritidae	*Bactrocera correcta*	A	Santa Clara	1
Diptera	Tephritidae	*Bactrocera correcta*	A	Orange	3
Diptera	Tephritidae	*Bactrocera correcta*	A	San Diego	3
Diptera	Tephritidae	*Bactrocera correcta*	A	Los Angeles	4
Diptera	Tephritidae	*Bactrocera cucurbitae*	A	Los Angeles	2
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Alameda	1
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Santa Clara	1
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Riverside	2
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Santa Barbara	2
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	San Bernadino	5
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	San Diego	9
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Los Angeles	18
Diptera	Tephritidae	*Bactrocera dorsalis*-group	A	Orange	19
Diptera	Tephritidae	*Bactrocera oleae*	A	Butte	1

Order	Family	Scientific Name		County	Total
Diptera	Tephritidae	*Bactrocera oleae*	A	Imperial	1
Diptera	Tephritidae	*Bactrocera oleae*	A	Kern	1
Diptera	Tephritidae	*Bactrocera oleae*	A	Monterey	1
Diptera	Tephritidae	*Bactrocera oleae*	A	San Luis Obispo	1
Diptera	Tephritidae	*Bactrocera oleae*	A	Santa Clara	1
Diptera	Tephritidae	*Bactrocera oleae*	A	Shasta	1
Diptera	Tephritidae	*Bactrocera oleae*	A	Sutter	1
Diptera	Tephritidae	*Bactrocera oleae*	A	El Dorado	2
Diptera	Tephritidae	*Bactrocera oleae*	A	Marin	2
Diptera	Tephritidae	*Bactrocera oleae*	A	Sacramento	2
Diptera	Tephritidae	*Bactrocera oleae*	A	San Joaquin	2
Diptera	Tephritidae	*Bactrocera oleae*	A	Sonoma	2
Diptera	Tephritidae	*Bactrocera oleae*	A	Fresno	3
Diptera	Tephritidae	*Bactrocera oleae*	A	San Bernadino	3
Diptera	Tephritidae	*Bactrocera oleae*	A	Kings	4
Diptera	Tephritidae	*Bactrocera oleae*	A	Contra Costa	5
Diptera	Tephritidae	*Bactrocera zonata*	A	Los Angeles	1
Diptera	Tephritidae	*Bactrocera zonata*	A	Sacramento	1
Diptera	Tephritidae	*Bactrocera zonata*	A	San Mateo	1
Diptera	Tephritidae	*Bactrocera zonata*	A	Fresno	6
Diptera	Tephritidae	*Ceratitis capitata*	A	Santa Clara	2
Diptera	Tephritidae	*Ceratitis capitata*	A	Los Angeles	3
Diptera	Tephritidae	*Ceratitis capitata*	A	San Bernadino	26
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Contra Costa	1
Diptera	Tephritidae	*Rhagoletis pomonella*	B	San Benito	1
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Shasta	1
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Solano	1
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Monterey	2
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Santa Cruz	2
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Stanislaus	2
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Alameda	3
Diptera	Tephritidae	*Rhagoletis pomonella*	B	San Joaquin	4
Diptera	Tipulidae	*Tipula oleracea*	B	Yolo	7
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Los Angeles	1
Gastropoda	Helicidae	*Theba pisana*	B	Riverside	1
Gastropoda	Hydrobiidae	*Potamopyrgus antipodarum*	Q	Orange	1
Gastropoda	Philomycidae	*Meghimatium striatum*	Q	Los Angeles	1
Hemiptera[1]	Cicadellidae	*Agallia* sp.	Q	Los Angeles	1
Hemiptera[1]	Cicadellidae	*Graphocephala versuta*	Q	Orange	1
Hemiptera[1]	Cicadellidae	*Graphocephala versuta*	Q	Los Angeles	2
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Kern	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Orange	1

[1] suborder Auchenorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Placer	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Sutter	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Cruz	2
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Stanislaus	2
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Barbara	3
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Alameda	4
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Fresno	4
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Luis Obispo	4
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Contra Costa	5
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Monterey	6
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Sacramento	10
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Solano	11
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Joaquin	14
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Riverside	22
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Imperial	25
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Clara	88
Hemiptera[1]	Cicadellidae	*Homalodisca* sp.	B	Imperial	1
Hemiptera[1]	Cicadellidae	*Homalodisca* sp.	B	Santa Cruz	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	Fresno	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	Riverside	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	San Luis Obispo	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	Santa Clara	3
Hemiptera[2]	Lygaeidae	*Metapoplex ditomoides*	Q	Napa	1
Hemiptera[2]	Lygaeidae	*Metapoplex ditomoides*	Q	Sonoma	1
Hemiptera[2]	Lygaeidae	*Metapoplex ditomoides*	Q	Solano	2
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	Los Angeles	1
Hemiptera[2]	Lygaeidae	*Raglius alboacuminatus*	Q	San Joaquin	2
Hemiptera[2]	Pentatomidae	*Agonoscelis puberula*	Q	Los Angeles	1
Hemiptera[2]	Pentatomidae	*Agonoscelis puberula*	Q	San Bernadino	3
Hemiptera[2]	Pentatomidae	*Halyomorpha halys*	Q	Santa Clara	1
Hemiptera[2]	Pentatomidae	*Halyomorpha halys*	Q	Los Angeles	10
Hemiptera[2]	Tingidae	*Pseudacysta persea*	Q	San Diego	1
Hemiptera[2]	Tingidae	*Stephanitis pyrioides*	Q	Contra Costa	2
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Santa Clara	1
Hemiptera[3]	Aleyrodidae	*Aleuroclava aucubae*	Q	Sacramento	3
Hemiptera[3]	Aleyrodidae	*Tetraleurodes perseae*	B	Ventura	1
Hemiptera[3]	Aleyrodidae	*Trialeurodes* sp.	Q	Solano	2
Hemiptera[3]	Aphididae	*Cinara cedri*	Q	Contra Costa	2
Hemiptera[3]	Aphididae	*Greenidea* sp.	Q	Santa Barbara	1
Hemiptera[3]	Aphididae	*Sitobion luteum*	Q	Riverside	1
Hemiptera[3]	Aphididae	*Sitobion luteum*	Q	Santa Barbara	1
Hemiptera[3]	Coccidae	*Ceroplastes rubens*	A	Los Angeles	1

[1] suborder Auchenorrhyncha, [2] suborder Heteroptera, [3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Coccidae	*Ceroplastes rusci*	A	San Diego	1
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	A	Ventura	1
Hemiptera[3]	Coccidae	*Coccus viridis*	A	San Diego	1
Hemiptera[3]	Coccidae	*Protopulvinaria pyriformis*	B	Los Angeles	1
Hemiptera[3]	Coccidae	*Protopulvinaria pyriformis*	B	Santa Cruz	1
Hemiptera[3]	Coccidae	*Pulvinaria psidii*	B	San Diego	2
Hemiptera[3]	Coccidae	*Pulvinaria psidii*	B	Ventura	2
Hemiptera[3]	Coccidae	*Pulvinaria urbicola*	B	Santa Barbara	1
Hemiptera[3]	Coccidae	*Toumeyella liriodendri*	B	Santa Clara	1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Imperial	1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	San Bernadino	1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Santa Cruz	1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	San Luis Obispo	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Santa Barbara	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Solano	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Riverside	12
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Los Angeles	2
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	San Diego	3
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Santa Barbara	3
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Riverside	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	San Francisco	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	San Francisco	1
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Riverside	1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Los Angeles	1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Riverside	1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	San Luis Obispo	1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Ventura	4
Hemiptera[3]	Diaspididae	*Poliaspis cycadis*	Q	San Diego	1
Hemiptera[3]	Diaspididae	*Poliaspoides formosanus*	Q	Los Angeles	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Tulare	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Ventura	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Orange	6
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Riverside	6
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Los Angeles	12
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Diego	74
Hemiptera[3]	Diaspididae	*Thysanofiorinia leei*	Q	San Diego	1
Hemiptera[3]	Diaspididae	*Thysanofiorinia nephelii*	Q	Los Angeles	1
Hemiptera[3]	Diaspididae	*Unaspis euonymi*	B	Sacramento	1
Hemiptera[3]	Pseudococcidae	*Delottococcus* sp.	Q	Santa Cruz	1
Hemiptera[3]	Pseudococcidae	*Delottococcus* sp.	Q	Sonoma	1
Hemiptera[3]	Pseudococcidae	*Ferrisia gilli*	B	Glenn	1
Hemiptera[3]	Pseudococcidae	*Ferrisia gilli*	B	Orange	1

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Pseudococcidae	*Ferrisia gilli*	B	El Dorado	2
Hemiptera[3]	Pseudococcidae	*Ferrisia gilli*	B	Tehama	2
Hemiptera[3]	Pseudococcidae	*Ferrisia gilli*	B	Tulare	3
Hemiptera[3]	Pseudococcidae	*Ferrisia virgata*	B	Imperial	1
Hemiptera[3]	Pseudococcidae	*Geococcus coffeae*	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	Imperial	2
Hemiptera[3]	Pseudococcidae	*Miscanthicoccus miscanthi*	Q	Riverside	1
Hemiptera[3]	Pseudococcidae	*Miscanthicoccus miscanthi*	Q	Santa Barbara	1
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp.	Q	Santa Barbara	1
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp.	Q	Los Angeles	2
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp. (undescr.)	Q	Los Angeles	9
Hemiptera[3]	Pseudococcidae	*Palmicultor guamensis*	Q	Orange	2
Hemiptera[3]	Pseudococcidae	*Palmicultor lumpurensis*	Q	San Diego	1
Hemiptera[3]	Pseudococcidae	*Palmicultor* sp.	Q	Sonoma	1
Hemiptera[3]	Pseudococcidae	*Phenacoccus* sp.	Q	Fresno	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Fresno	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Merced	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Monterey	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Sacramento	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Santa Barbara	1
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	San Luis Obispo	2
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Kern	3
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Yolo	3
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	San Joaquin	9
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Sonoma	12
Hemiptera[3]	Pseudococcidae	*Planococcus ficus*	B	Napa	30
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Contra Costa	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Stanislaus	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	San Mateo	2
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Amador	3
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Lake	3
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Merced	3
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Santa Clara	4
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	San Joaquin	5
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	San Benito	8
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Sacramento	10
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Tulare	12
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Fresno	23
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	San Luis Obispo	33
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Monterey	60
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Kern	104

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Napa	105
Hemiptera[3]	Pseudococcidae	*Planococcus* sp. prob. *ficus*	B	Sonoma	118
Hemiptera[3]	Pseudococcidae	*Pseudococcus elisae*	A	Sacramento	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus americanus*	Q	Riverside	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus floridanus*	Q	Riverside	13
Hemiptera[3]	Pseudococcidae	*Rhizoecus hibisci*	Q	Riverside	12
Hemiptera[3]	Pseudococcidae	*Rhizoecus* sp.	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus* sp.	Q	Riverside	3
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Los Angeles	1
Hymenoptera	Formicidae	*Ochetellus glaber*	Q	Los Angeles	1
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Bernadino	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Los Angeles	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	San Diego	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Kern	3
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Fresno	5
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Stanislaus	10
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Madera	20
Hymenoptera	Formicidae	*Solenopsis invicta*	A	San Bernadino	32
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Riverside	69
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Merced	70
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Orange	155
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Los Angeles	6
Lepidoptera	Geometridae	*Disclisioprocta stellata*	Q	San Diego	1
Lepidoptera	Geometridae	*Disclisioprocta stellata*	Q	Santa Barbara	2
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Stanislaus	1
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Tulare	1
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Fresno	2
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	San Bernadino	3
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Santa Barbara	3
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Ventura	3
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Kern	4
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Orange	4
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Tulare	5
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	San Luis Obispo	6
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Los Angeles	7
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Riverside	13
Lepidoptera	Gracillariidae	*Phyllocnistis* sp.	B	San Bernadino	1
Lepidoptera	Lasiocampidae	*Malacosoma americanum*	A	Santa Clara	1
Lepidoptera	Limacodidae	*Darna pallivitta*	Q	Santa Barbara	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Alameda	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Orange	1

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Sacramento	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	San Benito	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Solano	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Marin	2
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Santa Barbara	2
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Santa Clara	2
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Santa Cruz	2
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Riverside	3
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	San Mateo	3
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Los Angeles	4
Lepidoptera	Noctuidae	*Chrysodeixis chalcites*	A	San Mateo	1
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	San Mateo	1
Lepidoptera	Noctuidae	*Noctua pronuba*	Q	Humboldt	1
Lepidoptera	Noctuidae	*Noctua pronuba*	Q	Marin	1
Lepidoptera	Noctuidae	*Noctua pronuba*	Q	Sacramento	1
Lepidoptera	Noctuidae	*Noctua pronuba*	Q	San Joaquin	1
Lepidoptera	Noctuidae	*Spodoptera* sp.	Q	San Mateo	1
Lepidoptera	Pyralidae	*Asciodes gordialis*	Q	Imperial	1
Lepidoptera	Pyralidae	*Hellula rogatalis*	A	Calaveras	1
Lepidoptera	Sesiidae	*Podosesia syringae*	B	Sacramento	1
Lepidoptera	Sesiidae	*Podosesia syringae*	B	Stanislaus	1
Lepidoptera	Tineidae	*Phereoeca praecox*	B	Orange	1
Lepidoptera	Tortricidae	*Lorita scarificata*	Q	Sacramento	1
Orthoptera	Phasmatidae	*Carausius morosus*	Q	Alameda	1
Orthoptera	Phasmatidae	*Carausius morosus*	Q	Los Angeles	1
Orthoptera	Phasmatidae	*Carausius morosus*	Q	Santa Barbara	1
Orthoptera	Phasmatidae	*Carausius morosus*	Q	Santa Cruz	1
Thysanoptera	Phlaeothripidae	*Teuchothrips* sp.	Q	Santa Barbara	1
Thysanoptera	Phlaeothripidae	*Teuchothrips* sp.	Q	Los Angeles	2
Thysanoptera	Phlaeothripidae	*Teuchothrips* sp.	Q	Orange	2
Thysanoptera	Phlaeothripidae	*Teuchothrips* sp.	Q	Ventura	2
Thysanoptera	Phlaeothripidae	*Teuchothrips* sp. (undescr.)	Q	Los Angeles	1
Thysanoptera	Thripidae	*Dorcadothrips oahuensis*	Q	Los Angeles	1
TOTAL					**2140**

ENTOMOLOGY

A, B & Q RATED INTERCEPTIONS FROM BORDER STATIONS

"Pers" vehicle type refers to personal vehicles such as automobile, bus, camper, recreational vehicles, trailers, utility vehicles, self-movers. "Comm" vehicle type refers to commercial vehicles such as tractor-trailer trucks.

Order	Family	Scientific Name		Station	Com	Pers
Acari	Tenuipalpidae	*Dolichotetranychus* sp.	Q	Winterhaven	1	
Acari	Tuckerellidae	*Tuckerella* sp.	Q	Vidal	1	
Coleoptera	Buprestidae	*Actenodes auronotatus*	Q	Needles		1
Coleoptera	Chrysomelidae	*Chelymorpha* sp.	B	Vidal	1	
Coleoptera	Chrysomelidae	*Diabrotica undecimpunctata*	A	Vidal	1	
Coleoptera	Chrysomelidae	*Diabrotica undecimpunctata*	A	Truckee	2	
Coleoptera	Chrysomelidae	*Trirhabda* sp.	Q	Truckee	1	
Coleoptera	Curculionidae	*Chalcodermus* sp.	Q	Winterhaven	1	
Coleoptera	Curculionidae	*Curculio* sp.	Q	Yermo	1	
Coleoptera	Curculionidae	*Diaprepes abbreviatus*	A	Vidal	1	
Coleoptera	Curculionidae	*Hylobius* sp.	Q	Truckee	1	
Coleoptera	Curculionidae	*Oxyops* sp.	Q	Vidal	1	
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Blythe	1	
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Needles	26	1
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	Truckee	2	
Coleoptera	Scarabaeidae	*Cyclocephala* sp.	Q	Truckee	3	
Coleoptera	Scarabaeidae	*Diplotaxis* sp.	Q	Needles		1
Coleoptera	Scarabaeidae	*Eburia* sp.	Q	Truckee	1	
Coleoptera	Scarabaeidae	*Ligyrus* sp.	Q	Truckee	1	
Coleoptera	Scarabaeidae	*Ligyrus* sp.	Q	Needles		1
Coleoptera	Scarabaeidae	*Phyllophaga* sp.	Q	Blythe	1	
Coleoptera	Scarabaeidae	*Phyllophaga* sp.	Q	Needles	29	10
Coleoptera	Scarabaeidae	*Polyphylla* sp.	Q	Winterhaven		1
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Hornbrook	1	
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Needles	9	8
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Winterhaven		1
Coleoptera	Scarabaeidae	*Serica* sp.	Q	Truckee	7	
Coleoptera	Scolytidae	*Crypturgus* sp.	Q	Redwood Hwy		1
Coleoptera	Scolytidae	*Ips* sp.	Q	Truckee	1	
Coleoptera	Scolytidae	*Ips* sp.	Q	Needles		1
Coleoptera	Scolytidae	*Xyloborus* sp.	Q	Truckee	1	
Diptera	Agromyzidae	*Liriomyza* sp.	Q	Truckee	1	
Diptera	Otitidae	*Chaetopsis* sp.	Q	Blythe		1
Diptera	Phoridae	*Megaselia seticauda*	B	Vidal	1	
Diptera	Phoridae	*Megaselia seticauda*	B	Blythe	35	

Order	Family	Scientific Name		Station	Com	Pers
Diptera	Phoridae	*Megaselia* sp.	Q	Blythe	1	
Diptera	Sciaridae	*Bradysia zingiberis*	Q	Needles	1	
Diptera	Tephritidae	*Anastrepha ludens*	A	Vidal	1	
Diptera	Tephritidae	*Anastrepha* sp.	A	Winterhaven	3	1
Diptera	Tephritidae	*Anastrepha* sp.	A	Blythe	4	
Diptera	Tephritidae	*Rhagoletis cingulata*	A	Needles		1
Diptera	Tephritidae	*Rhagoletis indifferens*	A	Needles		1
Diptera	Tephritidae	*Rhagoletis indifferens*	A	Tulelake		1
Diptera	Tephritidae	*Rhagoletis indifferens*	A	Redwood Hwy		6
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Vidal	2	
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Hornbrook		1
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Needles		6
Diptera	Tephritidae	*Rhagoletis pomonella*	B	Redwood Hwy		20
Diptera	Tephritidae	*Rhagoletis* sp.	Q	Needles		2
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Yermo	1	
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Needles	3	2
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Truckee	3	
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Winterhaven	4	1
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Vidal	4	
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Blythe	12	
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	Needles	1	1
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	Vidal	1	
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	Blythe	4	
Gastropoda	Helicidae	*Cepaea nemoralis*	Q	Hornbrook	1	1
Gastropoda	Helicidae	*Cepaea nemoralis*	Q	Truckee	2	
Gastropoda	Subulinidae	*Allopeas clavulinum*	A	Blythe	1	
Gastropoda	Succineidae	*Succinea* sp.	Q	Blythe	2	
Gastropoda	Succineidae	*Succinea* sp.	Q	Dorris	3	
Hemiptera[1]	Acanaloniidae	*Acanalonia conica*	Q	Vidal	1	
Hemiptera[1]	Cicadellidae	*Colladonus* sp.	Q	Blythe	1	
Hemiptera[1]	Cicadellidae	*Empoasca* sp.	Q	Vidal	2	
Hemiptera[1]	Cicadellidae	*Gyponana* sp.	Q	Needles		1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Needles	1	3
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Vidal	1	
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Truckee	2	
Hemiptera[1]	Cicadellidae	*Homalodisca* sp.	Q	Needles		1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	Yermo	1	
Hemiptera[1]	Cicadellidae	*Oncometopia* sp.	Q	Winterhaven	1	
Hemiptera[1]	Cicadellidae	*Paraulacizes irrorata*	Q	Needles		1
Hemiptera[2]	Alydidae	*Hyalymenus* sp.	Q	Needles		1
Hemiptera[2]	Cydnidae	*Rhytidoporus indentatus*	Q	Truckee	1	

[1] suborder Auchenorrhyncha, [2] suborder Heteroptera (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hemiptera[2]	Lygaeidae	*Blissus* sp.	Q	Needles		2
Hemiptera[2]	Lygaeidae	*Hereaus* sp.	Q	Blythe	1	
Hemiptera[2]	Lygaeidae	*Ischnodemus fulvipes*	Q	Vidal	1	
Hemiptera[2]	Lygaeidae	*Ischnodemus* sp.	Q	Needles	1	1
Hemiptera[2]	Lygaeidae	*Neopamera* sp.	Q	Needles	1	
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	Winterhaven	1	1
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	Needles	1	2
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	Vidal	8	
Hemiptera[2]	Lygaeidae	*Ozophora* sp.	Q	Winterhaven	1	
Hemiptera[2]	Lygaeidae	*Perigenes* sp.	Q	Needles	1	
Hemiptera[2]	Lygaeidae	*Pseudopachybrachius basalis*	Q	Needles	1	
Hemiptera[2]	Lygaeidae	*Ptochiomera nodosa*	Q	Vidal	1	
Hemiptera[2]	Lygaeidae	*Raglius alboacuminatus*	Q	Truckee	1	
Hemiptera[2]	Lygaeidae	*Raglius alboacuminatus*	Q	Needles		1
Hemiptera[2]	Pentatomidae	*Halyomorpha halys*	Q	Needles		1
Hemiptera[2]	Pentatomidae	*Halyomorpha* sp.	Q	Truckee	1	
Hemiptera[2]	Pentatomidae	*Loxa flavicollis*	Q	Vidal	1	
Hemiptera[2]	Pentatomidae	*Oebalus* sp.	Q	Vidal	1	
Hemiptera[3]	Aleyrodidae	*Tetraleurodes* sp.	Q	Needles		1
Hemiptera[3]	Aphididae	*Acyrthosiphon* sp.	Q	Needles		1
Hemiptera[3]	Asterolecaniidae	*Asterolecanium* sp.	Q	Vidal	2	
Hemiptera[3]	Asterolecaniidae	*Asterolecanium* sp.	Q	Winterhaven	3	
Hemiptera[3]	Cercopidae	*Prosapia bicincta*	Q	Truckee	1	
Hemiptera[3]	Coccidae	*Ceroplastes floridensis*	A	Needles		1
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	Q	Needles	1	1
Hemiptera[3]	Coccidae	*Coccus hesperidum*	Q	Hornbrook	1	
Hemiptera[3]	Coccidae	*Philephedra tuberculosa*	Q	Blythe		2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Yermo	2	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Hornbrook	3	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Winterhaven	7	3
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Needles	9	30
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Vidal	10	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Blythe	19	
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Dorris	72	
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Alturas		1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Tulelake		1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Redwood Hwy		4
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Smith River		67
Hemiptera[3]	Diaspididae	*Aonidiella orientalis*	A	Blythe	1	
Hemiptera[3]	Diaspididae	*Aonidiella orientalis*	A	Needles		1
Hemiptera[3]	Diaspididae	*Aonidiella* sp.	Q	Vidal	1	
Hemiptera[3]	Diaspididae	*Aonidiella* sp.	Q	Hornbrook		2

[2] suborder Heteroptera, [3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Yermo	1	1
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Dorris	1	
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Long Valley	1	
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Smith River	2	12
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Needles	3	1
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Winterhaven	19	3
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Vidal	25	
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Blythe	58	3
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Aulacaspis tubercularis*	Q	Tulelake		1
Hemiptera[3]	Diaspididae	*Chionaspis furfura*	A	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Chrysomphalus* sp.	Q	Dorris	1	
Hemiptera[3]	Diaspididae	*Diaspidiotus* sp.	Q	Needles		1
Hemiptera[3]	Diaspididae	*Hemiberlesia neodiffinis*	Q	Needles		1
Hemiptera[3]	Diaspididae	*Hemiberlesia* sp.	Q	Smith River		1
Hemiptera[3]	Diaspididae	*Hemiberlesia* sp.	Q	Vidal		1
Hemiptera[3]	Diaspididae	*Hemiberlesia* sp.	Q	Winterhaven		1
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Winterhaven	1	1
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Truckee	1	
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Winterhaven	1	
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Dorris	3	
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Vidal	3	
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	Smith River		2
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Smith River	1	10
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Yermo	1	
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Needles	2	18
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Truckee	2	
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Winterhaven	5	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Vidal	7	
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Blythe	22	
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Dorris	26	
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Redwood Hwy		11
Hemiptera[3]	Diaspididae	*Lepidosaphes gloverii*	B	Vidal	1	
Hemiptera[3]	Diaspididae	*Lepidosaphes gloverii*	B	Dorris	2	
Hemiptera[3]	Diaspididae	*Lepidosaphes* sp.	Q	Blythe	1	
Hemiptera[3]	Diaspididae	*Lepidosaphes* sp.	Q	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Melanaspis* sp.	Q	Dorris	1	
Hemiptera[3]	Diaspididae	*Morganella longispina*	A	Needles		1
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Hornbrook	1	
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Winterhaven	1	
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Yermo	1	
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Blythe	5	

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Dorris	11	
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Vidal	14	
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Mycetaspis personata*	Q	Smith River		4
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Yermo	1	
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Hornbrook	2	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Truckee	2	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Needles	10	41
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Winterhaven	14	5
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Vidal	54	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Blythe	88	2
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Dorris	140	
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Tulelake		1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Redwood Hwy		23
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Smith River		33
Hemiptera[3]	Diaspididae	*Parlatoria proteus*	A	Needles		1
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Hornbrook	1	
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Smith River	3	37
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Needles	8	10
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Yermo	9	
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Winterhaven	44	4
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Vidal	53	
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Dorris	77	
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Blythe	273	1
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Tulelake		1
Hemiptera[3]	Diaspididae	*Parlatoria pseudaspidiotus*	A	Redwood Hwy		5
Hemiptera[3]	Diaspididae	*Pinnaspis aspidistrae*	A	Needles		1
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Needles	1	3
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Winterhaven	2	
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Blythe	3	
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Vidal	6	
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Dorris	39	
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Redwood Hwy		2
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	Q	Smith River		4
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Needles	1	
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Yermo	2	
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Blythe	4	
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Vidal	10	
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Dorris	54	
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Smith River		3
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Needles		4

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Yermo	1	1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Winterhaven	1	
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Vidal	2	
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Blythe	5	
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Needles	5	
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Redwood Hwy		1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Smith River		1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Tulelake		1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Blythe	5	
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Winterhaven	7	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Yermo	1	
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Smith River		4
Hemiptera[3]	Diaspididae	*Pseudaulacaspis* sp.	Q	Smith River		1
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Blythe	1	
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Long Valley	1	
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Vidal	1	
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Dorris	5	
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Winterhaven	5	
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Alturas		1
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Needles		1
Hemiptera[3]	Diaspididae	*Radionaspis indica*	Q	Redwood Hwy		2
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Blythe	1	
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Dorris	1	
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Hornbrook	1	
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Needles	1	
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Smith River		2
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Hornbrook	1	1
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Truckee	1	
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Yermo	1	
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Needles	2	5
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Vidal	3	1
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Winterhaven	3	
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Blythe	14	
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Dorris	62	
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Redwood Hwy		5
Hemiptera[3]	Diaspididae	*Unaspis citri*	A	Smith River		10
Hemiptera[3]	Diaspididae	*Unaspis* sp.	Q	Smith River		3
Hemiptera[3]	Margarodidae	*Icerya* sp.	Q	Vidal	1	
Hemiptera[3]	Pseudococcidae	*Dysmicoccus grassii*	A	Blythe	4	
Hemiptera[3]	Pseudococcidae	*Dysmicoccus hurdi*	Q	Blythe	1	
Hemiptera[3]	Pseudococcidae	*Dysmicoccus* sp.	Q	Blythe	12	
Hemiptera[3]	Pseudococcidae	*Dysmicoccus texensis*	Q	Blythe	3	

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	Needles	1	
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	Vidal	1	
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	Blythe	3	
Hemiptera[3]	Pseudococcidae	*Ferrisia virgata*	B	Blythe	1	
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	Needles	1	
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	Blythe	2	
Hemiptera[3]	Pseudococcidae	*Palmicultor palmarum*	Q	Needles		1
Hemiptera[3]	Pseudococcidae	*Phenacoccus* sp.	Q	Winterhaven		1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Needles	1	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Vidal	3	
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Winterhaven	3	
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Blythe	15	
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Smith River		1
Hemiptera[3]	Pseudococcidae	*Pseudococcus donrileyi*	Q	Blythe	1	
Hemiptera[3]	Pseudococcidae	*Pseudococcus odermatti*	Q	Needles		1
Hemiptera[3]	Pseudococcidae	*Pseudococcus odermatti*	Q	Yermo		1
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Dorris	1	
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Winterhaven	1	
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Vidal	11	
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Blythe	22	
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Needles		1
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Dorris	1	
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Vidal	6	1
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Blythe	11	
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Needles	16	28
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Winterhaven		1
Hymenoptera	Formicidae	*Crematogaster* sp.	Q	Blythe	1	
Hymenoptera	Formicidae	*Crematogaster* sp.	Q	Needles	1	
Hymenoptera	Formicidae	*Hypoponera* sp.	Q	Needles		3
Hymenoptera	Formicidae	*Monomorium* sp.	Q	Needles	1	
Hymenoptera	Formicidae	*Monomorium* sp.	Q	Blythe	5	
Hymenoptera	Formicidae	Myrmicini	Q	Needles	1	2
Hymenoptera	Formicidae	Myrmicini	Q	Truckee	1	
Hymenoptera	Formicidae	Myrmicini	Q	Winterhaven	1	
Hymenoptera	Formicidae	Myrmicini	Q	Vidal	4	
Hymenoptera	Formicidae	*Odontomachus* sp.	Q	Yermo	1	
Hymenoptera	Formicidae	*Paratrechina* sp.	Q	Winterhaven	1	
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Long Valley	1	
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Blythe	2	
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Needles		1
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Winterhaven	1	
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Needles	2	16

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		Station	Com	Pers
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Yermo	2	
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Truckee	4	
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Vidal	7	
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Blythe	20	
Hymenoptera	Formicidae	*Ponera* sp.	Q	Vidal	1	
Hymenoptera	Formicidae	*Ponera* sp.	Q	Winterhaven	1	
Hymenoptera	Formicidae	*Ponera* sp.	Q	Needles		1
Hymenoptera	Formicidae	*Pseudomyrmex gracilis*	Q	Needles		1
Hymenoptera	Formicidae	*Pseudomyrmex* sp.	Q	Needles	1	
Hymenoptera	Formicidae	*Pseudomyrmex* sp.	Q	Blythe	2	
Hymenoptera	Formicidae	*Solenopsis geminata*	A	Vidal	1	
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Benton	1	
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Hornbrook	1	
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Yermo	3	
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Winterhaven	9	
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Needles	18	10
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Blythe	20	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Vidal	45	
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Winterhaven	1	
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Blythe	3	
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Truckee	3	
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Needles	4	2
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Vidal	45	
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Blythe	1	
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Needles	1	
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Truckee	2	
Hymenoptera	Formicidae	*Technomyrmex* sp.	Q	Needles	1	
Hymenoptera	Formicidae	*Tetramorium* sp.	Q	Blythe	1	
Isoptera	Rhinotermitidae	*Reticulitermes* sp.	Q	Needles		1
Lepidoptera	Gelechiidae	*Pectinophora gossypiella*	A	Vidal	1	
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Truckee	1	
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Yermo	1	
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Smith River		1
Lepidoptera	Lasiocampidae	*Malacosoma americanum*	A	Needles		1
Lepidoptera	Lasiocampidae	*Malacosoma* sp.	A	Needles	1	1
Lepidoptera	Lymantriidae	*Dasychira* sp.	Q	Long Valley		1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Long Valley		1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Redwood Hwy		1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Truckee		1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Winterhaven		1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Needles		2
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Smith River		2
Lepidoptera	Lymantriidae	*Orgyia* sp.	Q	Needles		1
Lepidoptera	Noctuidae	*Noctua pronuba*	Q	Dorris	1	

Order	Family	Scientific Name		Station	Com	Pers
Lepidoptera	Noctuidae	*Spodoptera* sp.	Q	Vidal	1	
Lepidoptera	Notodontidae	*Nadata gibbosa*	A	Truckee	1	
Lepidoptera	Pyralidae	*Diaphania nitidalis*	B	Vidal	1	
Lepidoptera	Pyralidae	*Moodna bisinuella*	Q	Winterhaven		1
Lepidoptera	Pyralidae	*Ostrinia nubilalis*	A	Truckee	1	
Lepidoptera	Pyralidae	*Phycitinae* sp.	Q	Vidal	1	
Lepidoptera	Pyralidae	*Pyrausta* sp.	Q	Winterhaven	1	
Lepidoptera	Pyralidae	*Tampa dimediatella*	Q	Winterhaven	1	
Lepidoptera	Saturniidae	*Anisota stigma*	Q	Truckee	1	
Lepidoptera	Saturniidae	*Callosamia promethea*	Q	Truckee		1
Lepidoptera	Sphingidae	*Eumorpha typhon*	Q	Blythe	1	
Lepidoptera	Tortricidae	*Cydia caryana*	A	Winterhaven	1	1
Lepidoptera	Tortricidae	*Grapholita* sp.	Q	Needles	1	1
Lepidoptera	Tortricidae	*Thaumatotibia leucotreta*	A	Blythe	1	
Lepidoptera	Tortricidae	*Thaumatotibia leucotreta*	A	Truckee	1	
Lepidoptera	Tortricidae	*Thaumatotibia leucotreta*	A	Yermo	2	
Lepidoptera	Tortricidae	*Thaumatotibia leucotreta*	A	Needles	25	1
Lepidoptera	Tortricidae	*Thaumatotibia leucotreta*	A	Winterhaven		1
Orthoptera	Acrididae	*Metaleptea brevicorris*	Q	Truckee	1	
Orthoptera	Gryllidae	*Anaxipha* sp.	Q	Winterhaven		1
Orthoptera	Gryllidae	*Oecanthus* sp.	Q	Truckee	1	
Orthoptera	Tettigoniidae	*Orchelimum* sp.	Q	Blythe	1	
Orthoptera	Tettigoniidae	*Orchelimum* sp.	Q	Truckee	5	
Orthoptera	Tettigoniidae	*Orchelimum vulgare*	Q	Blythe	1	
Orthoptera	Tettigoniidae	*Orchelimum vulgare*	Q	Truckee	1	
Pelecypoda	Dreisseniidae	*Dreissena polymorpha*	Q	Long Valley	1	
Pelecypoda	Dreisseniidae	*Dreissena polymorpha*	Q	Winterhaven	1	
Pelecypoda	Dreisseniidae	*Dreissena polymorpha*	Q	Needles	2	3
Pelecypoda	Dreisseniidae	*Dreissena polymorpha*	Q	Truckee	3	2
Thysanoptera	Merothripidae	*Merothrips* sp.	Q	Blythe	1	
Thysanoptera	Phlaeothripidae	*Liothrips* sp.	Q	Needles	1	
Thysanoptera	Thripidae	*Heliothrips* sp.	Q	Hornbrook	1	
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A, B & Q RATED INTERCEPTIONS BY COUNTY (NON-BORDER STATIONS)

Order	Family	Scientific Name		County	Total
Acari	Tenuipalpidae	*Brevipalpus* sp.	Q	Alameda	1
Acari	Tetranychidae	*Tetranychus* sp.	Q	San Mateo	1
Coleoptera	Anthribidae	*Araecerus* sp.	Q	San Mateo	1
Coleoptera	Apionidae	*Apion* sp.	Q	San Mateo	1
Coleoptera	Apionidae	*Cylas formicarius*	A	Los Angeles	1
Coleoptera	Bostrichidae	*Sinoxylon* sp.	Q	Sonoma	1
Coleoptera	Buprestidae	*Chrysobothris* sp.	Q	San Mateo	1
Coleoptera	Cerambycidae	*Curtomerus flavus*	Q	San Luis Obispo	1
Coleoptera	Cerambycidae	*Curtomerus flavus*	Q	Los Angeles	2
Coleoptera	Cerambycidae	*Monochamus* sp.	Q	Los Angeles	1
Coleoptera	Cerambycidae	*Sybra alternans*	Q	Los Angeles	3
Coleoptera	Cerambycidae	*Sybra alternans*	Q	San Mateo	7
Coleoptera	Chrysomelidae	*Cassida circumdata*	Q	San Luis Obispo	1
Coleoptera	Chrysomelidae	*Chrysophtharta* sp.	Q	Riverside	1
Coleoptera	Chrysomelidae	*Leptinotarsa decemlineata*	A	Ventura	2
Coleoptera	Chrysomelidae	*Longitarsus* sp.	Q	San Mateo	2
Coleoptera	Chrysomelidae	*Oulema melanopus*	A	San Luis Obispo	1
Coleoptera	Chrysomelidae	*Trachymela sloanei*	B	Sacramento	2
Coleoptera	Curculionidae	*Acythopeus cocciniae*	Q	San Mateo	2
Coleoptera	Curculionidae	*Cylas formicarius*	A	Los Angeles	1
Coleoptera	Curculionidae	*Gasterolisus tricostatus*	Q	San Mateo	1
Coleoptera	Curculionidae	*Lixus* sp.	Q	San Mateo	1
Coleoptera	Curculionidae	*Myllocerus* sp.	Q	San Bernadino	1
Coleoptera	Curculionidae	*Myllocerus undatus*	Q	San Mateo	1
Coleoptera	Curculionidae	*Orchidophilus atterimus*	Q	Orange	1
Coleoptera	Curculionidae	*Orchidophilus* sp.	Q	Los Angeles	1
Coleoptera	Curculionidae	*Pholidophorus advena*	Q	Los Angeles	1
Coleoptera	Curculionidae	*Tanymecus lacaena*	Q	San Diego	1
Coleoptera	Nitidulidae	*Aethina* sp.	Q	San Mateo	1
Coleoptera	Nitidulidae	*Aethina tumida*	Q	Glenn	4
Coleoptera	Scarabaeidae	*Adoretus sinicus*	Q	Los Angeles	1
Coleoptera	Scarabaeidae	*Adoretus* sp.	Q	Orange	1
Coleoptera	Scarabaeidae	*Adoretus* sp.	Q	San Mateo	1
Coleoptera	Scarabaeidae	*Adoretus* sp.	Q	Los Angeles	4
Coleoptera	Scarabaeidae	*Anomala orientalis*	A	Sacramento	1
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	Alameda	1
Coleoptera	Scarabaeidae	*Anomala* sp.	A	Los Angeles	1
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	Solano	1
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	Orange	4
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	Sacramento	5
Coleoptera	Scarabaeidae	*Anomala* sp.	Q	San Diego	6

Order	Family	Scientific Name		County	Total
Coleoptera	Scarabaeidae	*Dyscinetus* sp.	Q	Los Angeles	1
Coleoptera	Scarabaeidae	*Dyscinetus* sp.	Q	San Diego	1
Coleoptera	Scarabaeidae	*Phyllophaga* sp.	Q	San Diego	1
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Madera	1
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Humboldt	2
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Mateo	2
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Francisco	3
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Fresno	5
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Orange	22
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Santa Clara	29
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Sacramento	37
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Bernadino	44
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Alameda	62
Coleoptera	Scarabaeidae	*Popillia japonica*	A	San Diego	136
Coleoptera	Scarabaeidae	*Popillia japonica*	A	Los Angeles	320
Coleoptera	Scolytidae	*Hypothenemus* sp.	Q	San Mateo	2
Coleoptera	Scolytidae	*Xylosandrus crassiusculus*	Q	Orange	1
Coleoptera	Scolytidae	*Xylosandrus* sp.	Q	Contra Costa	1
Coleoptera	Scolytidae	*Xylosandrus* sp.	Q	Los Angeles	1
Coleoptera	Scolytidae	*Xylosandrus* sp.	Q	Sacramento	1
Coleoptera	Scolytidae	*Xylosandrus* sp.	Q	San Bernadino	1
Coleoptera	Scolytidae	*Xylosandrus* sp.	Q	Orange	2
Coleoptera	Tenebrionidae	*Eutochia* sp.	Q	San Bernadino	1
Diptera	Agromyzidae	*Liriomyza* sp.	Q	San Mateo	2
Diptera	Agromyzidae	*Phytomyza ilicis*	B	Santa Cruz	1
Diptera	Agromyzidae	*Phytomyza* sp.	Q	San Mateo	1
Diptera	Cecidomyiidae	*Paradiplosis tumifex*	B	Sonoma	4
Diptera	Syrphidae	*Eumerus figurans*	Q	San Bernadino	1
Diptera	Tephritidae	*Anastrepha obliqua*	A	San Joaquin	1
Diptera	Tephritidae	*Bactrocera* sp.	A	Alameda	1
Diptera	Tipulidae	*Tipula oleracea*	Q	Santa Cruz	1
Gastropoda	Achatinidae	*Achatina fulica*	A	Los Angeles	1
Gastropoda	Achatinidae	*Achatina fulica*	A	San Diego	1
Gastropoda	Achatinidae	*Achatina fulica*	A	San Mateo	3
Gastropoda	Achatinidae	*Lamellaxis* sp.	A	San Mateo	1
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Riverside	1
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Sonoma	1
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	San Mateo	2
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	San Joaquin	3
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Alameda	4
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Orange	12
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	Los Angeles	13
Gastropoda	Bradybaenidae	*Bradybaena similaris*	B	San Diego	36
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	Alameda	1

Order	Family	Scientific Name		County	Total
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	Los Angeles	2
Gastropoda	Camaenidae	*Zachrysia provisoria*	Q	San Diego	5
Gastropoda	Camaenidae	*Zachrysia* sp.	Q	San Mateo	1
Gastropoda	Succineidae	*Succinea* sp.	Q	San Luis Obispo	3
Gastropoda	Veronicellidae	*Veronicella* sp.	Q	Orange	1
Hemiptera[1]	Cercopidae	*Aphrophora* sp.	Q	San Mateo	1
Hemiptera[1]	Cercopidae	*Prosapia bicincta*	Q	Los Angeles	1
Hemiptera[1]	Cicadellidae	*Agallia lingula*	Q	San Mateo	1
Hemiptera[1]	Cicadellidae	*Agallia* sp.	Q	San Joaquin	1
Hemiptera[1]	Cicadellidae	*Agallia* sp.	Q	San Mateo	7
Hemiptera[1]	Cicadellidae	*Agallia* sp.	Q	Los Angeles	49
Hemiptera[1]	Cicadellidae	*Empoasca* sp.	Q	Orange	2
Hemiptera[1]	Cicadellidae	*Empoasca* sp.	Q	San Mateo	6
Hemiptera[1]	Cicadellidae	*Gyponana germari*	Q	Los Angeles	1
Hemiptera[1]	Cicadellidae	*Gyponana* sp.	Q	San Diego	1
Hemiptera[1]	Cicadellidae	*Gyponana* sp.	Q	San Luis Obispo	1
Hemiptera[1]	Cicadellidae	*Gyponana* sp.	Q	San Mateo	4
Hemiptera[1]	Cicadellidae	*Gyponana* sp.	Q	Los Angeles	5
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	El Dorado	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Fresno	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Marin	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Monterey	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Diego	1
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Solano	2
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Mateo	3
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Barbara	4
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Cruz	5
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Napa	6
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Stanislaus	6
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Contra Costa	7
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Santa Clara	7
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Sonoma	7
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Alameda	13
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Sacramento	20
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	Imperial	25
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Luis Obispo	31
Hemiptera[1]	Cicadellidae	*Homalodisca coagulata*	B	San Joaquin	95
Hemiptera[1]	Cicadellidae	*Homalodisca* sp.	B	Humboldt	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	Santa Clara	1
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	San Joaquin	3
Hemiptera[1]	Cicadellidae	*Homalodisca vitripennis*	B	San Luis Obispo	5
Hemiptera[1]	Cicadellidae	*Kallitaxa granulata*	Q	San Mateo	1

[1] suborder Auchenorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[1]	Cicadellidae	*Oncometopia* sp.	Q	San Mateo	1
Hemiptera[1]	Cicadellidae	*Oncometopia* sp.	Q	Los Angeles	2
Hemiptera[1]	Cicadellidae	*Oncometopia* sp.	Q	San Luis Obispo	2
Hemiptera[1]	Cicadellidae	*Oncometopia* sp.	Q	San Joaquin	13
Hemiptera[1]	Cicadellidae	*Protalebrella brasiliensis*	Q	Los Angeles	10
Hemiptera[1]	Cixiidae	*Oliarus* sp.	Q	Los Angeles	1
Hemiptera[1]	Delphacidae	*Tarophagus colocasiae*	Q	San Bernadino	1
Hemiptera[1]	Delphacidae	*Tarophagus colocasiae*	Q	San Mateo	18
Hemiptera[1]	Delphacidae	*Tarophagus* sp.	Q	San Mateo	2
Hemiptera[1]	Flatidae	*Melormenis antillarum*	Q	Los Angeles	1
Hemiptera[1]	Flatidae	*Melormenis antillarum*	Q	San Mateo	1
Hemiptera[1]	Flatidae	*Melormenis* sp.	Q	San Diego	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Mendocino	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Monterey	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	San Joaquin	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Shasta	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Sonoma	1
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	San Luis Obispo	3
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Alameda	4
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Contra Costa	5
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Orange	9
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	Los Angeles	27
Hemiptera[1]	Tropiduchidae	*Kallitaxila granulata*	Q	San Mateo	67
Hemiptera[1]	Tropiduchidae	*Kallitaxila* sp.	Q	San Mateo	1
Hemiptera[2]	Coreidae	*Physomerus grossipes*	Q	Los Angeles	1
Hemiptera[2]	Cydnidae	*Rhytidoporus indentatus*	Q	Mendocino	1
Hemiptera[2]	Cydnidae	*Rhytidoporus indentatus*	Q	Orange	1
Hemiptera[2]	Lygaeidae	*Graptostethus manillensis*	Q	Alameda	1
Hemiptera[2]	Lygaeidae	*Heterogaster* sp.	Q	San Diego	1
Hemiptera[2]	Lygaeidae	*Metapoplex ditomoides*	Q	Lake	1
Hemiptera[2]	Lygaeidae	*Metapoplex ditomoides*	Q	Solano	1
Hemiptera[2]	Lygaeidae	*Nysins* sp.	Q	Los Angeles	84
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	San Luis Obispo	1
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	San Bernadino	3
Hemiptera[2]	Lygaeidae	*Nysius* sp.	Q	San Mateo	21
Hemiptera[2]	Lygaeidae	*Raglius alboacuminatus*	Q	San Luis Obispo	1
Hemiptera[2]	Lygaeidae	*Remaudiereana nigriceps*	Q	Los Angeles	1
Hemiptera[2]	Pentatomidae	*Eurydema* sp.	Q	San Mateo	1
Hemiptera[2]	Pentatomidae	*Euschistus* sp.	Q	Sonoma	1
Hemiptera[2]	Pentatomidae	*Piezodorus* sp.	Q	San Mateo	1
Hemiptera[2]	Pentatomidae	*Plautia* sp.	Q	San Mateo	1

[1] suborder Auchenorrhyncha, [2] suborder Heteroptera (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Aleyrodidae	*Aleuroclava* sp.	Q	San Bernadino	1
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Sonoma	1
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Ventura	1
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	San Joaquin	2
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	San Luis Obispo	2
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Shasta	2
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Contra Costa	3
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	San Bernadino	4
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Orange	7
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	San Mateo	70
Hemiptera[3]	Aleyrodidae	*Aleurodicus dispersus*	Q	Los Angeles	162
Hemiptera[3]	Aleyrodidae	*Aleurodicus* sp.	Q	Contra Costa	1
Hemiptera[3]	Aleyrodidae	*Aleurodicus* sp.	Q	San Mateo	1
Hemiptera[3]	Aleyrodidae	*Aleurodicus* sp.	Q	Orange	2
Hemiptera[3]	Aleyrodidae	*Aleuropleurocelus* sp.	Q	Shasta	1
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus atratus*	Q	San Mateo	1
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus* sp.	Q	Sonoma	1
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus* sp.	Q	Los Angeles	2
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus* sp.	Q	Sacramento	2
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus* sp.	Q	San Mateo	5
Hemiptera[3]	Aleyrodidae	*Aleurotrachelus trachoides*	Q	San Mateo	1
Hemiptera[3]	Aleyrodidae	*Aleyrodes* sp.	Q	Contra Costa	3
Hemiptera[3]	Aleyrodidae	Aleyrodinae	Q	San Mateo	1
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Alameda	1
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Los Angeles	1
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Sacramento	1
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	San Luis Obispo	1
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Contra Costa	2
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Orange	5
Hemiptera[3]	Aleyrodidae	*Orchamoplatus mammaeferus*	Q	Santa Cruz	5
Hemiptera[3]	Aleyrodidae	*Paraleyrodes* sp.	Q	San Joaquin	1
Hemiptera[3]	Aleyrodidae	*Paraleyrodes* sp.	Q	San Mateo	1
Hemiptera[3]	Aleyrodidae	*Tetraleurodes perseae*	B	San Luis Obispo	2
Hemiptera[3]	Aphididae	*Acyrthosiphon* sp.	Q	San Mateo	1
Hemiptera[3]	Aphididae	*Aphis* sp.	Q	San Mateo	1
Hemiptera[3]	Aphididae	*Cinara* sp.	Q	Orange	3
Hemiptera[3]	Aphididae	*Greenidea psidii*	Q	Mendocino	1
Hemiptera[3]	Aphididae	*Greenidea* sp.	Q	Alameda	1
Hemiptera[3]	Aphididae	*Greenidea* sp.	Q	San Mateo	1
Hemiptera[3]	Aphididae	*Myzus ascalonicus*	Q	San Mateo	2
Hemiptera[3]	Coccidae	*Ceroplastes ceriferus*	A	Sonoma	1

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Coccidae	*Ceroplastes floridensis*	A	San Luis Obispo	1
Hemiptera[3]	Coccidae	*Ceroplastes rubens*	A	San Bernadino	1
Hemiptera[3]	Coccidae	*Ceroplastes rubens*	A	Los Angeles	2
Hemiptera[3]	Coccidae	*Ceroplastes rubens*	A	Orange	2
Hemiptera[3]	Coccidae	*Ceroplastes rubens*	A	San Francisco	2
Hemiptera[3]	Coccidae	*Ceroplastes rusci*	A	San Joaquin	2
Hemiptera[3]	Coccidae	*Ceroplastes rusci*	A	Los Angeles	3
Hemiptera[3]	Coccidae	*Ceroplastes rusci*	A	San Diego	7
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	Q	Contra Costa	1
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	Q	Amador	1
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	Q	San Diego	1
Hemiptera[3]	Coccidae	*Ceroplastes* sp.	Q	Los Angeles	4
Hemiptera[3]	Coccidae	*Coccus capparidis*	Q	Orange	1
Hemiptera[3]	Coccidae	*Coccus capparidis*	Q	San Mateo	1
Hemiptera[3]	Coccidae	*Coccus moestus*	Q	San Mateo	1
Hemiptera[3]	Coccidae	*Coccus* sp.	Q	Contra Costa	1
Hemiptera[3]	Coccidae	*Coccus* sp.	Q	Humboldt	1
Hemiptera[3]	Coccidae	*Coccus* sp.	A	Los Angeles	1
Hemiptera[3]	Coccidae	*Coccus* sp.	Q	San Mateo	1
Hemiptera[3]	Coccidae	*Coccus viridis*	A	San Luis Obispo	1
Hemiptera[3]	Coccidae	*Coccus viridis*	A	Orange	4
Hemiptera[3]	Coccidae	*Mesolecanium nigrofasciatum*	A	San Luis Obispo	1
Hemiptera[3]	Coccidae	*Milviscutulus mangiferae*	Q	San Mateo	1
Hemiptera[3]	Coccidae	*Milviscutulus mangiferae*	Q	Orange	3
Hemiptera[3]	Coccidae	*Milviscutulus mangiferae*	Q	San Luis Obispo	3
Hemiptera[3]	Coccidae	*Milviscutulus mangiferae*	Q	Contra Costa	4
Hemiptera[3]	Coccidae	*Philephedra tuberculosa*	Q	San Joaquin	1
Hemiptera[3]	Coccidae	*Philephedra tuberculosa*	Q	San Mateo	2
Hemiptera[3]	Coccidae	*Prococcus acutissimus*	Q	Los Angeles	1
Hemiptera[3]	Coccidae	*Prococcus acutissimus*	Q	Orange	1
Hemiptera[3]	Coccidae	*Prococcus acutissimus*	Q	San Mateo	2
Hemiptera[3]	Coccidae	*Protopulvinaria pyriformis*	B	Imperial	1
Hemiptera[3]	Coccidae	*Protopulvinaria pyriformis*	B	San Luis Obispo	4
Hemiptera[3]	Coccidae	*Pulvinaria psidii*	B	San Diego	2
Hemiptera[3]	Coccidae	*Pulvinaria urbicola*	B	Contra Costa	1
Hemiptera[3]	Coccidae	*Pulvinaria urbicola*	B	San Luis Obispo	1
Hemiptera[3]	Coccidae	*Pulvinaria urbicola*	B	San Mateo	1
Hemiptera[3]	Coccidae	*Pulvinaria urbicola*	B	Santa Barbara	1
Hemiptera[3]	Coccidae	*Saissetia* sp.	Q	San Luis Obispo	1
Hemiptera[3]	Coccidae	*Vinsonia stellifera*	Q	Contra Costa	1
Hemiptera[3]	Coccidae	*Vinsonia stellifera*	Q	San Mateo	3

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Coccidae	*Vinsonia stellifera*	Q	Los Angeles	10
Hemiptera[3]	Diaspididae	*Abgrallaspis* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Acutaspis albopicta*	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Acutaspis* sp.	Q	Riverside	1
Hemiptera[3]	Diaspididae	*Acutaspis* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Placer	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	San Luis Obispo	2
Hemiptera[3]	Diaspididae	*Aonidiella aurantii*	B	Riverside	4
Hemiptera[3]	Diaspididae	*Aonidiella inornata*	Q	Orange	1
Hemiptera[3]	Diaspididae	*Aonidiella inornata*	Q	San Mateo	8
Hemiptera[3]	Diaspididae	*Aonidiella orientalis*	A	Humboldt	1
Hemiptera[3]	Diaspididae	*Aonidiella* sp.	Q	San Diego	1
Hemiptera[3]	Diaspididae	*Aonidiella* sp.	Q	San Mateo	3
Hemiptera[3]	Diaspididae	*Aspidiotus destructor*	A	San Bernadino	1
Hemiptera[3]	Diaspididae	*Aspidiotus destructor*	A	Orange	2
Hemiptera[3]	Diaspididae	*Aspidiotus destructor*	A	San Mateo	14
Hemiptera[3]	Diaspididae	*Aspidiotus destructor*	A	Los Angeles	25
Hemiptera[3]	Diaspididae	*Aspidiotus excisus*	Q	Orange	1
Hemiptera[3]	Diaspididae	*Aspidiotus* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Aulacaspis* sp.	Q	Contra Costa	1
Hemiptera[3]	Diaspididae	*Aulacaspis* sp.	Q	Los Angeles	1
Hemiptera[3]	Diaspididae	*Aulacaspis* sp.	Q	San Luis Obispo	1
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Sacramento	1
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Santa Barbara	1
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Sonoma	1
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Riverside	2
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	San Bernadino	2
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Contra Costa	4
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	San Diego	4
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Orange	14
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	Los Angeles	22
Hemiptera[3]	Diaspididae	*Aulacaspis yasumatsui*	Q	San Mateo	32
Hemiptera[3]	Diaspididae	*Chrysomphalus* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Clavaspis herculeana*	A	Riverside	1
Hemiptera[3]	Diaspididae	*Clavaspis herculeana*	A	San Mateo	1
Hemiptera[3]	Diaspididae	*Diaspis* sp.	Q	Riverside	1
Hemiptera[3]	Diaspididae	*Duplachionaspis divergens*	Q	Orange	1
Hemiptera[3]	Diaspididae	*Dynaspidiotus britannicus*	B	Santa Barbara	1
Hemiptera[3]	Diaspididae	*Fiorinia* sp.	Q	Alameda	1
Hemiptera[3]	Diaspididae	*Fiorinia* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Fiorinia theae*	A	Sonoma	1

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Diaspididae	*Hemiberlesia palmae*	A	Orange	1
Hemiptera[3]	Diaspididae	*Hemiberlesia palmae*	A	San Mateo	1
Hemiptera[3]	Diaspididae	*Howardia biclavis*	A	Riverside	3
Hemiptera[3]	Diaspididae	*Ischnaspis longirostris*	A	San Mateo	2
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Alameda	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Humboldt	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Los Angeles	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	San Luis Obispo	1
Hemiptera[3]	Diaspididae	*Lepidosaphes beckii*	B	Shasta	1
Hemiptera[3]	Diaspididae	*Lepidosaphes* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Lepidosaphes* sp.	Q	Los Angeles	2
Hemiptera[3]	Diaspididae	*Lepidosaphes stepta*	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Lepidosaphes tokionis*	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Lopholeucaspis cockerelli*	A	Orange	1
Hemiptera[3]	Diaspididae	*Lopholeucaspis cockerelli*	A	San Mateo	1
Hemiptera[3]	Diaspididae	*Melanaspis* sp.	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Orange	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Shasta	1
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	San Luis Obispo	2
Hemiptera[3]	Diaspididae	*Parlatoria pergandii*	B	Tulare	2
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	Contra Costa	1
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	Sacramento	1
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	San Joaquin	1
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	San Luis Obispo	1
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	Alameda	3
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	Orange	6
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	Los Angeles	10
Hemiptera[3]	Diaspididae	*Pinnaspis buxi*	A	San Mateo	82
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	A	Riverside	1
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	A	San Joaquin	1
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	A	Contra Costa	2
Hemiptera[3]	Diaspididae	*Pinnaspis* sp.	A	San Mateo	3
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	San Bernadino	1
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Santa Cruz	2
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Contra Costa	5
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Los Angeles	6
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	San Luis Obispo	6
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	San Mateo	23
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	Orange	28
Hemiptera[3]	Diaspididae	*Pinnaspis strachani*	A	San Joaquin	31
Hemiptera[3]	Diaspididae	*Pinnaspis uniloba*	Q	Orange	1

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Contra Costa	1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Orange	1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	San Bernadino	1
Hemiptera[3]	Diaspididae	*Pseudaonidia trilobitiformis*	Q	Alameda	2
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	Alameda	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	Orange	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	Sacramento	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	Sonoma	3
Hemiptera[3]	Diaspididae	*Pseudaulacaspis brimblecombei*	Q	Contra Costa	5
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Madera	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Placer	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Bernadino	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Francisco	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Luis Obispo	2
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Sonoma	2
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Riverside	3
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Santa Barbara	3
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Diego	3
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Alameda	5
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Joaquin	7
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Orange	15
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Contra Costa	21
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Diego	38
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	Los Angeles	47
Hemiptera[3]	Diaspididae	*Pseudaulacaspis cockerelli*	A	San Mateo	61
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Alameda	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Riverside	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Sonoma	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Los Angeles	2
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	San Bernadino	3
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	Contra Costa	5
Hemiptera[3]	Diaspididae	*Pseudaulacaspis pentagona*	A	San Mateo	9
Hemiptera[3]	Diaspididae	*Pseudaulacaspis* sp.	Q	Contra Costa	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis* sp.	Q	Sacramento	1
Hemiptera[3]	Diaspididae	*Pseudaulacaspis* sp.	Q	Sonoma	1
Hemiptera[3]	Diaspididae	*Pseudischnaspis bowreyi*	Q	Los Angeles	1
Hemiptera[3]	Diaspididae	*Pseudoparlatoria parlatorioides*	A	San Mateo	4
Hemiptera[3]	Diaspididae	*Rutherfordia major*	Q	Sonoma	1
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	San Luis Obispo	1
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	Los Angeles	6

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Diaspididae	*Selenaspidus articulatus*	A	San Mateo	11
Hemiptera[3]	Diaspididae	*Thysanofiorinia nephelii*	Q	Fresno	1
Hemiptera[3]	Diaspididae	*Thysanofiorinia nephelii*	Q	San Mateo	1
Hemiptera[3]	Diaspididae	*Thysanofiorinia nephelii*	Q	Sonoma	1
Hemiptera[3]	Diaspididae	*Thysanofiorinia nephelii*	Q	San Joaquin	2
Hemiptera[3]	Halimococcidae	*Thysanococcus pandani*	Q	Orange	1
Hemiptera[3]	Margarodidae	*Icerya* sp.	Q	San Mateo	3
Hemiptera[3]	Pseudococcidae	*Dysmicoccus grassii*	A	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Dysmicoccus grassii*	A	Orange	3
Hemiptera[3]	Pseudococcidae	*Dysmicoccus grassii*	A	Ventura	3
Hemiptera[3]	Pseudococcidae	*Dysmicoccus* sp.	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Dysmicoccus* sp.	Q	Mendocino	1
Hemiptera[3]	Pseudococcidae	*Dysmicoccus* sp.	Q	Santa Cruz	1
Hemiptera[3]	Pseudococcidae	*Dysmicoccus* sp.	Q	San Mateo	2
Hemiptera[3]	Pseudococcidae	*Ferrisia malvastrum*	B	San Mateo	2
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	Tulare	1
Hemiptera[3]	Pseudococcidae	*Ferrisia* sp.	Q	San Mateo	3
Hemiptera[3]	Pseudococcidae	*Ferrisia virgata*	B	Orange	2
Hemiptera[3]	Pseudococcidae	*Ferrisia virgata*	B	San Mateo	3
Hemiptera[3]	Pseudococcidae	*Geococcus coffeae*	Q	Orange	1
Hemiptera[3]	Pseudococcidae	*Laminicoccus pandani*	Q	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Laminicoccus vitiensis*	Q	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	Contra Costa	1
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	San Joaquin	3
Hemiptera[3]	Pseudococcidae	*Maconellicoccus hirsutus*	A	San Mateo	5
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp.	Q	Alameda	2
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp.	Q	Contra Costa	2
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp.	Q	San Mateo	2
Hemiptera[3]	Pseudococcidae	*Nipaecoccus* sp. (undescribed)	Q	Alameda	1
Hemiptera[3]	Pseudococcidae	*Palmicultor palmarum*	Q	Santa Cruz	1
Hemiptera[3]	Pseudococcidae	*Palmicultor* sp.	Q	Riverside	2
Hemiptera[3]	Pseudococcidae	*Phenacoccus* sp.	Q	San Luis Obispo	1
Hemiptera[3]	Pseudococcidae	*Phenacoccus* sp.	Q	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Planococcus minor*	Q	San Joaquin	1
Hemiptera[3]	Pseudococcidae	*Planococcus minor*	Q	Mendocino	2
Hemiptera[3]	Pseudococcidae	*Planococcus minor*	Q	San Mateo	4
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	San Bernadino	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Santa Barbara	1
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	San Luis Obispo	3
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Mendocino	4

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	Contra Costa	5
Hemiptera[3]	Pseudococcidae	*Planococcus* sp.	Q	San Mateo	25
Hemiptera[3]	Pseudococcidae	*Pseudococcus cryptus*	A	Contra Costa	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus cryptus*	A	Sonoma	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus cryptus*	A	San Mateo	4
Hemiptera[3]	Pseudococcidae	*Pseudococcus elisae*	A	Contra Costa	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus elisae*	A	Orange	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus elisae*	A	San Mateo	5
Hemiptera[3]	Pseudococcidae	*Pseudococcus importatus*	A	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus jackbeardsleyi*	Q	Alameda	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus jackbeardsleyi*	Q	Contra Costa	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus jackbeardsleyi*	Q	San Luis Obispo	2
Hemiptera[3]	Pseudococcidae	*Pseudococcus jackbeardsleyi*	Q	San Mateo	7
Hemiptera[3]	Pseudococcidae	*Pseudococcus lycopodii*	Q	Orange	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus odermatti*	Q	San Luis Obispo	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus odermatti*	Q	San Joaquin	2
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Mendocino	1
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	Contra Costa	3
Hemiptera[3]	Pseudococcidae	*Pseudococcus* sp.	Q	San Mateo	23
Hemiptera[3]	Pseudococcidae	*Pseudococcus viburni*	Q	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus americanus*	Q	Orange	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus americanus*	Q	San Diego	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus americanus*	Q	San Mateo	2
Hemiptera[3]	Pseudococcidae	*Rhizoecus caladii*	Q	Orange	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus hawaiiensis*	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus hawaiiensis*	Q	Orange	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus* sp.	Q	Los Angeles	1
Hemiptera[3]	Pseudococcidae	*Rhizoecus* sp.	Q	San Diego	2
Hemiptera[3]	Pseudococcidae	*Ripersiella hibisci*	Q	San Mateo	1
Hemiptera[3]	Pseudococcidae	*Ripersiella hibisci*	Q	Riverside	3
Hemiptera[3]	Pseudococcidae	*Ripersiella hibisci*	Q	Orange	4
Hemiptera[3]	Pseudococcidae	*Ripersiella hibisci*	Q	Los Angeles	8
Hemiptera[3]	Pseudococcidae	*Ripersiella hibisci*	Q	San Diego	20
Hemiptera[3]	Psyllidae	*Heteropsylla* sp.	Q	San Mateo	1
Hemiptera[3]	Psyllidae	*Psylla* sp.	Q	San Mateo	2
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Alameda	1
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Mendocino	1
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Orange	1
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	San Bernadino	1
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	San Diego	1
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Los Angeles	2

[3] suborder Sternorrhyncha (see p 23)

Order	Family	Scientific Name		County	Total
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	San Mateo	2
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Santa Barbara	2
Hymenoptera	Formicidae	*Anoplolepis gracilipes*	Q	Contra Costa	6
Hymenoptera	Formicidae	*Camponotus* sp.	Q	Nevada	1
Hymenoptera	Formicidae	*Camponotus* sp.	Q	San Luis Obispo	1
Hymenoptera	Formicidae	*Camponotus* sp.	Q	San Mateo	1
Hymenoptera	Formicidae	*Monomorium floricola*	Q	San Mateo	1
Hymenoptera	Formicidae	*Monomorium* sp.	Q	Los Angeles	1
Hymenoptera	Formicidae	*Monomorium* sp.	Q	Orange	1
Hymenoptera	Formicidae	*Monomorium* sp.	Q	San Mateo	2
Hymenoptera	Formicidae	Myrmicini	Q	San Mateo	2
Hymenoptera	Formicidae	*Ochetellus glaber*	Q	Contra Costa	1
Hymenoptera	Formicidae	*Ochetellus glaber*	Q	Los Angeles	1
Hymenoptera	Formicidae	*Ochetellus glaber*	Q	San Luis Obispo	1
Hymenoptera	Formicidae	*Ochetellus glaber*	Q	San Mateo	10
Hymenoptera	Formicidae	*Odontomachus* sp.	Q	Orange	1
Hymenoptera	Formicidae	*Odontomachus* sp.	Q	San Mateo	1
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Humboldt	1
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Mendocino	1
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Santa Barbara	1
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Shasta	1
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Riverside	2
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Alameda	3
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Sacramento	3
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Sonoma	3
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Orange	4
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	San Luis Obispo	5
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	San Bernadino	8
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Contra Costa	10
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	Los Angeles	11
Hymenoptera	Formicidae	*Pheidole megacephala*	Q	San Mateo	65
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Marin	1
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Joaquin	1
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Fresno	2
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Diego	2
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Luis Obispo	2
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Los Angeles	3
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Sacramento	3
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Bernadino	3
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Shasta	3
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Alameda	4

Order	Family	Scientific Name		County	Total
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Contra Costa	8
Hymenoptera	Formicidae	*Pheidole* sp.	Q	Orange	12
Hymenoptera	Formicidae	*Pheidole* sp.	Q	San Mateo	36
Hymenoptera	Formicidae	*Ponera* sp.	Q	San Diego	1
Hymenoptera	Formicidae	*Pseudomyrmex gracilis*	Q	Placer	1
Hymenoptera	Formicidae	*Solenopsis geminata*	A	Los Angeles	4
Hymenoptera	Formicidae	*Solenopsis geminata*	A	San Mateo	6
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Fresno	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Los Angeles	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	San Bernadino	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	San Diego	1
Hymenoptera	Formicidae	*Solenopsis invicta*	A	Contra Costa	2
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	Los Angeles	3
Hymenoptera	Formicidae	*Solenopsis* sp.	Q	San Mateo	4
Hymenoptera	Formicidae	*Strumigenys* sp.	Q	Orange	1
Hymenoptera	Formicidae	*Tapinoma melanocephalum*	Q	San Mateo	1
Hymenoptera	Formicidae	*Tapinoma* sp.	Q	San Luis Obispo	1
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Monterey	1
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Riverside	1
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	San Joaquin	1
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	San Diego	1
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Kern	2
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Sacramento	2
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Shasta	3
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Sonoma	3
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Santa Barbara	4
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Mendocino	5
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	San Luis Obispo	7
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Alameda	14
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	San Bernadino	22
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Contra Costa	31
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Orange	32
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	Los Angeles	41
Hymenoptera	Formicidae	*Technomyrmex albipes*	Q	San Mateo	108
Hymenoptera	Formicidae	*Tetramorium* sp.	Q	San Mateo	2
Hymenoptera	Formicidae	*Wasmannia auropunctata*	Q	Orange	1
Hymenoptera	Scelionidae	*Baeus* sp.	Q	San Mateo	1
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Tulare	1
Lepidoptera	Gracillariidae	*Phyllocnistis citrella*	B	Ventura	1
Lepidoptera	Lasiocampidae	*Malacosoma* sp.	Q	Napa	1
Lepidoptera	Lasiocampidae	*Malacosoma* sp.	A	Placer	1

Order	Family	Scientific Name		County	Total
Lepidoptera	Limacodidae	*Acharia stimulea*	Q	San Joaquin	1
Lepidoptera	Limacodidae	*Darna pallivitta*	A	Contra Costa	1
Lepidoptera	Limacodidae	*Darna pallivitta*	A	Orange	1
Lepidoptera	Limacodidae	*Darna pallivitta*	A	Alameda	2
Lepidoptera	Limacodidae	*Darna pallivitta*	A	San Bernadino	2
Lepidoptera	Limacodidae	*Darna pallivitta*	A	San Joaquin	2
Lepidoptera	Limacodidae	*Darna pallivitta*	A	Los Angeles	3
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Alameda	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Contra Costa	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Placer	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Riverside	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Sonoma	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Yuba	1
Lepidoptera	Lymantriidae	*Lymantria dispar*	A	Monterey	4
Lepidoptera	Lymantriidae	*Orgyia* sp.	Q	Humboldt	1
Lepidoptera	Lymantriidae	*Orgyia* sp.	Q	Sonoma	1
Lepidoptera	Noctuidae	*Abagrotis* sp.	Q	San Mateo	1
Lepidoptera	Noctuidae	*Agrotis* sp.	Q	Los Angeles	1
Lepidoptera	Noctuidae	*Chrysodeixis chalcites*	Q	San Mateo	12
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	Shasta	1
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	Contra Costa	2
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	Orange	4
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	Los Angeles	11
Lepidoptera	Noctuidae	*Chrysodeixis eriosoma*	A	San Mateo	13
Lepidoptera	Noctuidae	*Helicoverpa* sp.	Q	San Mateo	1
Lepidoptera	Noctuidae	*Heliothine* sp.	Q	San Mateo	1
Lepidoptera	Noctuidae	*Heliothis* sp.	Q	Los Angeles	1
Lepidoptera	Noctuidae	*Spodoptera* sp.	Q	San Mateo	5
Lepidoptera	Nymphalidae	*Libythaea bachmani*	Q	El Dorado	1
Lepidoptera	Psychidae	*Thyridopteryx ephemeraeformis*	A	San Diego	1
Lepidoptera	Pyralidae	*Diaphania nitidalis*	B	San Mateo	8
Lepidoptera	Pyralidae	*Diaphania nitidalis*	B	Los Angeles	41
Lepidoptera	Pyralidae	*Hellula rogatalis*	A	San Mateo	1
Lepidoptera	Pyralidae	*Synclita obliteralis*	Q	San Luis Obispo	1
Lepidoptera	Saturniidae	*Actias luna*	A	Sonoma	1
Lepidoptera	Tortricidae	*Rhyacionia* sp.	Q	Sacramento	1
Orthoptera	Blattidae	*Allacta similis*	Q	Shasta	1
Orthoptera	Blattidae	*Pelmatosilpha coriacea*	Q	Alameda	1
Orthoptera	Blattidae	*Pelmatosilpha* sp.	Q	Contra Costa	1
Orthoptera	Diplopteridae	*Diploptera punctata*	Q	Los Angeles	4
Orthoptera	Diplopteridae	*Diploptera punctata*	Q	San Mateo	4

Order	Family	Scientific Name		County	Total
Orthoptera	Gryllidae	*Trigonidomorpha sjostedti*	Q	Orange	2
Orthoptera	Gryllidae	*Trigonidomorpha sjostedti*	Q	Los Angeles	3
Orthoptera	Gryllidae	*Trigonidomorpha* sp.	Q	Los Angeles	1
Orthoptera	Gryllidae	*Trigonium* sp.	Q	Los Angeles	1
Orthoptera	Gryllidae	*Trigonium* sp.	Q	Orange	1
Orthoptera	Pyrgomorphidae	*Actractomorpha sinensis*	Q	Los Angeles	14
Orthoptera	Pyrgomorphidae	*Atractomorpha* sp.	Q	Los Angeles	1
Orthoptera	Tettigoniidae	*Conocephalus saltator*	Q	Los Angeles	1
Orthoptera	Tettigoniidae	*Euconocephalus* sp.	Q	Los Angeles	1
Orthoptera	Tettigoniidae	*Orchelimum* sp.	Q	San Bernadino	1
Orthoptera	Tettigoniidae	*Phaeneroptera furcifera*	Q	Los Angeles	2
Orthoptera	Tettigoniidae	*Phaeneroptera* sp.	Q	Los Angeles	1
Orthoptera	Tettigoniidae	*Phaeneroptera* sp.	Q	San Mateo	3
Thysanoptera	Phlaeothripidae	*Gynaikothrips uzeli*	Q	Alameda	1
Thysanoptera	Phlaeothripidae	*Liothrips* sp.	Q	Los Angeles	1
Thysanoptera	Thripidae	*Selenothrips rubrocinctus*	Q	Orange	1
Thysanoptera	Thripidae	*Terebranchia* sp.	Q	San Mateo	1
Thysanoptera	Thripidae	*Thrips orientalis*	Q	Orange	5
TOTAL					**3506**

BOTANY

A & Q RATED DETECTIONS FROM BORDER STATIONS

Scientific Name	Common Name		2005	2006	**Total**
Carduus acanthoides	plumeless thistle	A	1	1	**2**
Carduus nutans	musk thistle	A		10	**10**
Carthamus leucocaulos	whitestem distaff thistle	A		1	**1**
Centaurea diffusa	diffuse knapweed	A	1	3	**4**
Centaurea maculosa	spotted knapweed	A	7	18	**25**
Centaurea squarrosa	squarrose knapweed	A		1	**1**
Cirsium cf. *ochrocentrum*	yellowspine thistle	Q		1	**1**
Cirsium sp.	thistle	A	1		**1**
Cirsium undulatum	wavy thistle	A	1		**1**
Cuscuta cf. *japonica*	Japanese dodder	A		1	**1**
Halogeton glomeratus	halogeton	A	1		**1**
Hydrilla verticillata	hydrilla	A		1	**1**
Linaria sp.	toadflax	Q		1	**1**
Onopordum acanthium	Scotch thistle	A	4	13	**17**
Panicum sp.	panic-grass	Q		2	**2**
Salsola collina	slender Russian-thistle	Q	1		**1**
Sonchus arvensis	perennial sow thistle	A	1		**1**
Sonchus sp.	sowthistle	Q	1		**1**
Totals			**19**	**53**	**72**

BOTANY

A & Q RATED DETECTIONS BY COUNTY (NON-BORDER STATION)

County	Scientific Name	Common Name		2005	2006	**Total**
Mendocino	*Acaena novae-zelandiae*	biddy-biddy	A		1	**1**
Los Angeles	*Alternanthera* cf. *sessilis*	alligator-weed	Q	1		**1**
San Diego	*Alternanthera philoxeroides*	alligator-weed	A		2	**2**
Los Angeles	*Alternanthera* sp.	alligator-weed	Q	1		**1**
San Francisco	*Alternaria yaliinficiens*	chocolate spot	Q		1	**1**
Lassen	*Berteroa incana*	hoary alyssum	Q	1		**1**
Los Angeles	*Berula* sp.	water-parsnip	Q	1		**1**
Alameda	*Cabomba caroliniana*	Carolina fanwort	Q	1		**1**
Los Angeles	*Cabomba caroliniana*	Carolina fanwort	Q		4	**4**
Shasta	*Carduus nutans*	musk thistle	A	1		**1**
Butte	*Centaurea diffusa*	diffuse knapweed	A		2	**2**
Mariposa	*Centaurea diffusa*	diffuse knapweed	A		1	**1**
Shasta	*Centaurea diffusa*	diffuse knapweed	A	2		**2**
Mariposa	*Centaurea iberica*	Iberian starthistle	A		1	**1**
Butte	*Centaurea maculosa*	spotted knapweed	A		1	**1**
Fresno	*Centaurea maculosa*	spotted knapweed	A	1	1	**2**
Placer	*Centaurea maculosa*	spotted knapweed	A		1	**1**
San Bernadino	*Centaurea maculosa*	spotted knapweed	A			**0**
San Diego	*Centaurea maculosa*	spotted knapweed	A			**0**
Shasta	*Centaurea maculosa*	spotted knapweed	A	6	1	**7**
Solano	*Centaurea maculosa*	spotted knapweed	A	1		**1**
Ventura	*Centaurea maculosa*	spotted knapweed	A	1		**1**
Shasta	*Centaurea pratensis*	field knapweed	A		1	**1**
Shasta	*Centaurea* sp.	knapweed	A	2	1	**3**
Shasta	*Centaurea squarrosa*	squarrose knapweed	A	5	3	**8**
Los Angeles	*Ceratopteris thalictroides*	watersprite	Q	1		**1**
Lake	*Chondrilla juncea*	skeleton weed	A		1	**1**
Monterey	*Chondrilla juncea*	skeleton weed	A	1		**1**
Tuolome	*Chondrilla juncea*	skeleton weed	A		1	**1**
Modoc	*Cirsium ochrocentrum*	yellow-spine thistle	A	1		**1**
Santa Barbara	*Cirsium ochrocentrum*	yellow-spine thistle	A	1		**1**
Humboldt	*Colocasia esculenta*	taro	Q	1		**1**
Alameda	*Cuscuta* cf. *japonica*	Japanese dodder	A		19	**19**
Contra Costa	*Cuscuta* cf. *japonica*	Japanese dodder	A		13	**13**
Fresno	*Cuscuta* cf. *japonica*	Japanese dodder	A		19	**19**
Merced	*Cuscuta* cf. *japonica*	Japanese dodder	A		6	**6**
Sacramento	*Cuscuta* cf. *japonica*	Japanese dodder...	A		86	**86**
San Joaquin	*Cuscuta* cf. *japonica*	Japanese dodder	Q		1	**1**

County	Scientific Name	Common Name		2005	2006	**Total**
Tulare	*Cuscuta* cf. *japonica*	Japanese dodder	A		1	**1**
Yolo	*Cuscuta* cf. *japonica*	Japanese dodder	Q	2	5	**7**
Los Angeles	*Cuscuta japonica*	Japanese dodder	Q		1	**1**
Shasta	*Cuscuta japonica*	Japanese dodder	Q	3		**3**
Sacramento	*Cuscuta* sp.	dodder	Q		2	**2**
Solano	*Digitaria ciliaris*	crabgrass	Q	1		**1**
Los Angeles	*Echinodorus* sp.	sword plant	Q	1		**1**
Los Angeles	*Egeria densa*	Brazilian waterweed	Q	1		**1**
Butte	*Elytrigia* sp.	quackgrass	Q		1	**1**
Lassen	*Euphorbia esula*	leafy spurge	A	1		**1**
Modoc	*Euphorbia esula*	leafy spurge	A	1	1	**2**
Contra Costa	*Euphorbia terracina*	Geraldton spurge	Q		1	**1**
Los Angeles	*Euphorbia terracina*	Geraldton spurge	Q		1	**1**
Los Angeles	*Fatoua villosa*	hairy crabweed	Q		1	**1**
San Diego	*Fatoua villosa*	hairy crabweed	Q		2	**2**
Imperial	*Hydrilla verticillata*	hydrilla	A	1		**1**
Nevada	*Hydrilla verticillata*	hydrilla	A	1	1	**2**
Shasta	*Hydrilla verticillata*	hydrilla	A	1		**1**
Santa Barbara	*Hypericum canariense*	Canary Island St. Johnswort	Q		1	**1**
Fresno	*Ipomoea* sp.	morning-glory	Q	1		**1**
San Mateo	*Ipomoea* sp.	morning-glory	Q		1	**1**
San Diego	*Kyllinga brevifolia*	shortleaf spikesedge	Q		1	**1**
Amador	*Limnobium laevigatum*	South American spongeplant	A	1		**1**
Humboldt	*Limnobium laevigatum*	South American spongeplant	A	1		**1**
San Luis Obispo	*Limnobium laevigatum*	South American spongeplant	A		1	**1**
Santa Clara	*Limnobium laevigatum*	South American spongeplant	A	1		**1**
Shasta	*Limnobium laevigatum*	South American spongeplant	A	2		**2**
Shasta	*Linaria dalmatica*	dalmatian toadflax	A	1		**1**
Mendocino	*Linaria genistifolia*	dalmatian toadflax	A	1		**1**
Los Angeles	*Lysimachia nummularia*	creeping Jenny	Q	1		**1**
Los Angeles	*Myriophyllum* sp.	watermilfoil	Q	1		**1**
Shasta	*Myriophyllum* sp.	watermilfoil	Q	1		**1**
Los Angeles	*Nassella tenuissima*	finestem tussockgrass	Q	2		**2**
Santa Clara	*Nassella tenuissima*	finestem tussockgrass	Q	3		**3**
Lake	*Onopordum acanthium*	Scotch thistle	A		1	**1**
Shasta	*Onopordum acanthium*	Scotch thistle	Q	1		**1**
Shasta	*Onopordum acanthium*	Scotch thistle	A	2		**2**
Siskiyou	*Onopordum tauricum*	tauric thistle	A	1		**1**
Contra Costa	*Panicum virgatum*	switchgrass	Q	1	2	**3**
Ventura	*Peperomia* sp.	peperomia	Q	1		**1**

County	Scientific Name	Common Name		2005	2006	**Total**
Santa Cruz	*Polygonum* sp.	knotweed	Q			**0**
Mendocino	*Ranunculus* sp.	buttercup	Q		1	**1**
Sacramento	*Rorippa sylvestris*	field cress	Q			**0**
Ventura	*Rorippa sylvestris*	creeping yellow field cress	Q	2		**2**
Los Angeles	*Rotala rotundifolia*	roundleaf toothcup	Q	1		**1**
Los Angeles	*Rotala* sp.	toothcup	Q	1		**1**
San Luis Obispo	*Sagittaria* sp.	arrowhead	Q	1		**1**
Contra Costa	*Sesbania punicea*	rattlebox	Q	1		**1**
Solano	*Sesbania punicea*	rattlebox	Q	1		**1**
Orange	*Solanum* cf. *torvum*	turkey berry	Q		1	**1**
San Diego	*Solanum torvum*	tropical soda apple	Q	1		**1**
Los Angeles	*Solanum viarum*	tropical soda apple	Q		1	**1**
Modoc	*Tanacetum vulgare*	common tansy	Q	1		**1**
Los Angeles	*Veronica anagallis-aquatica*	water speedwell	Q	1		**1**
Totals				**74**	**194**	**268**

PLANT PATHOLOGY

A & Q RATED DETECTIONS

Pathogen		2005	2006	Total
Alternaria panax	Q	1		1
Alternaria yaliinficiens	Q		1	1
Ascochyta clematidina	Q		1	1
Canna Yellow Mottle virus*	Q	Numerous	Numerous	Numerous
Coleosporium delicatulum	Q		1	1
Coleosporium plumierae	Q		1	1
Cylindrocladium spathulatum	Q	3		3
Dasturella divina	Q		1	1
Gymnosporangium virginianae	A		1	1
Melampsora sp.	Q		7	7
Mycosphaerella leucospermi	Q		1	1
Orchid Fleck virus	Q	6		6
Pea Seed-borne Mosaic virus	Q	9		9
Peronospora grisea	Q		1	1
Peronospora radii	Q		2	2
Phoma draconis	Q	1		1
Phoma viburni	Q		1	1
Phragmidium violaceum	Q	10		10
Phyllosticta digitalis	Q		1	1
Phyllosticta dracaenae	Q		1	1
*Phytophthora foliorum**	Q		Numerous	Numerous
*Phytophthora hibernalis**	Q		Numerous	Numerous
*Phytophthora nemorosa**	Q	4	Numerous	Numerous
*Phytophthora pseudosyringae**	Q	Numerous	Numerous	Numerous
*Phytophthora ramorum**	Q	Numerous	Numerous	Numerous
Plasmopara sp.	Q	1		1
Pseudocercospora myrticola	Q	2		2
Puccinia horiana	A/Q	86**	20	106
Puccinia ludovicianae	Q		1	1
Puccinia psidii	Q	1		1
Puccinia rubigo-vera	Q		1	1
Puccinia vincae	Q	5		5
Ramularia carthami	Q		1	1
Scrophularia Mottle virus	Q	1		1
Uromyces junci-effusi	Q		1	1
Uromyces sisyrinchii	Q		1	1
Uromyces transversalis	Q		8	8
Totals				**179**

* not included in totals; ** was an “A” rated pest in 2005

PLANT PATHOLOGY

A & Q RATED PATHOGENS & HOSTS DETECTED BY COUNTY

Pathogen	Host Scientific Name	Common Name	County
Alternaria panax	*Aralia sieboldii*	Aralia	Santa Barbara
Alternaria yaliinficiens	*Pyrus communis*	Pear	San Francisco
Ascochyta clematidina	*Clematis* sp.	Clematis	Santa Cruz
Canna Yellow Mottle virus	*Canna* sp.	Canna	Orange
Canna Yellow Mottle virus	*Canna* sp.	Canna	San Diego
Canna Yellow Mottle virus	*Canna* sp.	Canna	Santa Barbara
Coleosporium delicatulum	*Solidago canadensis*	Northern Goldenrod	Orange
Coleosporium plumierae	*Plumeria rubra*	Plumeria	Orange
Cylindrocladium spathulatum	*Banksia* sp.	Banksia	Santa Barbara
Cylindrocladium spathulatum	*Myrtus communis*	Myrtle	Santa Barbara
Dasturella divina	*Bambusa* sp.	Bamboo	Los Angeles
Melampsora sp.	*Salix lasiolepis*	Arroyo willow	Riverside
Mycosphaerella leucospermi	*Protea magnifica*	Queen Protea	Santa Barbara
Orchid Fleck virus	*Cymbidium* sp.	Orchid	San Luis Obispo
Pea Seed-borne Mosaic virus	*Pisum sativum*	Pea	Monterey
Peronospora grisea	*Hebe* sp.	Hebe	Santa Barbara
Peronospora radii	*Chrysanthemum frutescens*	Marguerite	Santa Cruz
Phoma draconis	*Cordyline terminalis*	Red Ti	Sonoma
Phoma viburni	*Viburnum davidii*	Viburnum	Santa Cruz
Phoma viburni	*Viburnum davidii*	Viburnum	Santa Cruz
Phragmidium violacium	*Rubus* sp.	Blackberry	Del Norte
Phragmidium violacium	*Rubus* sp.	Blackberry	Humboldt
Phragmidium violacium	*Rubus* sp.	Blackberry	Sonoma
Phyllosticta dracaenae	*Cordyline terminalis*	Green ti	Sonoma
Phytophthora foliorum	*Rhododendron* sp.	Azalea	Orange
Phytophthora foliorum	*Rhododendron* sp.	Azalea	San Diego
Phytophthora foliorum	*Rhododendron* sp.	Azalea	Santa Barbara
Phytophthora foliorum	*Rhododendron* sp.	Azalea	Solano
Phytophthora foliorum	*Camellia japonica*	Camellia	Ventura
Phytophthora hibernalis	*Arbutus unedo*	Strawberry Tree	Sacramento
Phytophthora hibernalis	*Rhododendron* sp.	Rhododendron	Santa Cruz
Phytophthora hibernalis	*Rhododendron* sp.	Rhododendron	Sonoma
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Alameda
Phytophthora nemorosa	*Camellia* sp.	Camellia	Alameda
Phytophthora nemorosa	*Quercus agrifolia*	Coast Live Oak	Alameda
Phytophthora nemorosa	*Pieris japonica*	Pieris	Alameda

Pathogen	Host Scientific Name	Common Name	County
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Contra Costa
Phytophthora nemorosa	*Osmanthus heterophyllus*	False Holly	Humboldt
Phytophthora nemorosa	*Osmanthus heterophyllus 'goshiki'*	Japanese False Holly	Humboldt
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Humboldt
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Marin
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Marin
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Mendocino
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	San Mateo
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Santa Clara
Phytophthora nemorosa	*Arbutus marina*	Arbutus sp.	Santa Cruz
Phytophthora nemorosa	*Rhododendron* sp.	Rhododendron	Santa Cruz
Phytophthora nemorosa	*Camellia japonica*	Camellia	Solano
Phytophthora nemorosa	*Rhododendron* sp.	Rhododendron	Sonoma
Phytophthora nemorosa	*Umbellularia californica*	California Bay Laurel	Sonoma
Phytophthora pseudosyringae	*Umbellularia californica*	California Bay Laurel	Alameda
Phytophthora pseudosyringae	*Umbellularia californica*	California Bay Laurel	Contra Costa
Phytophthora pseudosyringae	*Umbellularia californica*	California Bay Laurel	Humboldt
Phytophthora pseudosyringae	*Umbellularia californica*	California Bay Laurel	Mendocino
Phytophthora pseudosyringae	*Prunus laurocerasus*	English Laurel	Santa Cruz
Phytophthora ramorum	*Camellia japonica*	Camellia	Alameda
Phytophthora ramorum	*Camellia sasanqua*	Camellia	Alameda
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Alameda
Phytophthora ramorum	*Rhamnus californica*	California Coffeeberry	Alameda
Phytophthora ramorum	*Quercus agrifolia*	Coast Live Oak	Alameda
Phytophthora ramorum	*Rhododendron* sp.	Rhododendron	Alameda
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Contra Costa
Phytophthora ramorum	*Camellia* sp.	Camellia	Contra Costa
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Humboldt
Phytophthora ramorum	*Osmanthus fragrans*	False Holly	Humboldt
Phytophthora ramorum	*Rhododendron* sp.	Rhododendron	Humboldt
Phytophthora ramorum	*Osmanthus fragrans*	Sweet Olive	Humboldt
Phytophthora ramorum	*Lithocarpus densiflorus*	Tan Oak	Humboldt
Phytophthora ramorum	*Viburnum tinus*	Viburnum	Humboldt
Phytophthora ramorum	*Camellia japonica*	Camellia	Los Angeles
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Marin
Phytophthora ramorum	*Camellia sasanqua*	Camellia	Marin
Phytophthora ramorum	*Rhododendron* sp.	Rhododendron	Marin

Pathogen	Host Scientific Name	Common Name	County
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Mendocino
Phytophthora ramorum	*Camellia* sp.	Camellia	Mendocino
Phytophthora ramorum	*Rhododendron* sp.	Rhododendron	Mendocino
Phytophthora ramorum	*Lithocarpus densiflorus*	Tan Oak	Mendocino
Phytophthora ramorum	*Ceanothus thyrsiflorus*	Blueblossom	Monterey
Phytophthora ramorum	*Camellia* sp.	Camellia	Napa
Phytophthora ramorum	*Camellia* sp.	Camellia	Nevada
Phytophthora ramorum	*Rhododenron* sp.	Rhododendron	Nevada
Phytophthora ramorum	*Camellia japonica*	Camellia	Sacramento
Phytophthora ramorum	*Rhododenron* sp.	Rhododendron	Sacramento
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	San Francisco
Phytophthora ramorum	*Lithocarpus densiflorus*	Tan Oak	San Francisco
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	San Mateo
Phytophthora ramorum	*Camellia* sp.	Camellia	San Mateo
Phytophthora ramorum	*Quercus agrifolia*	Coast Live Oak	San Mateo
Phytophthora ramorum	*Sequoia sempervirens*	Redwood	San Mateo
Phytophthora ramorum	*Lithocarpus densiflorus*	Tan Oak	San Mateo
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Santa Clara
Phytophthora ramorum	*Quercus agrifolia*	Coast Live Oak	Santa Clara
Phytophthora ramorum	*Vancouveria planipetala*	Redwood Ivy	Santa Clara
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Santa Cruz
Phytophthora ramorum	*Camellia* sp.	Camellia	Santa Cruz
Phytophthora ramorum	*Rhododenron* sp.	Rhododendron	Santa Cruz
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Solano
Phytophthora ramorum	*Camellia* sp.	Camellia	Solano
Phytophthora ramorum	*Heteromeles arbutifolia*	Toyon	Solano
Phytophthora ramorum	*Umbellularia californica*	California Bay Laurel	Sonoma
Phytophthora ramorum	*Camellia* sp.	Camellia	Sonoma
Phytophthora ramorum	*Lithocarpus densiflorus*	Tan Oak	Sonoma
Phytophthora ramorum	*Camellia japonica*	Camellia	Tulare
Phytophthora ramorum	*Rhododenron* sp.	Rhododendron	Ventura
Phytophthora sp.	*Rhododendron* spp..	Azalea	Santa Barbara
Pseudocercospora myrticola	*Myrtus communis*	Myrtle	San Diego
Puccinia horiana	*Chrysanthemum* spp.	Chrysanthemum	Napa
Puccinia horiana	*Chrysanthemum* spp.	Chrysanthemum	Santa Barbara
Puccinia horiana	*Chrysanthemum* spp..	Chrysanthemum	Santa Cruz
Puccinia ludovicianae	*Artemisia* sp.	Artemisia	Santa Barbara
Puccinia psidii	*Pimenta diocia*	Pimento	Santa Clara
Puccinia rubigo-vera	*Leymus condesatus*	Wild Rye grass	Santa Barbara
Puccinia vincae	*Vinca* sp.	Periwinkle	Santa Barbara
Puccinia vincae	*Vinca* sp.	Periwinkle	Sutter
Ramularia carthami	*Carthamus tinctorius*	Safflower	Sacramento

Pathogen	Host Scientific Name	Common Name	County
Scrophularia Mottle virus	*Diascia* sp.	Twinspur	San Luis Obispo
Uromyces junci-effusi	*Juncus xiphoides*	Juncus (herb)	Santa Barbara
Uromyces sisyrinchii	*Sisyrinchium montanum*	Blue-eyed grass	Santa Cruz
Uromyces transversalis	*Gladiolus* sp.	Gladiolus	San Diego

NEMATOLOGY

A & Q RATED DETECTIONS

Scientific Name		2005	2006	Total
Aphelenchoides besseyi	A	11		**11**
Aphelenchoides sp.	Q	10		**10**
Dolichodorus heterocephalus	A		1	**1**
Hemicycliophora arenaria	A		3	**3**
Heterodinae	Q	1		**1**
Pratylenchus sp.	Q	1	1	**2**
Radopholus similis	A	1		**1**
Rotylenchulus reniformis	A	2	1	**3**
Rotylenchulus sp.	Q	1		**1**
Totals		**27**	**6**	**33**