CALIFORNIA PLANT PEST and DISEASE REPORT

Vol. 11 Numbers 3-4
June-September, 1992

What's Inside:

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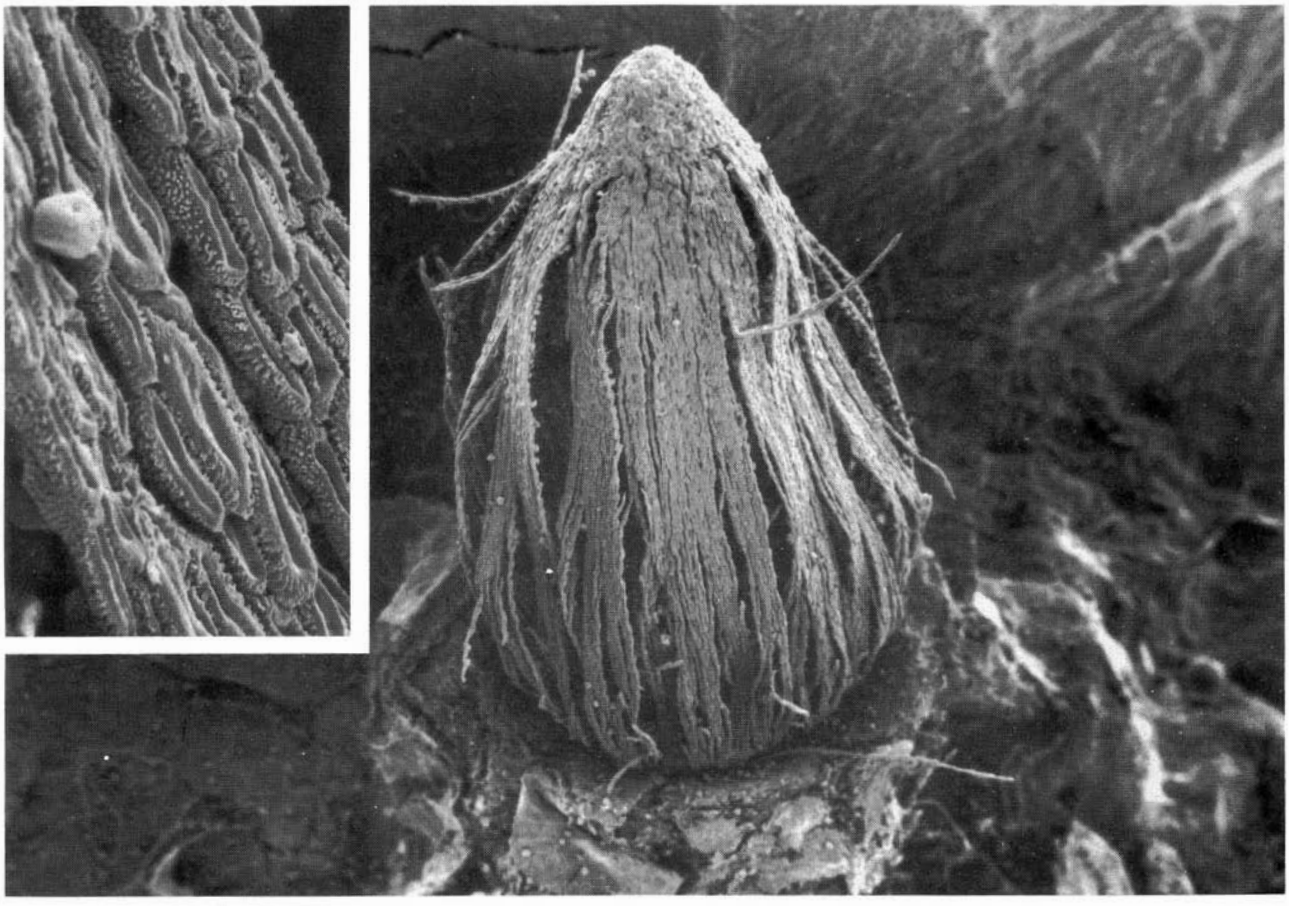

Pear-Juniper Rust, *Gymnosporangium fuscum*

Picture illustrates a unique balanoid aecia with a fused apex and finely lacerated sides composed of (inset) elongated, interlocking peridial cells. Original SEM photograph magnified to 26X, inset to 200X, with subsequent magnification. Photographs by Jim Heath, CDFA.

CALIFORNIA PLANT PEST AND DISEASE REPORT

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The editor acknowledges the contributions of numerous individuals within this Department, without whose cooperation and assistance this project would not be possible.

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A Note to CAPS/NAPIS Cooperators

As members and cooperators of the U.S.D.A. COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS) Program, many of you have been receiving this report for the last year or two through the special efforts of Rich Jakowski, CAPS western region support officer. This report, the "California Plant Pest and Disease Report," somewhat affectionately called the "CPPDR," has been produced in its present form since 1982, although its roots go back many years to the old U.S.D.A. weekly reports first entitled the "Cooperative Economic Insect Report" and later the "Cooperative Plant Pest Report." When these reports were discontinued in favor of our present computer based NATIONAL AGRICULTURAL PEST INFORMATION SERVICE (NAPIS), California Department of Food and Agricultural officials felt that there was a need to continue with some type of newsletter to inform various agricultural agencies in California of current pest conditions and of the introduction of new and exotic pest species. While it has not been feasible to document current common pest conditions in California because of the large size of the state, the large diversity of crops grown, the large diversity of pest species which occur here, and the immensity of the agricultural programs involved, the CPPDR has been useful instead to keep the various organizations abreast of new pest introductions not only into California but into the rest of the United States and adjacent countries as well.

When theresponsibility for NAPIS implementation was assigned to the Analysis and Identification Branch of the Department of Food and Agriculture in 1989, it was logical to incorporate into the CPPDR the data developed through CAPS, not only through the NAPIS database, but also via the many useful telemail alerts that are generated through CAPS and APHIS as a whole.

With the change in the CAPS funding structure, and in consideration of California's current budget problems, it was decided to present the CPPDR to the CAPS program as a special project. Agreement of this has been reached, and the CPPDR is now being funded officially through CAPS, and CAPS administrators and all CAPS cooperators in the western region will be receiving a copy of CPPDR as part of the official mailing list. We welcome you to our readership, and would like to extend the offer to have you contribute articles on significant pest problems, distribution maps, and other timely subjects from your respective states. If you would like more than one copy of the CPPDR, please contact the editorial staff.

The CPPDR currently has a circulation of approximately 600 copies, with about 40 sent to foreign countries and about 80 distributed to other states. Back issues of CPPDR and a 10-year cumulative subject index are available on request.

Raymond J. Gill, Editor.

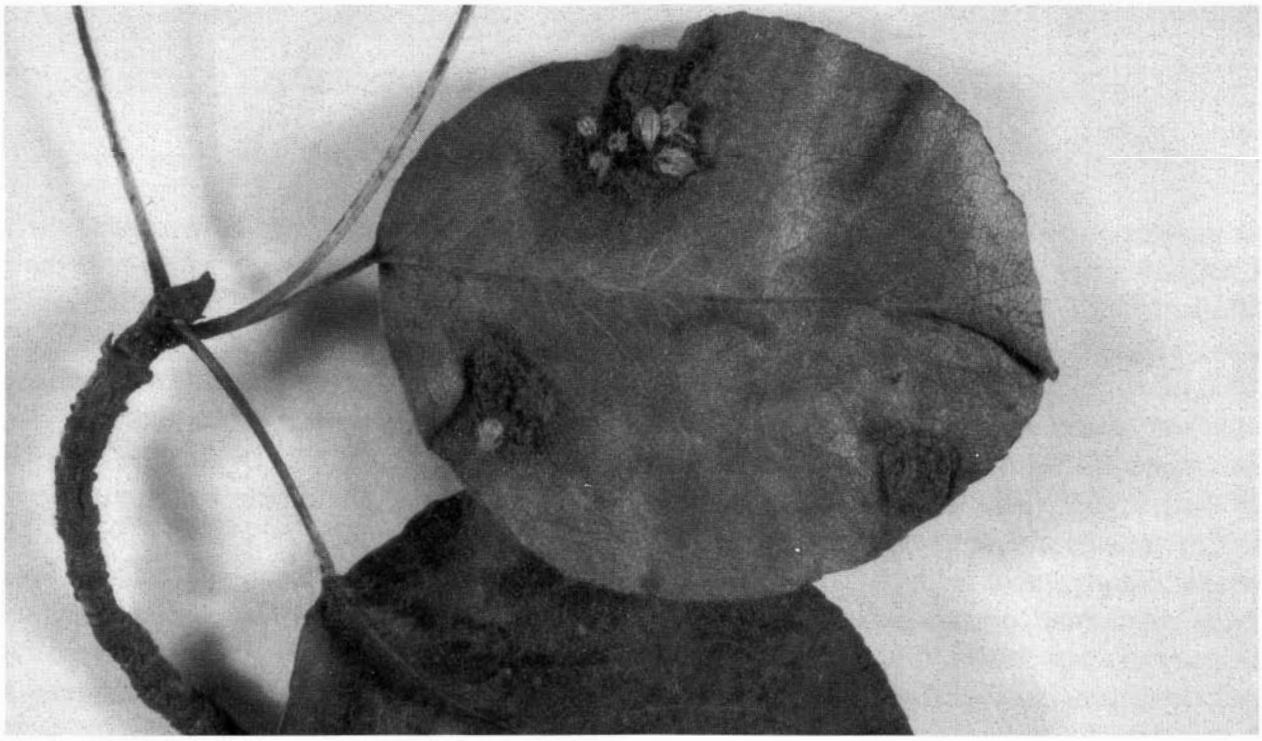

Fig. 1. Aecial stage of *Gymnosporangium fuscum* on the underside of ornamental pear. (Contra Costa County, September 1992.

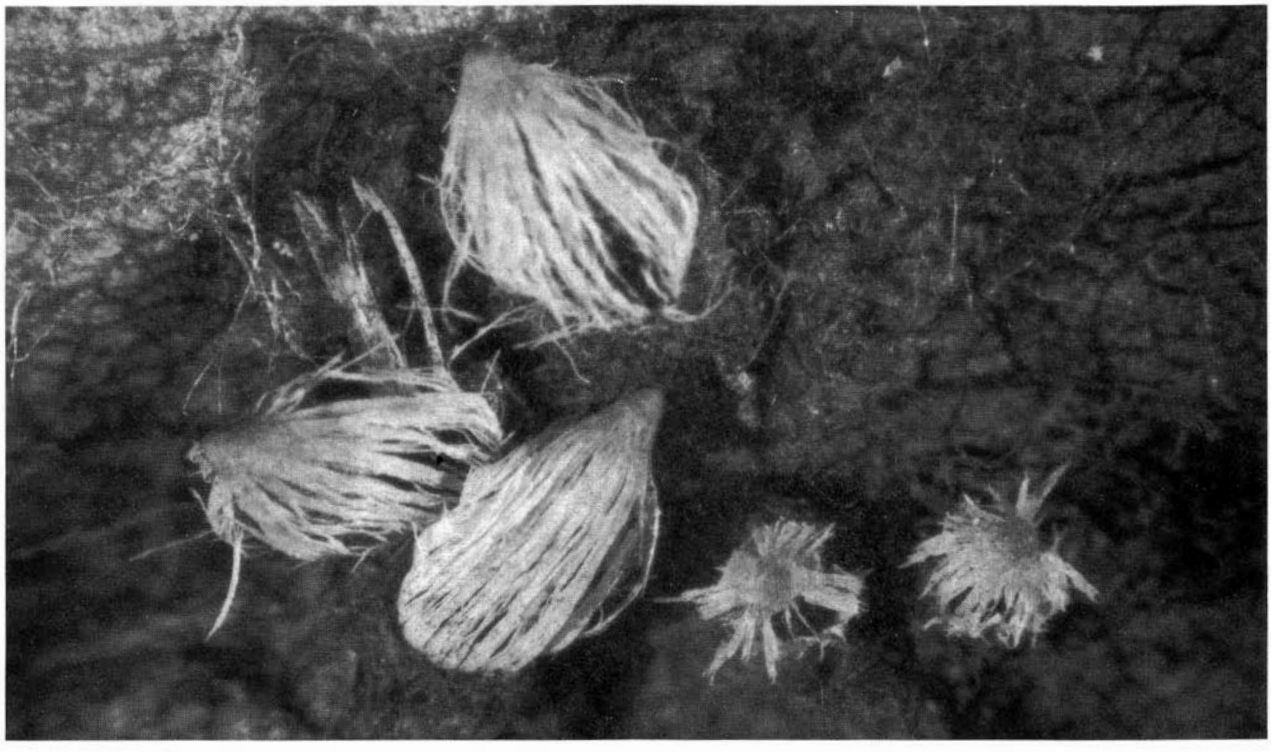

Fig. 2. Acorn-shaped (balanoid) aecial structure used to identify *Gymnosporangium fuscum*. Note the pointed or fused apices and finely lacerated sides of the fruiting structures.

PEAR-JUNIPER RUST

by
Dan Opgenorth and Jeanenne White

The aecial stage of *Gymnosporangium fuscum* DC., (*G. sabinae* [Dickson] ex-Winter), causal fungus of pear-juniper rust, was identified on several nursery pear tree (*Pyrus communis*) specimens submitted from Contra Costa County during September 1992. This B-rated fungal rust has not been reported in California for over 10 years. Records of the California Department of Food and Agriculture indicate previous occurrences in Contra Costa and Marin counties. The disease is caused by a heteroecious fungus requiring both alternate hosts (pear and juniper) for completion of the life cycle. Intensive cultivation of orchard pear trees and *Juniperus sabinae* (or other *Juniperus* spp.) in close proximity favored spread of the disease in Europe where it is an economically important disease. Because the fungus has been consistently identified on the ornamental sabinian juniper, it is currently called *Gymnosporangium sabinae* (pear "Trellis" rust) in Europe and Canada.

In 1932-33, the disease was believed to be first introduced to North America on imported ornamental junipers. Introduction probably occurred because of the difficulty of identifying characteristic symptoms, which usually take 15 to 18 months to develop, on newly infected juniper. During the next 15 years, little attention was given to the disease in North America due to the misidentification of it as common juniper rust (*Gymnosporangium clavariiforme*). The disease was finally recognized as an established and unique rust pathogen of *Pyrus communis* in Victoria, British Columbia, in 1961. The first identification of the disease in the United States was on Bartlett pear from the Lafayette area in Contra Costa County, California, during 1960 (1,2).

Pears are susceptible to at least 10 species of rust fungi all belonging to the genus *Gymnosporangium*. The differentiation of the species *fuscum* (*sabinae*) is based on the aecial stage fruiting characteristics, life cycle and host range which includes *Pyrus communis* and its wild and cultivated subspecies, *P. caucasica* and *P. sativa*, respectively. During the spring and summer months, yellow-orange lesions up to 2 cm in diameter occur on the upper and lower pear leaf surfaces. Small black fruiting structures (pycnia) develop in the center of the lesions. Pycnia are black and measure 170 - 190 μ wide x 150 - 170 μ high. On rare occasions, pycnia may overwinter in hypertrophied pear tissue and re-infect the pear for several successive seasons.

The aecial stage subsequently develops on under surfaces of the pear leaf directly opposite the pycnia causing hypertrophy of leaf foliage (Fig. 1). Aecial fruiting structures produced are pale, balaniform (acorn-shaped), with pointed closed apices, and finely lacerated sides (thus the name "Trellis Rust"), measuring 2 - 5 mm high x 1 - 3 mm wide (Fig. 2). Aeciospores are globose to broadly ellipsoid, angular 23 - 37 μ in diameter, cinnamon-brown, finely varicose and 2.5 - 4 μ thick (Fig. 3). The balanoid (acorn-shaped) aecial structure is the distinguishing morphological characteristic of this rust species on pear. Specialized elongated peridial cells are connected by double notched joints to create long filaments covered by an apical cap (Fig. cover photo) (3,4,5). Under conditions of favorable humidity, the peridial cells flex at the joints and open the aecia for spore dispersal. Using this mechanism, the fruiting structure is protected, repeatedly producing and dispersing aeciospores over a prolonged period of time. This mechanism of long term spore production and dispersal is only associated with this species of rust.

Perennial infection of *Juniperus* spp. (including *Juniperus chinensis, J. sabina,* and *J. virginiana*) occurs from the aecial stage in the Fall. At least two juniper host rust species, *Gymnosporangium*

fuscum and *G. confusum*, may be morphologically similar in the telial stage. Juniper infections initially occurring in the Fall do not produce teliospores until Spring of the second year, 15 to 18 months later. During this "dormant" period, the disease is virtually impossible to detect. Occasionally, telia have been observed in California junipers that are less than six months old (2,6). Symptoms on juniper twigs eventually exhibited are fusiforme spindle-shaped swellings which may girdle and kill the plant tissue (Fig. 4). During moist atmospheric conditions, long cylindrical, reddish-brown, teliospore horns are formed on the swollen tissue.

Morphological characteristics of the fungus used for identification include two types of teliospores produced on juniper forming the telial horn. Outer surfaces have thick-walled (2.5 μ) chestnut brown spores measuring 42 - 47 x 23 - 30 μ, and thin-walled (17 μ) colorless spores measuring 44 - 51 x 18 - 24 μ, occurring deep in the telial horn. Basidiospores (Sporidia) which germinate from the teliospores measure 18 - 20 x 15 μ. Teliospores germinate optimally at 64° F (or above) forming basidiospores (sporidia), which are windborne and infect pear leaves, or occasionally the fruit and twigs, during early Spring. Because teliospores are susceptible to desiccation, the infected juniper must be in close proximity to the pear. Damage may be severe when infected junipers are within 33 yards of pear trees, but will diminish as the alternate hosts are distanced. At 220 to 330 yards, the infection risk has been shown to be negligible. [Note: Urediospores, which re-infect the host they are produced on, are not part of the life cycle (2).]

Damage caused by pear-juniper rust is worldwide; over 50 reports from 19 countries have been documented. Eradication of all rust-infected juniper plants is compulsory in some European countries. The disease has a negative impact on pear fruit yield only when a large proportion of the leaves (fruit or twigs) are infected. Growth and fruit set of heavily infected pear trees is inhibited and leaves tend to drop early in the season.

Usual control methods are eradication of the alternate host (juniper) if feasible, chemical spray programs (use of Ziram, bordeaux, etc., as protective measures), and judicious pruning of infected areas (reducing innoculum). The potential risk of this disease to California pears should possibly be re-evaluated when a new infection such as this has been identified. The susceptibility of American pear cultivars and widespread distribution of the alternate host may favor future epidemics in California.

REFERENCES

1. McCain, A. H. 1961. *Gymnosporangium fuscum* Found on Pears in California. Pl. Dis. Reptr. 45: 151.
2. McCain, A. H. and D. Y. Rosenberg. 1961. Pear-Juniper Rust, a Disease New to California and the United States. Bull. California Dept. Agric. 50: 13-19.
3. Ziller, W. G. 1961. Pear Rust (*Gymnosporangium fuscum*) in North America. Pl. Dis. Reptr. 45: 90-94.
4. Leppils, E. E. 1977. Form and Function of Balanoid Aecia of *Gymnosporangium fuscum*. Mycologia. 69: 967-974.
5. CMI Descriptions of Pathogenic Fungi and Bacteria. 1977. *Gymnosporangium fuscum*. No. 545.
6. Hunt, R. S. and H. J. O'Reilly. 1978. Overwintering of Pear Trellis Rust in Pear. Pl. Dis. Reptr. 62: 659-660.

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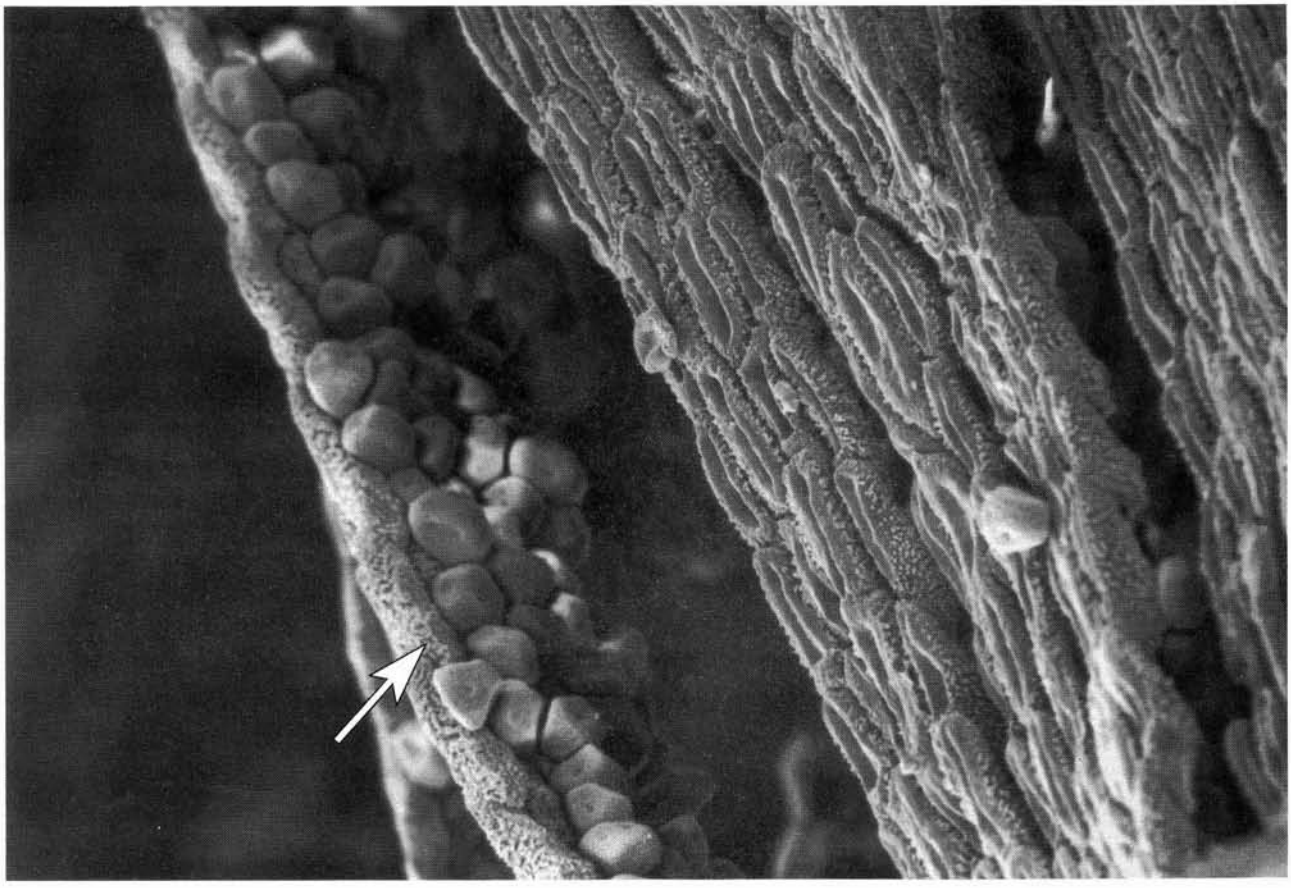

Fig. 3. Aeciospores are globose to broadly ellipsoid and nest on the finely lacerated sides of the aecia; composed of elongated interlocking peridial cells. Original SEM photograph taken by Jim Heath at 200X, with subsequent magnification.

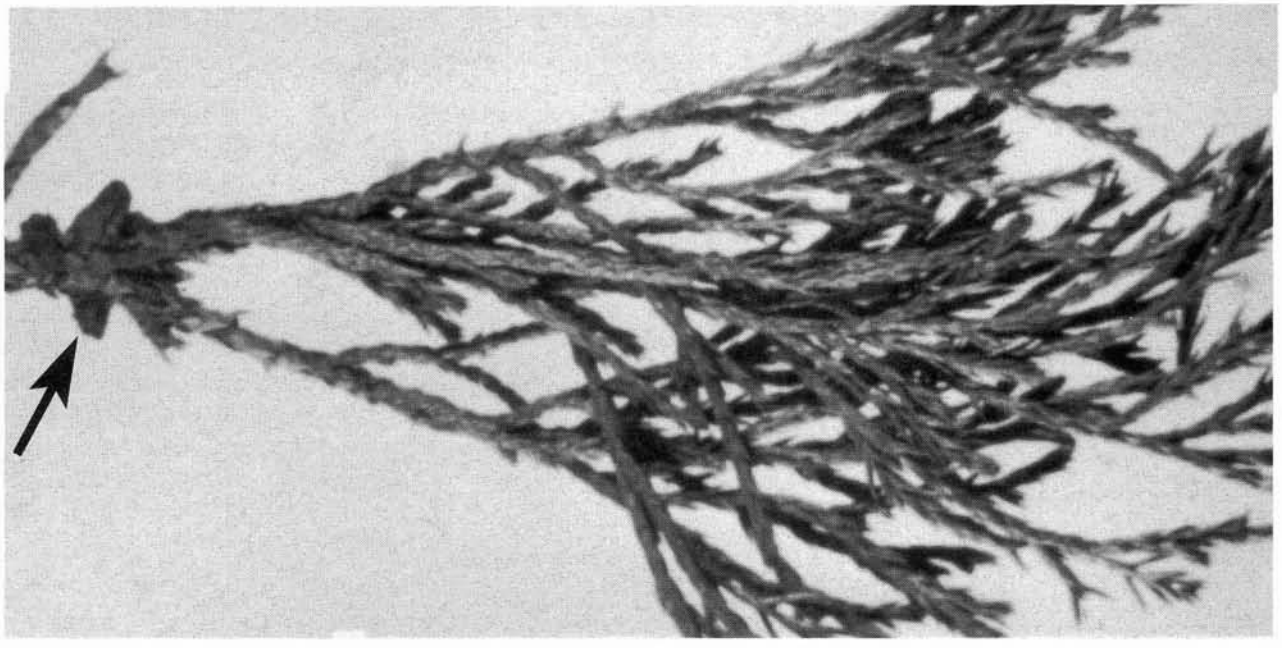

Fig. 4. Symptoms of *Gymnosporangium fuscum* on juniper exhibiting slight fusiform swellings. Symptoms may not be evident until 18 months after the initial infection. Teliospore horns are only present under moist conditions and usually do not persist for long periods of time.

Sorghum Stunt Mosaic and Sugarcane Mosaic Virus in the Same Cells

by

Dennis Mayhew, CDFA

Sorghum stunt mosaic rhabdovirus (SSMV), first reported in sorghum in 1981, and subsequently in field corn in 1989, has been limited to the desert regions of California and Arizona. In the 1992 growing season, sweet corn (Zea mays L. 'Silverado') growing in Stanislaus County (in the central valley of California), was found to be infected with SSMV and sugar cane mosaic potyvirus (SCMV), which is endemic to all of California. Mixed infections with potyviruses have been reported for tobamovirus, nepovirus, comovirus and caulimovirus.

Two virus-like particles were observed in leaf dip preparations. One was typical of SCMV; long, flexuous rods measuring approximately 13 X 750 nm. The other particles were bacilliform, approximately 70 X 220 nm, and similar to those described for SSMV (Fig. 1A). In thin sections, cells showed evidence of either SCMV, SSMV, or both viruses (Fig. 1B). In cells apparently free of rhabdovirus, cytoplasmic inclusion bodies typical of a potyvirus were present. These consisted of pinwheels, scrolls, and laminated aggregates. No bundles of virus particles were observed, but individual virions were scattered throughout the cytoplasm. In cells that appeared to contain rhabdovirus only, bacilliform particles were found in large numbers between the membranes of the perinuclear envelope, and in membrane bound vesicles in the cytoplasm. Morphology, staining properties, and distribution of virions within the cell are consistent with SSMV.

Many cells contained pinwheel inclusions, long rods, and large aggregates of rhabdoviruses (Fig. 1C), indicating that a single cell can support the replication of both SSMV and SCMV. This is the first report of evidence that a potyvirus and a rhabdovirus can replicate in the same cell.

Selected References:

Mayhew, D. E. 1989. Outbreak of sorghum stunt mosaic virus in corn in California and Arizona. Plant Disease 73:444.

Mayhew, D. E., and R. A. Flock. 1981. Sorghum stunt mosaic. Plant Disease 65:84-86.

Teakle, D. S., D. D. Shukla, and R. E. Ford. 1989. Sugar cane mosaic virus. C.M.I./A.A.B. Descriptions of Plant Viruses. No. 342.

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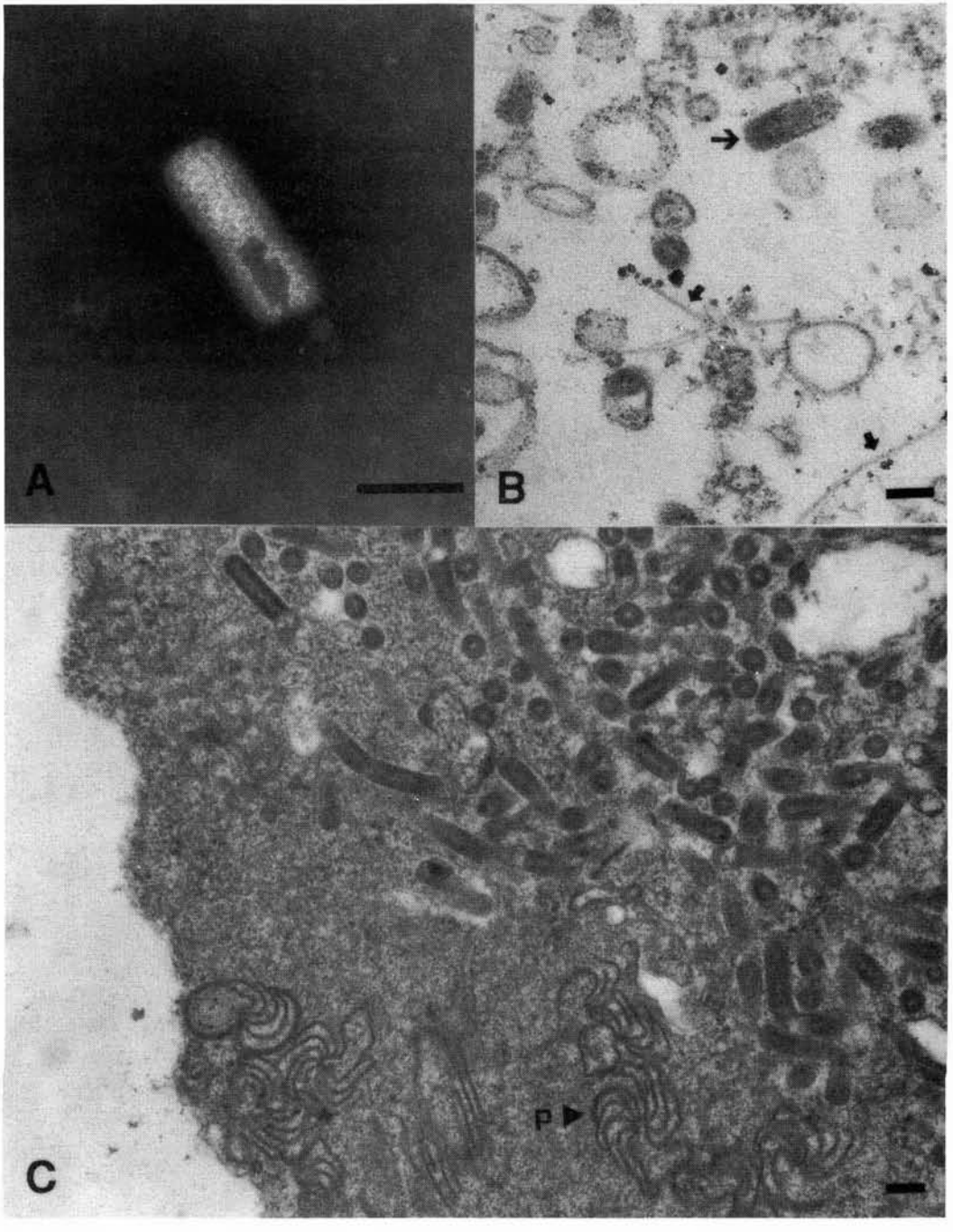


Fig. 5. (A) Rhabdovirus observed in leaf dip preparation from infected corn. (B) Thin section of primordial xylem element showing both rod shaped particles (small arrows) and bacilliform particles (large arrow). (C) Thin section of parenchyma cell showing pinwheel inclusions (P) and aggregates of bacilliform particles. Line represents 100 nm.

PLANT PATHOLOGY HIGHLIGHTS

CHRYSANTHEMUM WHITE RUST, *Puccinia horiana* -(A)- Because of the finds earlier this year of chrysanthemum white rust (CWR) in Santa Barbara and Santa Clara counties, nurseries have been surveyed in other counties. This procedure resulted in a new find for CWR in a nursery in Watsonville, Santa Cruz County, in June. The Watsonville nursery is the only known chrysanthemum grower in Santa Cruz County. The infected plants ranged in size from 2-inch to 6-inch pots, with the larger 6-inch pots being more heavily infested. Due to the severity of the infection, all the chrysanthemum plants in the nursery were destroyed.

This nursery has shipped potted chrysanthemums to receivers in several other counties. County quarantine officers were asked to make follow-up inspections at these locations. If any symptoms were observed, affected plants were to be placed under hold and a sample sent to the Sacramento laboratory for identification.

SIGNIFICANT FINDS IN OTHER STATES

OAK WILT, -(A)- Oak wilt, caused by the fungus, *Ceratocystis fagacearum*, is continuing to spread in Texas, now found in 36 counties within that state. First discovered in the United States 40 years ago and occurring presently in 22 other states, oak wilt is considered one of the most destructive tree diseases in the country. All oaks (*Quercus* spp.) are susceptible to this disease to some degree.

Foliar symptoms and the presence of fungal fruiting structures is reliable for field diagnosis, but a laboratory analysis usually is necessary for confirmation. The most definitive foliar symptom is the exhibition of veinal necrosis: chlorotic veins that eventually turn necrotic. Other foliar symptoms include patterns of chlorosis and necrosis such as marginal scorch or tip burn, but these are less reliable than veinal necrosis.

Fungal mats form beneath the bark of certain diseased red oak trees in late fall and early spring. They can be located by looking for inconspicuous narrow cracks in the bark and hollow areas between the bark and the wood. These fruiting structures are covered with spores and only remain viable for two to three weeks. They exude a sweet odor which attracts insects, particularly sap feeding nitidulid beetles. Fungal mats can also form on logs, large branches, and fresh firewood cut from diseased trees.

Following the initial appearance of symptoms, most live oaks defoliate and die over a three to six month period, red oaks may die within one month. Infection through interconnected roots may spread at the rate of 75 feet per day. Long distance transmission of the fungus occurs when insects feed on fungal mats then visit wound locations on other oak trees.

The Department of Food and Agriculture maintains an exterior quarantine against this disease; it can be found within Quarantine Proclamation 2, Chestnut Bark Diseases and Oak Wilt Disease Exterior Quarantine.

ENTOMOLOGY HIGHLIGHTS

SIGNIFICANT FINDS

MEDITERRANEAN FRUIT FLY, *Ceratitis capitata*, -(A)- Infestations of this fruit fly have been noted this year in the counties of **Santa Clara** and **Los Angeles** . A total of 133 reports have come in from these two counties. Data covering the finds are presented in the tables on the following pages.

ORIENTAL FRUIT FLY, *Bactrocera dorsalis*, -(A)- There have been a number of Oriental fruit fly finds over the summer also. A total of 21 flies have been trapped in **Los Angeles, Orange, Ventura, Santa Clara** and **San Diego** counties. Refer to the following page for a complete list of Oriental fruit fly collections.

MEXICAN FRUIT FLY, *Anastrepha ludens*, -(A)- There have been three more specimens trapped so far this year. The three Mexican fruit flies were found in **Santa Clara** and **San Diego** counties. Also, wings were found in a trap from **Riverside** County. Presented in the table on page 38 are the data covering the finds.

GUAVA FRUIT FLY, *Bactrocera correcta*, -(A)- Also, over the summer, **Los Angeles** County experienced four new finds of this fruit fly, each in a different locality. See the listing on page 43.

WEST INDIAN FRUIT FLY, *Anastrepha obliqua*, -(A)- This fruit fly was found for the first time this year in **San Diego** County. See the listing on page 43.

JAPANESE BEETLE, *Popillia japonica*, -(A)- In addition to the many airport interceptions of Japanese beetle this summer, four specimens were trapped and one was visually identified.

On July 14, a male was found by California Department of Food and Agriculture inspectors Karen Holsinger and Gregory Meyer near a Japanese beetle trap at the Oakland International Airport in **Alameda** County.

Two Japanese beetles were trapped near San Francisco International Airport, San Mateo County, on July 21 and 25 by **San Mateo** County Pest Detection Specialists Karen Blumenshire and Chris Waska.

Another beetle was trapped near Oakland International Airport, **Alameda** County by trapper Mike Meyers on July 29.

On August 12, trapper Bob Wieder found a specimen in a JB trap near an ornamental planting area in West Los Angeles, **Los Angeles** County.

GYPSY MOTH, *Lymantria dispar* -(A)- There have been eight trappings of gypsy moth in eight different counties since June this year.

On June 15, trapper Brian Burkman found a trapped specimen in a eucalyptus tree in Carlsbad, **San Diego** County. (continued on page 44)

Oriental Fruit Fly, *Bactrocera dorsalis*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Los Angeles	6/01/92	1/0	Jackson	loquat	Busatto
Los Angeles	Monterey Park	6/11/92	1/0	Jackson	orange	Kheir
Los Angeles	Santa Monica	6/12/92	1/0	Jackson	orange	Rodriquez
Orange	Irvine	6/26/92	1/0	Jackson	nectarine	Carrillo
Ventura	Simi Valley	6/30/92	1/0	Jackson	apricot	Deen
Orange	Westminster	7/07/92	1/0	Jackson	peach	Henry
Los Angeles	Wilmington	7/08/92	1/0	Jackson	peach	Anderson
Santa Clara	Sunnyvale	7/21/92	1/0	Jackson	tangerine	Filice
Orange	Huntington Beach	8/13/92	1/0	Jackson	grapefruit	Marovic
San Diego	San Diego	8/20/92	1/0	Jackson	lemon	Stowell
San Diego	San Diego	8/21/92	1/0	Jackson	lemon	Stowell
San Diego	San Diego	8/21/92	0/1	McPhail	orange	Gomez
San Diego	San Diego	8/23/92	1/0	Jackson	orange	Burkman
San Diego	Poway	8/31/92	2/0	Jackson	fig	Stowell
San Diego	Poway	9/01/92	1/0	Jackson	fig	Gardner
San Diego	Linda Vista	9/03/92	1/0	Jackson	fig	Woldetsadik
San Diego	Poway	9/05/92	1/0	Jackson	fig	Gardner
San Diego	San Diego	9/23/92	0/1	McPhail	orange	Burkman
Los Angeles	Alhambra	9/26/92	1/0	Jackson	persimmon	Kheir
Los Angeles	Long Beach	9/28/92	1/0	Jackson	peach	Anderson

Mexican Fruit Fly, *Anastrepha ludens*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Santa Clara	San Jose	6/30/92	1/0	McPhail	apricot	Wilson
San Diego	San Diego	8/11/92	0/1	McPhail	fig	Gomez
Santa Clara	San Jose	9/15/92	1/0	McPhail	tangerine	Martinez

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Santa Clara	San Jose	7/28/92	2/3	McPhail	plum	Flores
Santa Clara	San Jose	7/28/92	1/0	Jackson	peach	Flores
Santa Clara	San Jose	7/29/92	0/1	McPhail	plum	Flores
Santa Clara	San Jose	7/30/92	6/0	Jackson	peach	Blazek
Santa Clara	San Jose	7/30/92	1/0	Yellow Sticky	magnolia	Esquivel
Santa Clara	San Jose	7/30/92	1/0	Yellow Sticky	lemon	Hannegan
Santa Clara	San Jose	7/30/92	?	Yellow Sticky	peppertree	Esquivel
Santa Clara	San Jose	7/31/92	1/0	Yellow Sticky	ornamental plum	Breckenridge
Santa Clara	San Jose	7/31/92	L	N/A	nectarine	Bronson
Santa Clara	San Jose	7/31/92	1/0	Yellow Sticky	almond	Breckenridge/Stewart
Santa Clara	San Jose	7/31/92	1/0	Yellow Sticky	peach	Esquivel/Markowitz
Santa Clara	San Jose	7/31/92	3/0	Yellow Sticky	ornamental	Breckenridge
Santa Clara	San Jose	7/31/92	L	N/A	peach	Bronson
Santa Clara	San Jose	7/31/92	2/0	Yellow Sticky	peach	Stewart/Breckenridge
Santa Clara	San Jose	7/31/92	1/0	Yellow Sticky	orange	Esquivel/Markowitz
Santa Clara	San Jose	7/31/92	8/0	Jackson	peach	Blazek
Santa Clara	San Jose	8/01/92	4/0	Yellow Sticky	cedar	Breckenridge/Sanders
Santa Clara	San Jose	8/01/92	1/0	Yellow Sticky	apple	Lubinski/Wong
Santa Clara	San Jose	8/01/92	L	N/A	nectarine	Penrose
Santa Clara	San Jose	8/02/92	L	N/A	peach	Penrose/Bronson
Santa Clara	San Jose	8/02/92	L	N/A	peach	Penrose/Bronson
Santa Clara	San Jose	8/02/92	E	N/A	peach	Penrose/Bronson
Santa Clara	San Jose	8/02/92	4/0	Yellow Sticky	peach	Breckenridge
Santa Clara	San Jose	8/03/92	L	N/A	peach	Bronson/Penrose
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	apple	Breckenridge
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	ornamental	Breckenridge
Santa Clara	San Jose	8/03/92	5/1	Yellow Sticky	ash	Breckenridge
Santa Clara	San Jose	8/03/92	4/0	Yellow Sticky	citrus	Taboas
Santa Clara	San Jose	8/03/92	2/0	Yellow Sticky	lime	Wong
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	ornamental	Breckenridge
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	plum	Jensen

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	ornamental	Gonzalez
Santa Clara	San Jose	8/03/92	4/0	Yellow Sticky	apple	Wong
Santa Clara	San Jose	8/03/92	2/0	Yellow Sticky	peppertree	Gonzalez
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	eucalyptus	Markowitz
Santa Clara	San Jose	8/03/92	5/0	Yellow Sticky	birch	Gonzalez
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	apple	Breckenridge
Santa Clara	San Jose	8/03/92	2/0	Yellow Sticky	ornamental	Gonzalez
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	plum	Breckenridge
Santa Clara	San Jose	8/03/92	3/0	Yellow Sticky	apple	Breckenridge
Santa Clara	San Jose	8/03/92	4/0	Yellow Sticky	lemon	Jensen
Santa Clara	San Jose	8/03/92	13/0	Yellow Sticky	pomegranate	Breckenridge
Santa Clara	San Jose	8/03/92	1/1	Yellow Sticky	apple	Jensen
Santa Clara	San Jose	8/03/92	0/1	Yellow Sticky	ornamental	Schwarz
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	apple	Wong
Santa Clara	San Jose	8/03/92	4/0	Yellow Sticky	lemon	Jensen
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	apple	Wong
Santa Clara	San Jose	8/03/92	1/0	Yellow Sticky	almond	Breckenridge
Santa Clara	San Jose	8/03/92	3/0	Yellow Sticky	ornamental	Breckenridge
Santa Clara	San Jose	8/04/92	3/0	Yellow Sticky	orange	Markowitz
Santa Clara	San Jose	8/04/92	1/0	Yellow Sticky	peach	Markowitz
Santa Clara	San Jose	8/04/92	L	N/A	peach	Penrose/Bronson
Santa Clara	San Jose	8/05/92	3/0	Yellow Sticky	peach	Lafeur
Santa Clara	San Jose	8/05/92	4/0	Yellow Sticky	apple	Daniels
Santa Clara	San Jose	8/05/92	0/2	McPhail	orange	Crawford
Santa Clara	San Jose	8/05/92	1/0	Jackson	peach	Crawford
Santa Clara	San Jose	8/05/92	1/0	Jackson	apple	Crawford
Santa Clara	San Jose	8/06/92	L	N/A	nectarine	Bronson/Penrose
Santa Clara	San Jose	8/07/92	L	N/A	peach	Penrose
Santa Clara	San Jose	8/07/92	L	N/A	peach	Sladovich
Santa Clara	San Jose	8/10/92	L	N/A	peach	Bronson/Daniels
Santa Clara	San Jose	8/10/92	L	N/A	peach	Guzman/Gilbert/Daniels

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Santa Clara	San Jose	8/10/92	L	N/A	peach	Baca/Griggs/Gilbert
Santa Clara	San Jose	8/10/92	L	N/A	peach	Gilbert/Daniels
Santa Clara	San Jose	8/10/92	L	N/A	nectarine	Gilbert/Daniels
Santa Clara	San Jose	8/10/92	L	N/A	peach	Baca/Griggs/O'Mally
Santa Clara	San Jose	8/10/92	L	N/A	peach	Bronson
Santa Clara	San Jose	8/10/92	2/0	Yellow Sticky	apple	Bishop
Santa Clara	San Jose	8/10/92	1/0	Yellow Sticky	lemon	Breckenridge
Santa Clara	San Jose	8/10/92	1/0	Yellow Sticky	peach	Breckenridge
Santa Clara	San Jose	8/11/92	L	N/A	peach	Bronson
Santa Clara	San Jose	8/11/92	L	N/A	peach	Gilbert/Daniels
Santa Clara	San Jose	8/11/92	L	N/A	peach	Daniels/Gilbert
Santa Clara	San Jose	8/12/92	1/0	Yellow Sticky	apple	Bishop
Santa Clara	San Jose	8/14/92	1/0	Yellow Sticky	apple	Bishop
Santa Clara	San Jose	8/17/92	L	N/A	peach	Bronson
Santa Clara	San Jose	8/18/92	L	N/A	peach	Bronson
Santa Clara	San Jose	8/19/92	L	N/A	peach	Bronson/O'Connell
Los Angeles	Pasadena	9/08/92	1/1	Jackson	apple	De La Hoya
Los Angeles	Pasadena	9/08/92	1/0	Jackson	apple	De La Hoya
Santa Clara	San Jose	9/09/92	0/1	Steiner	orange	Joesting
Los Angeles	Pasadena	9/10/92	2/0	Yellow Sticky	apple	Olson/Smith
Los Angeles	Pasadena	9/10/92	1/0	Jackson	apple	Olson/Smith
Los Angeles	Pasadena	9/12/92	0/1	Yellow Sticky	ornamental	Holman
Los Angeles	Pasadena	9/13/92	1/0	Yellow Sticky	lemon	Ledesma
Los Angeles	Alta Dena	9/15/92	3/0	Jackson	fig	Lopez
Los Angeles	Pasadena	9/16/92	1/0	Yellow Sticky	orange	Wetherington
Los Angeles	Pasadena	9/16/92	1/0	Yellow Sticky	peach	Wetherington
Los Angeles	Pasadena	9/17/92	L	N/A	guava	Price/Bronson
Los Angeles	Pasadena	9/17/92	2/0	Yellow Sticky	avocado	Romo
Los Angeles	Pasadena	9/17/92	1/0	Yellow Sticky	fig	Romo
Los Angeles	Pasadena	9/17/92	1/0	Yellow Sticky	ornamental	Rumsey
Los Angeles	Pasadena	9/19/92	1/0	Yellow Sticky	fig	Tuten

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Los Angeles	9/19/92	0/1	Jackson	peach	Kheir
Los Angeles	Los Angeles	9/21/92	1/0	Jackson	peach	Diaz
Los Angeles	Pasadena	9/21/92	L	N/A	guava	Wright
Los Angeles	Duarte	9/22/92	4/0	Jackson	peach	Quinnunes
Los Angeles	Jefferson Park	9/22/92	1/0	Jackson	orange	Follin
Los Angeles	Los Angeles	9/23/92	1/0	Jackson	grapefruit	Diaz
Los Angeles	Los Angeles	9/23/92	1/0	Yellow Sticky	avocado	Dayyani
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	loquat	Prinzbal
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	ornamental	Rocha
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	nut tree	Rocha
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	sycamore	Rocha
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	guava	Rocha
Los Angeles	Duarte	9/24/92	1/0	Yellow Sticky	maple	Prinzbal
Los Angeles	Los Angeles	9/24/92	1/0	Yellow Sticky	avocado	Olagues
Los Angeles	Griffith Park	9/25/92	1/0	Yellow Sticky	pomelo	Diaz
Los Angeles	Los Angeles	9/25/92	3/0	Yellow Sticky	lemon	Romo
Los Angeles	Los Angeles	9/25/92	1/0	Yellow Sticky	walnut	Romo
Los Angeles	Los Angeles	9/25/92	1/0	Yellow Sticky	nectarine	Romo
Los Angeles	Los Angeles	9/25/92	1/0	Jackson	fig	Burleson
Los Angeles	Duarte	9/25/92	L	N/A	peach	Anderson/Valdes
Los Angeles	Los Angeles	9/25/92	1/0	Yellow Sticky	shade tree	Diaz
Los Angeles	Los Angeles	9/25/92	1/0	Yellow Sticky	shade tree	Diaz
Los Angeles	Duarte	9/25/92	2/0	Yellow Sticky	orange	Rodriguez
Los Angeles	Duarte	9/25/92	1/0	Yellow Sticky	lemon	Carrera
Los Angeles	Duarte	9/25/92	1/0	Yellow Sticky	ornamental	Carrera
Los Angeles	Duarte	9/25/92	1/0	Yellow Sticky	grapefruit	Carrera
Los Angeles	Inglewood	9/26/92	0/1	Jackson	guava	Wieder
Los Angeles	Los Angeles	9/28/92	1/0	Jackson	guava	Tanudra
Los Angeles	Los Angeles	9/28/92	1/0	Jackson	persimmon	Camberos
Los Angeles	Los Angeles	9/28/92	1/0	Yellow Sticky	avocado	Bingham
Los Angeles	Los Angeles	9/28/92	1/0	Yellow Sticky	orange	Bingham

Mediterranean Fruit Fly, *Ceratitis capitata*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Los Angeles	9/28/92	1/1	Yellow Sticky	lime	Shank
Los Angeles	Altadena	9/29/92	1/0	Steiner	lemon	Rumsey
Los Angeles	Griffith Park	9/29/92	0/1	Yellow Sticky	guava	Bingham
Los Angeles	Griffith Park	9/29/92	1/0	Yellow Sticky	guava	Miller
Los Angeles	Griffith Park	9/29/92	1/0	Yellow Sticky	guava	Bingham
Los Angeles	Griffith Park	9/29/92	1/0	Yellow Sticky	sycamore	Cumberland
Los Angeles	Griffith Park	9/29/92	1/0	Yellow Sticky	orange	Cumberland
Los Angeles	Griffith Park	9/29/92	0/1	Yellow Sticky	orange	Bingham
Los Angeles	Griffith Park	9/29/92	0/1	Yellow Sticky	avocado	Miller

Guava Fruit Fly, *Bactrocera correcta*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
Los Angeles	Redondo Beach	6/16/92	1/0	Jackson	apricot	Abu El Naga
Los Angeles	No. Long Beach	8/18/92	1/0	Jackson	peach	Rice
Los Angeles	Hawthorne	9/09/92	1/0	Jackson	grapefruit	Abu El Naga
Los Angeles	Northridge	9/21/92	1/0	Jackson	apple	Fiedler

West Indian Fruit Fly, *Anastrepha obliqua*, -(A)- 1992 Collections

County	City	Date	#M/F/Stage	Trap	Host	Collectors
San Diego	San Diego	8/27/92	1/0	McPhail	sapote	Sanchez

SIGNIFICANT FINDS (continued)

A gypsy moth was found on June 16 in San Francisco, **San Francisco** County, by CDFA inspector Peter Mandel.

On June 25, a gypsy moth was found in Sacramento, **Sacramento** County, by Jennifer Neal.

On July 9, Williams found a specimen in a Delta/GM trap in Yucaipa, **San Bernardino** County.

Trapper Doug Burleson found a gypsy moth in Lancaster, **Los Angeles** County, on July 10.

Trapper Jeff Bingham found a specimen in a trap placed in a crape myrtle on July 21 in Turlock, **Stanislaus** County.

A gypsy moth was found in Campbell, **Santa Clara** County, by Crawford on August 8.

On September 3, a gypsy moth was detected in a trap at a campground in Groveland, **Tuolumne** County, by trapper Bob Stokes. The campground was trapped as a high-hazard site.

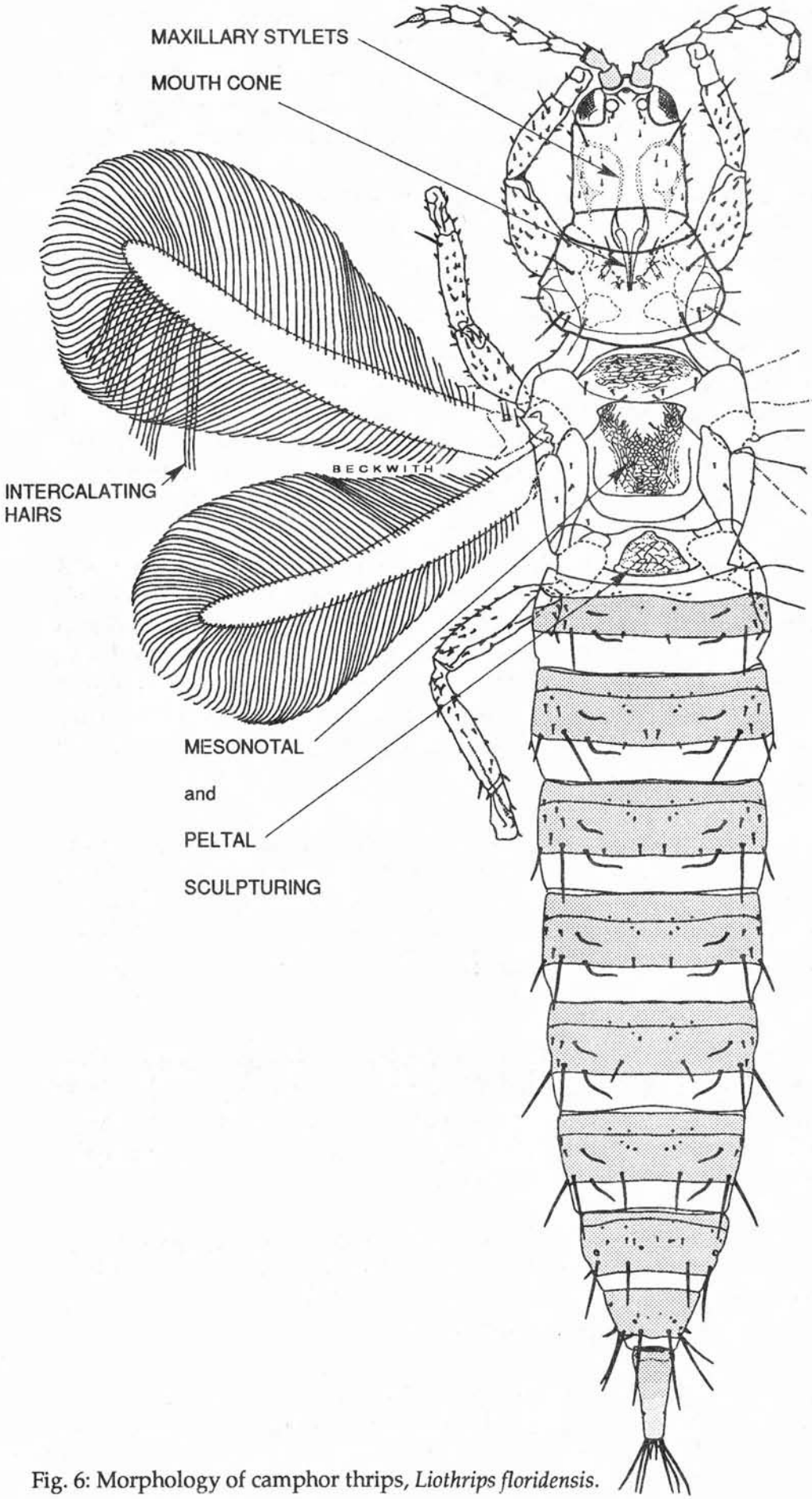
NEW STATE RECORDS

CAMPHOR THRIPS, *Liothrips floridensis* -(Q)- For the first time in California, a camphor thrips was found on *Cinnamomum camphora* in Santa Cruz, **Santa Cruz** County. Marilyn Perry discovered this new pest on July 27. The thrips were occurring in moderate numbers and were causing severe blackening and minor necrosis of the leaf tissue as well as having a similar effect on the young twigs.

This species of thrips belongs to the family Phlaeothripidae, the tubuliferous thrips. Most of the thrips in this family are large and usually black or very dark brown. Many of the species in the family are predaceous and so are beneficial. However, there are plant feeders in the family, and this is one of them.

This species was originally described from Florida by J.R. Watson in 1913 under the generic name *Cryptothrips*. It was also causing considerable damage to camphor trees at that time. Nothing else is known about this thrips. Its native home may be Florida, but very likely it may be from the native home of camphor, which is China and Japan.

There are now at least 10 species of *Liothrips* in California. Their taxonomy is rather difficult to understand. Since the species so far seems narrowly host restricted, this fact could be used for tentative field determinations. Collections should be sent to a specialist for confirmation. Included on the next page is a complete morphological illustration of the new pest.



There are approximately 47 species of *Liothrips* in North America, with about 32 of these recorded from the United States. The genus belongs to a poorly separated complex including among others the common genera *Bagnalliella, Haplothrips, Hoplandrothrips, Phlaeothrips* and *Poecilothrips*. This particular genus can be recognized because it has strong mesonotal and pectal sculpturing dorsally; has long pointed mouth cones usually reaching to the procoxae; five pairs of well developed prothoracic setae; it lacks foretarsal claws and praepectal plates; the maxillary stylets are well retracted into the head, almost reaching the posterior margin of the eyes; the forewings usually have intercalating hairs; and the genus contains strictly plant feeders.

There is no separation key to the species. However, this species can be recognized by having the head longer than broad; clear, unmarked wings with 15 or more intercalating hairs on the forewing; antennal segments III to VII and fore tarsi light in color; and close association with the host *Cinnamomum camphora*.

A specimen of the predaceous thrips *Leptothrips oribates* was collected with the camphor thrips specimens. There is a good possibility that the *Leptothrips* was feeding on the *Liothrips* colony.

Fig. 6: Morphology of camphor thrips, *Liothrips floridensis*.

AN AVOCADO MITE, *Oligonychus perseae* -(C)- This tetranychid mite was first brought to the attention of CDFA in August of this year. Specimens were submitted by San Diego County Entomologist David Kellum from a collection made in Escondido on June 15. It is presently causing severe injury to commercial avocado orchards in the Escondido-Poway area. The mite had been previously identified both as *Eotetranychus sexmaculatus* and *Oligonychus peruvianus*, mites that have been established on avocados in southern California for many years. Recently, however, it was decided that this mite was actually *O. perseae*, a species very nearly identical morphologically to *O. peruvianus*. The following report by Dr. Ron Somerby, CDFA mite taxonomist, supplies information on this new pest:

'Within the last two years, a mite new to California, Oligonichus *perseae* (Tetranychidae), has become established in San Diego County. The mite was recently identified by... "USDA scientists who first described the mite on Hass avocados in Mexico.... We have found the mites active on Hass, Gwen, and Reed varieties but not on Fuerte, Zutano or Bacon. The mite will also infest some weed species such as Malva and some ornamental trees" (Bender 1992). This devastating new mite has "....spread to over 5,000 acres, was threatening tens of thousands more, and had begun to cause defoliation in heavily infested groves" (Davis 1992).

The mite has not officially been assigned a common name. During the mite's first appearance, it was collected from backyard avocados in Coronado, La Jolla and other coastal towns. It was first identified locally as the six spotted mite (*Eotetranychus sexmaculatus*), an important pest species of citrus and avocado (Bender 1992). According to Bender (1992), "Dr. James McMurtry, an acarologist from U.C. Riverside, gave the mite a tentative identification as *Oligonychus peruvianus*, a relative of the avocado brown mite, *Oligonychus punicae*." McMurtry has been working on the avocado mite problem with Bender from the University of California Cooperative Extension, San Diego.

The Peruvian mite was described as a pest on carob trees in San Diego County back in the 1920's. In 1955, its distribution "....has been recorded from Peru, Trinidad, and southern California on willow, grape, carob, and cotton" (Pritchard and Baker 1955). Recently, Dr. Edward N. Baker, USDA, has looked at the new mite (pers. comm. with McMurtry). In his opinion, *O. perseae* is a good species although morphologically being extremely similar to *O. peruvianus*.

According to Bender regarding microhabitat (1992): "The damage caused by the new mite is quite different from brown mite damage (the familiar bronzing in the tops of the leaves). The new mite causes small necrotic spots on the undersides of the leaves along the midrib and main veins. As the mite population increases, the spots will merge into long necrotic strips along the veins of the leaf. [The damage eventually induces defoliation].

Each spot is covered by a fine webbing which shines silvery in the sunlight. Beneath the webbing, the mites are feeding and laying eggs and appear to be quite protected from feeding by predacious mites. A thorough spray with wettable sulfur is quite effective for control of the mite, but we have not yet evaluated a helicopter application of sulfur.

This new mite is a cause for concern because we have found it doing considerable damage in commercial groves in Poway, Highland Valley and at the west side of Escondido. One grower

reported that 15 acres were defoliated by the mites last year. With the way the mites are feeding in Escondido right now, I would expect large sections of these groves to be defoliated in a few months.

.....the mites spread naturally by spinning a strand of webbing and wafting through the air in the wind. They can also be moved around on equipment and clothing; therefore pickers could be major culprits in the spread. They do not infest fruit, however, so it is unlikely that they would be able to be spread from grove to grove in bins."

With additional regard to control measures, Dr. Bender says: "We were hoping that the mites would not infest the new flush of growth that occurred in the late summer, but the biological control agents have not caught up with the mite yet in most groves....

Some good news: backyard trees in San Diego that have had the mite problem for two years are beginning to recover. We have observed predatory thrips and mites feeding on the avocado mites, and we have also seen fly larvae under the webbing feeding on the mite eggs. Also of interest, Dr. Jim McMurtry from the University of California, Riverside reports that a predatory mite be imported from Florida, T*yphlodroma helveolus*, appears to be thriving on the avocado mite and is reducing its populations on test trees. .....it looks like our groves will have to go through some hard times before biological control agents reach populations high enough for economic mite control."'

Literature Cited:

Bender, G. A. 1992. Avocado-Citrus Notes. 1992. The Year of the Bugs. Cooperative Extension. University of California. San Diego County, 4 pp.

Davis, J. 1992. Executive Summary, Omite-30W vs. Omite-30W vs. *Oligonychus perseae* An Efficacy Study. (September) American Insectaries, Inc.

Pritchard, A. E. and E. W. Baker. 1955. A Revision of the Spider Mite Family Tetranychidae. Memoirs Series, Vol. No. 2. S.F. Pacific Coast Entomol. Society), 472 pp.

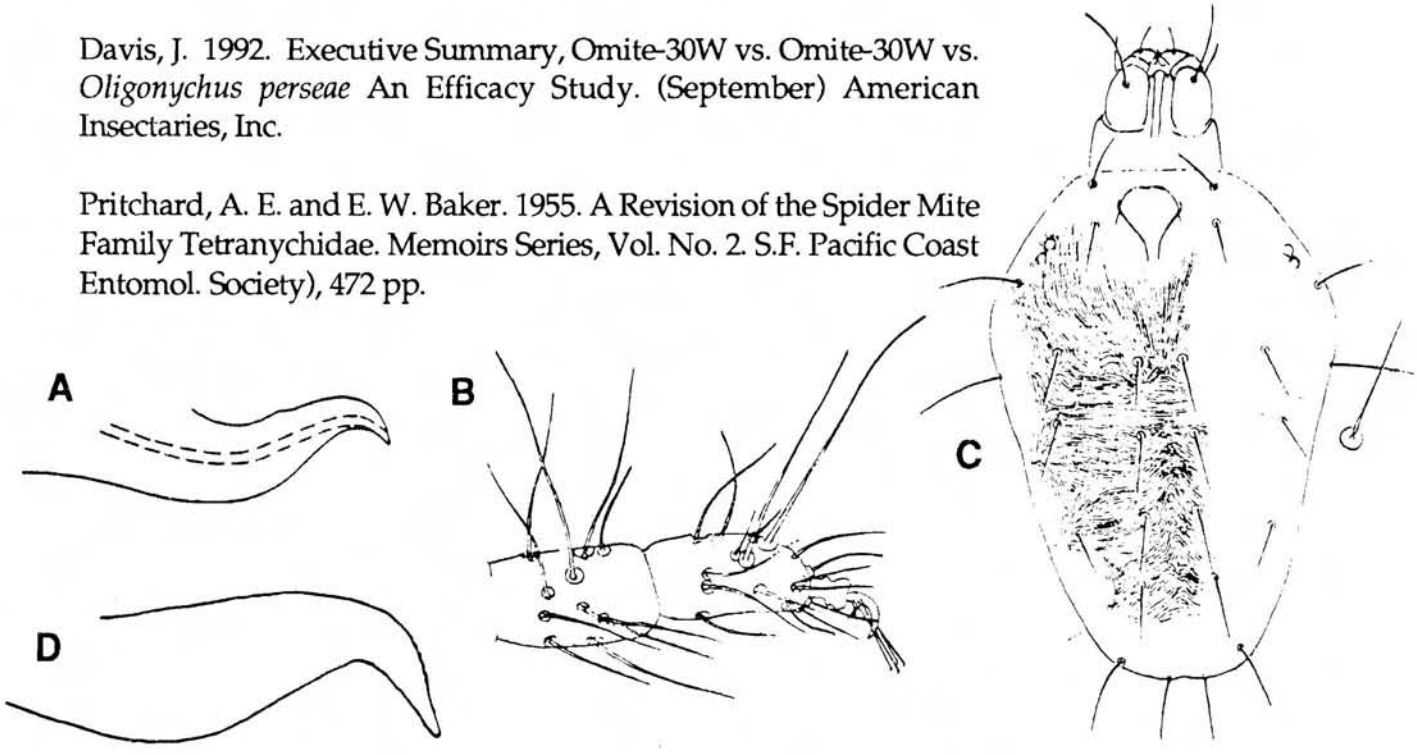


Fig. 7: Morphology of *Oligonychus perseae*. A. Male aedeagus, lateral view. B. Tarsus-tibia I (female). C. Dorsum (female). D. Male aedeagus of *O. peruvianus* for comparison. From Ochoa et al. 1991: Acaros fitafagos de America Central. CATIE 251 pp. (A). Illustrations B-D from Tuttle et al. 1976: Intl. J. Acar. 2(2): 82.

NEW COUNTY RECORDS

BLUEGUM PSYLLID, *Ctenarytaina eucalypti*, -(C)- Bluegum psyllid was found for the first time in **Placer** County on June 16. Doug Mitani made the find on a eucalyptus tree in Auburn. This pest also was found in Temecula, **Riverside** County, for the first time by Bill Tracy on June 18. The first North American record of this psyllid was in January 1991 in Monterey County (See CPPDR 10(1-2):5, 1991. The pest now occurs in the following counties plus those listed above: Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Napa, Orange, Sacramento, San Benito, San Bernardino, San Diego, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Sonoma, Stanislaus, Tulare, Tuolumne, and Ventura.

EHRHORN'S OAK SCALE, *Mycetococcus ehrhorni*, -(C)- Ehrhorn's oak scale, a native scale, was found on August 3 by Jack Gianelli in Lodi, **San Joaquin** County, constituting a new county record. This pest of oak trees has previously been known mostly from southern California where it is apparently common, but it was found recently as far north as Humboldt County in 1990 (See CPPDR 9(3-4):137, 1990.

TORPEDO BUG, Siphanta acuta, -(C)- This native Australian species has been found established for the first time in the Santa Barbara and East Bay areas. The first record for **Santa Barbara** County is from Montecito, where Richard Doutt collected adults from sago palms (*Cycas revoluta*) on August 25. Specimens were submitted from Berkeley, **Alameda** County for another new county record. The specimens were collected by Dr. Sandy Purcell from liquidambar trees near the U.C. Berkeley Campus on September 14. Dr. Purcell observed that the insects were becoming pests in a one or two block area and that they were attacking multiple hosts. Mr. Richard Tassan, also with the University, has also mentioned seeing populations in the Oakland-Berkeley area.

AMERICAN CORN LEAFHOPPER, *Dalbulus maidis*, -(C)- This leafhopper is a vector of the maize disease corn stunt. It has occurred in California for a number of years, having been collected in Los Angeles, Fresno, Kings and Santa Cruz Counties. It is common at times in the southern San Joaquin Valley. It has now been found in the Sacramento Valley. Specimens were collected several years ago during field studies involving a sustainable agriculture research project in the Capay Valley of **Yolo** County. Dr. Deborah Letourneau of U. C. Santa Cruz made the collection from a tomato field on August 27, 1990. Specimens were submitted to CDFA in August of this year.

SWEETPOTATO WHITEFLY, *Bemisia tabaci*, -(C)- This serious whitefly pest is continuing to increase its range out doors in more northernly locations in California. The first record for **Fresno** county was discovered on a well established poinsettia bush growing outside a county building complex near down town Fresno. The collection was made by Norm Smith and Richard Kassabian on September 14. The northern-most find on non-nursery crops was made in a 30 acre melon field in Yuba City, **Sutter** County. The collection was made by the grower on August 28 and submitted to the county. The field consisted of seedless watermelons, originally transplants which were purchased in Arizona. Subsequent survey near the site has revealed infestation on various weed species, and the white fly has been found 10 to 15 miles away near the town of Meridian. All of these new collections morphologically agree with the "B" strain of the sweetpotato whitefly.

RED BANDED WHITEFLY, *Tetraleurodes* sp. undescribed, -(B)- This whitefly was first found in California in San Diego County in 1982. It appeared to be under good biological control at that time and therefore never seemed to be much of a threat. It was found for the first time recently in Ventura County (see CPPDR 11[1-2]:7, 1992), and has now been found in adjacent **Santa Barbara** County. This most recent collection was made by Ed Kessel, a pest control advisor, and Jerry Davidson of the Agricultural Commissioner's office, on September 11. Jerry states that the whitefly is occurring in moderate to heavy populations on avocados throughout the south coastal area of the county from Carpinteria to Goleta. Due to this apparently serious outbreak, the CDFA Biological Control unit will begin looking at the possibilities of introducing some of the natural enemies from San Diego County.

This whitefly had so far been known only from avocadoes, although Jerry has now collected it from the closely related, native California laurel, *Umbellularia californica*. The species is presently undescribed, pending the completion of a generic revision that is currently underway by Steve Nakahara of the Systematic Entomology Laboratory at Beltsville, Maryland.

SEVENSPOTTED LADY BEETLE, *Coccinella septempunctata*, -(D)- This lady beetle has been introduced into the western states to aid in the control of the Russian wheat aphid. It had previously been found established in Modoc and San Joaquin Counties. This August, collections were made two miles north of Topaz, **Mono** County, by Jeff Knight of the Nevada Department of Agriculture, constituting a new county record.

EXCLUSION

MAGNOLIA WHITE SCALE, *Pseudaulacaspis cockerelli*, -(A)- There have been four more findings of magnolia white scale in 1992. The first was detected some time ago by Suzanne Squires at a nursery in Summerland, **Santa Barbara** County, on May 14. The second was infesting *Phoenix roebellinii* in Los Angeles, **Los Angeles** County. The discovery was made by N. Keller on June 3. J. Davey made the final detections at a nursery in Rancho Cucamonga, **San Bernardino** County, on June 29 and July 2.

LEUCAENA PSYLLID, *Heteropsylla cubana*?, -(Q)- Thomas Herrera detected what is probably this psyllid infesting *Albizzia* at a nursery at Long Beach, **Los Angeles** County, on July 7. A revision of this genus of psyllids was published recently by S.B. Muddiman and I.D. Hodkinson (Bul. Entomol. Res. 82:73-117, 1992). According to these authors, *Heteropsylla cubana* is restricted almost exclusively to *Leucaena leucocephala*, and *Albizzia* is not listed as a host. Southern California material keys out to *cubana*, but this species is nearly identical to *H. mexicana*. The host plants of *H. mexicana* are not known, so to try to clarify the identity of the specimens from southern California, representatives have been sent to the Systematic Entomology Laboratory in Beltsville.

GYPSY MOTH, *Lymantria dispar*, -(A)- Santa Barbara County Department of Agriculture biologist Kristen Burke found a gypsy moth on July 24 in a Delta/GM trap placed in a pine tree at Vandenberg Air Force Base, Lompoc, **Santa Barbara** County. The trap had been placed on the property as a result of a Gypsy Moth Warning Hold Notice (66-008A) previously issued by Pest Exclusion.

GLASSYWINGED SHARPSHOOTER, *Homalodisca coagulata*, -(Q)- A glassywinged sharpshooter, one of two specimens seen, was captured on a pepper plant in a nursery in Capitola, **Santa Cruz** County. Mike Morton discovered the specimen on August 6. This is a large leaf hopper very similar to the smoketree sharpshooter, *Homalodisca lacerta*, is common in southern California. This species (*H. coagulata*) is known to be a vector of Pierce's disease of grape and phony peach disease in the southeastern United States.

SIGNIFICANT FINDS IN OTHER STATES

COMMON PINE SHOOT BEETLE, *Tomicus piniperda* -(Q)- This recently introduced pest of conifers was recently found established in the northeast. The following report is excerpted from several similar reports from U.S.D.A. telecommunication reports, and by Dorthea Zadig, CDFA :

> The common (or larger) pine shoot beetle (PSB), *Tomicus* (=*Blastophagus*) *piniperda* (family Scolytidae) was recently discovered in Loraine County near Cleveland, Ohio. To date, subsequent visual surveys of Christmas tree plantations and nurseries have confirmed the pest in 42 counties in six states: Illinois, Indiana, Michigan, New York, Ohio, and Pennsylvania. Due to lack of funding, survey activities have been terminated for this year; though some federal and state agencies are continuing to informally survey for this pest.
>
> Since 1946, *Tomicus piniperda* has been routinely intercepted with packing and crating materials, particularly dunnage, at U.S. ports of entry. This is very likely the avenue for the introduction of the current infestation. It is thought that the beetles may have originated from this type of wood on freighters transiting the Great Lakes region.
>
> PSB is considered to be an important pest of pine in Europe; populations can quickly build up to outbreak levels which can last for several years. These build ups are accelerated by high temperatures and drought conditions which lower tree resistance. Furthermore, adult beetles may vector disease pathogens.
>
> Adults of the PSB are small (3 to 5 mm in length) beetles with a black head and thorax and reddish-brown to brownish-black wing covers (see more information on identification listed below). In Europe, Scotch pine (*Pinus silvestris*) is the principle host, but other pines, occasionally larch and spruce, and rarely Douglas fir, are known to be infested. In Ohio, *T. piniperda* occurs primarily in Christmas tree plantations on Scotch and white pine.
>
> The beetles overwinter in pine shoots or in short tunnels in and under the bark at the base of trees. In spring the beetles emerge from these sites and breed. There is no known aggregation or sex pheromone but PSB adults are attracted by certain terpene compounds. Adult beetles are capable of flying up to 1 km in search of host material and are attracted to pruning wounds. *Tomicus piniperda* has one generation per year in its native range of Europe and Asia. During February-March, adults quickly colonize cut pine stumps, logs, or trunks of weakened trees. Later they mate and lay eggs in vertical egg galleries in the inner bark. The next generation completes larval

development and then tunnels through the outer bark in May-June creating 2mm wide exit holes. Adults then fly to the crown of living trees of any age, although small trees up to 6 meters tall are apparently preferred. Adult feeding on the central portion of the lateral shoots (unlike *Pissodes* weevils that attack the inner bark of terminal leaders) produces tunnels from four to nine cm long. During this maturation feeding, each adult may destroy three to six shoots. Damaged shoots droop, become yellow to red and eventually fall to the ground.

Maturation feeding of the young shoots by adult beetles is the primary cause of damage to pines in Europe; it usually results in reduced radial and height growth. Damage appears as dieback, yellowing, or drooping of the shoots . Some parent beetles may produce a second brood; however, this beetle typically completes one life cycle per year. Tall pine stumps and pine logs in close proximity to healthy pine trees provide excellent breeding sites for the pine shoot beetle. They can easily reproduce in pine stumps cut at normal levels (two to four inches above the ground).

The U.S. Department of Agriculture has established a quarantine in six Northeastern States to prevent the spread of PBS. The quarantine requires a certificate or limited permit for the movement of pine Christmas trees, nursery stock, and bark-covered pine, spruce, larch, and fir logs and lumber. The only available treatment is a methyl bromide fumigation for logs and lumber. Since simple visual inspections are not adequate for certifying Christmas trees, PPQ developed a statistical sampling methodoloy that will ensure a minimal pest risk and allow movement of cut Christmas trees under a limited permit. We can accept a minimal pest risk in cut Christmas trees since most of these trees go into homes where the beetles will die of natural causes, and unsold trees will be destroyed. No inspection process is currently available for high-risk articles such as pine nursery stock.

Eggs are 1mm long, oval and shiny white. Larvae are legless, slightly curved grubs with four pairs of medial setae on the ephipharynx. They can reach 5mm in length when fully grown and have a brown head and white body. Immature stages, especially the pupae, are difficult to identify in the field. Adults of *T. piniperda* are cylindrical, 3 to 5mm long (about the size of a matchhead), with a shiny black head and smooth prothorax. The wing covers vary from reddish-brown to black. The antennal funicle has six segments. The second interval of the declivity lacks setal bases.

Illustrations of the beetle and its damage can be found on page 52. Adults can be tentatively separated from other North American Scolytidae by the following characteristics:

- Front tibia not produced into a long, curved, apical tooth; pronotum not margined laterally or posteriorly (versus *Scolytus*).
- Head salient, not concealed by the prothorax in dorsal view, readily visible; basal margin of elytra with a granulate carina; tarsal segment III bilobed (versus the Ipini, including *Ips, Coccotrypes, Xyleborus, Pityophthorus* and others).
- Eyes not emarginate; antennal club segments transversely divided and with long hairs (versus *Phloeosinus*).
- Anterior coxae contiguous, not divided by a a broad prosternal process; squamiform setae absent from pronotum, elytra and abdomen (versus *Hylesinus, Leperesinus* and others).

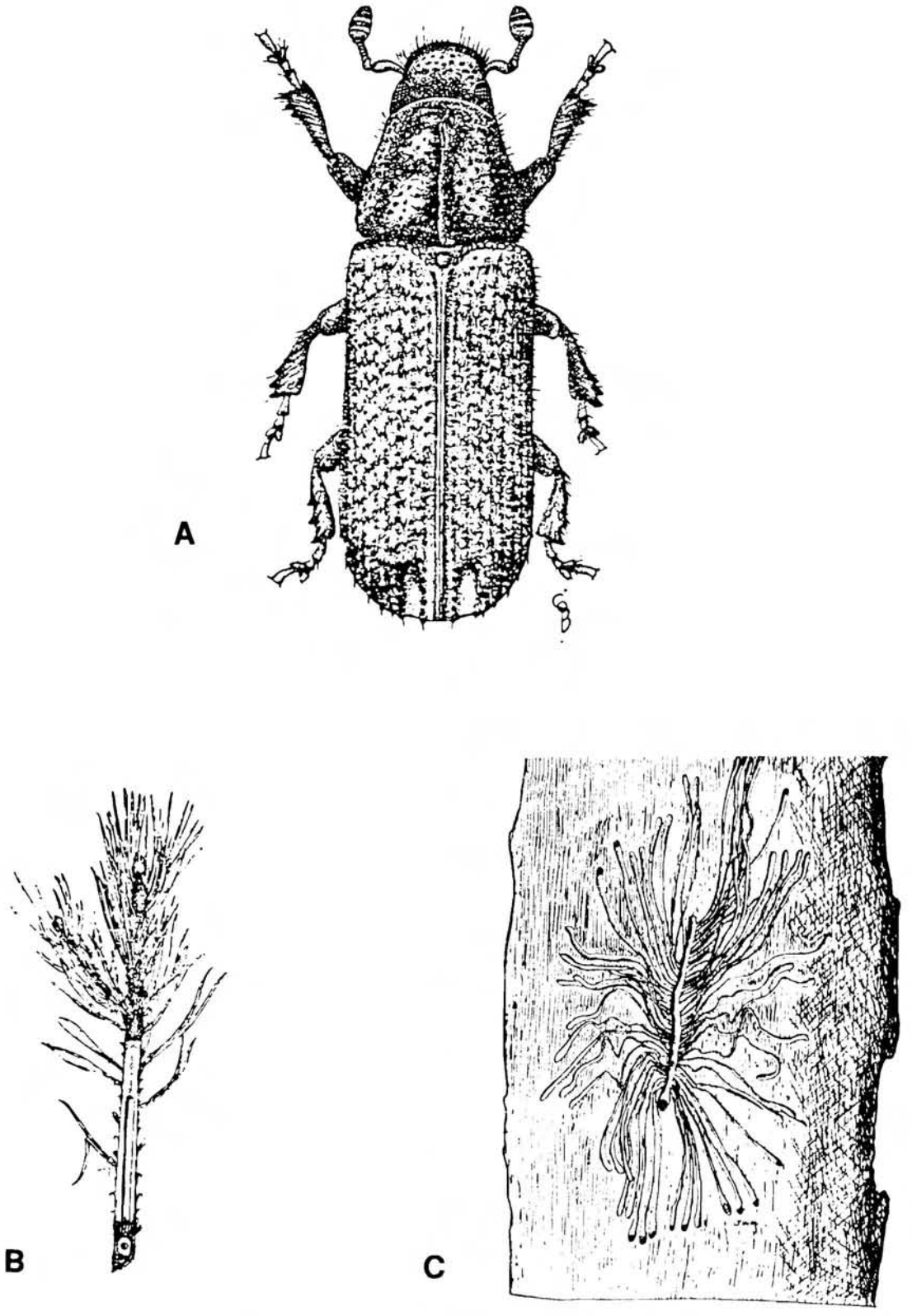


Fig. 8: Common pine shoot beetle, *Tomicus piniperda*. A. Adult beetle. B. Pine shoot tunneled by adult. C. Galleries under bark. From Duffy, 1953: Handbook for the Indentification of British Insects 5(15): 11 (A); and (B,C) from Cooperative Economic Insect Report, Insects Not Known to Occur in the United States 22(16): 234-6, 1972.

BORDER STATIONS

The fiscal crisis in California has had a major impact on the operations of the border stations (Agricultural Inspection Stations) this year, primarily because of budget cuts of more than $1.5 million. This has resulted in the layoff of many personnel, and the closing of some stations during non-peak periods. Some interesting facts have been developed because of a need to assess the affects of the budget cuts on overall operations.

- Nearly 27 million vehicles were checked at California border stations during the 1990-1991 fiscal year, over 3.5 million of these being trucks. That equates to 73,300 vehicles a day or 3,050 an hour.

- Of those vehicles checked, 105,00 produced quarantine material that was rejected, which equated to about 12 rejections per hour.

- Rejected materials included over 5,000 pest species, including insects, nematodes, plant diseases, weeds and other animals.

The border stations are a definite deterent to the introduction of exotic and economic pests into the state. The cutback in funding and resultant layoffs mandated by the lack of funding will undoubtedly affect the efficiency of the stations in intercepting pest species.

Following are several examples of unusual quarantine interceptions made at the borders during the June to September period this year:

Live eggs of a Notodontid moth (*Macruocampa marthesia*) were found on cut teepee palm fronds (probably cut in Mexico and packed in Florida). Larvae were completely developed within the eggs, allowing identification to be made. This moth is a general leaf feeder (maple, oak, etc.) in the southeastern states and Mexico. The interception was made by Al Guthrie at the Yermo Station.

Live weevil (Curculionidae) larvae were found in uncertified boniato fruit of unknown origin. This fruit is a known host of the sweetpotato weevil. The collection was made by Boston and Hinsley at the Blythe Station.

Live green shield scale, *Pulvinaria psidii*, were intercepted on uncertified litchi nuts of unknown origin. The interception was made by Charlie Hamilton at the Hornbrook Station.

Live fly larvae (Micropezidae) were intercepted in commercial yams from Granada (transhipped via Miami, Florida). The interception was made by Ruben Armendariz at the Blythe Station.

Mealybug nymphs, *Dysmicoccus* sp., were collected from Thailand betel nuts (purchased by the traveler in Oregon). The interception was made by Al Rojas at the Hornbrook Station.

BOTANY HIGHLIGHTS

NEW COUNTY RECORDS

WILD GARLIC, *Allium vineale*, -(B)- Wild garlic was found for the first time in **Shasta** County, some distance from the nearest infested counties of **Mendocino** and **Butte**. John Albright submitted the Redding find in June. For the current statewide distribution, see page 55.

DIFFUSE KNAPWEED, *Centaurea diffusa*, -(A)- Diffuse knapweed has been found in two new locations. One infestation was found near Foresthill, (S17 T13N R10E MD), a new county record for **Placer** County, by Karen Connolly on July 13. The other record is a new township from **Glenn** County, where Ernie Simpson found two plants near Elk Creek, (S28 T23N R9W MD), on July 20. For the current statewide distribution, see page 56. This location is southeast of a previous infestation in Mendocino County.

OTHER SIGNIFICANT FINDS

SKELETONWEED, *Chondrilla juncea*, -(A)- Skeletonweed has been found by E. Finley in two new locations near San Carlos, **San Mateo** County. Doug Barbe prepared the following report:

> An earlier find in 1972 in T5S, R4W was not specific to section number, it only stated "S.P.R.R. San Carlos; R.R. Right-of-way; 1 acre net." The find on July 15, 1992 may be in the 1972 site since the railroad right-of-way in San Carlos runs through sections 11, 12, and 13.
>
> A 1981 find in Sec. 27, T5S, R4W, is southwest of the find on July 13, 1992 on Edgewood Road.
>
> These new finds reflect good detection work and underline the importance of continued vigilance in preventing the introduction and spread of noxious weeds in California.

ILLYRIAN THISTLE, *Onopordum illyricum*, -(A)- Illyrian thistle, a proclaimed noxious weed in parts of Australia, has been found at a new location near Morgan Hill, **Santa Clara** County by E. Finley and K. O'Day on June 22, 1992. With characteristics similar to Scotch thistle, Illyrian thistle was only know previously on rangeland at New Almaden in Santa Clara County.

BEARDED CREEPER, *Crupina vulgaris*, -(A)- On June 12, 1992, Butch Kreps discovered bearded creeper in Adin, **Modoc** County. The following report was prepared by Doug Barbe:

> This is a new township record for *Crupina vulgaris* in Modoc County. The weed is now found in sections 30, 31, and 32, T40N R10E MD: and sections 25 and 36, T40N R9E MD. The only other location of *Crupina vulgaris* in California is in and around Annadel State Park, Santa Rosa, **Sonoma** County. See the map on page 57 for the statewide distribution of this weed.
>
> *Crupina vulgaris* also occurs in north-central Idaho and northeastern Oregon. The Idaho infestation was discovered in 1968 and was the first in North America.

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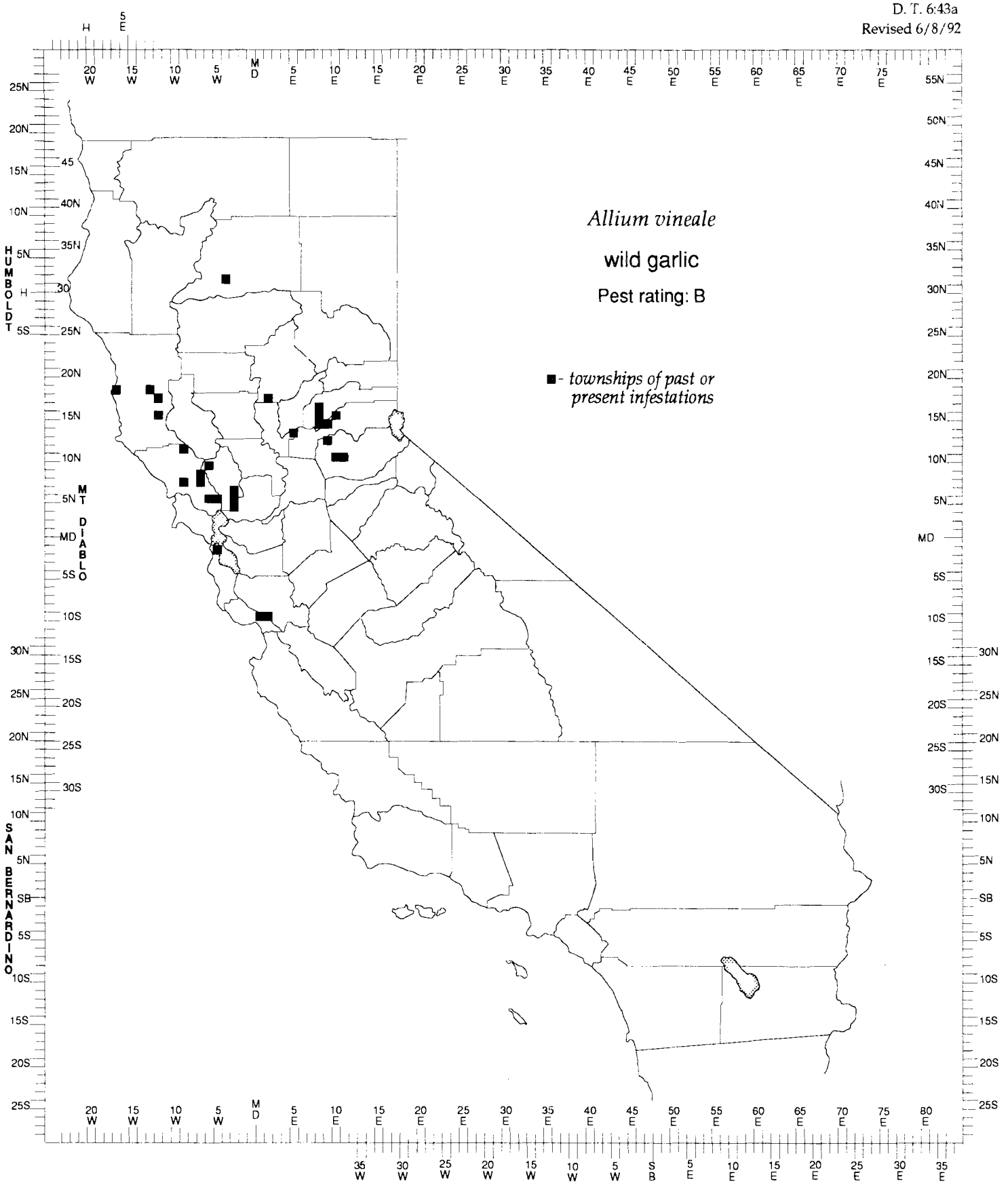
DETECTION MANUAL
D. T. 6:43a
Revised 6/8/92



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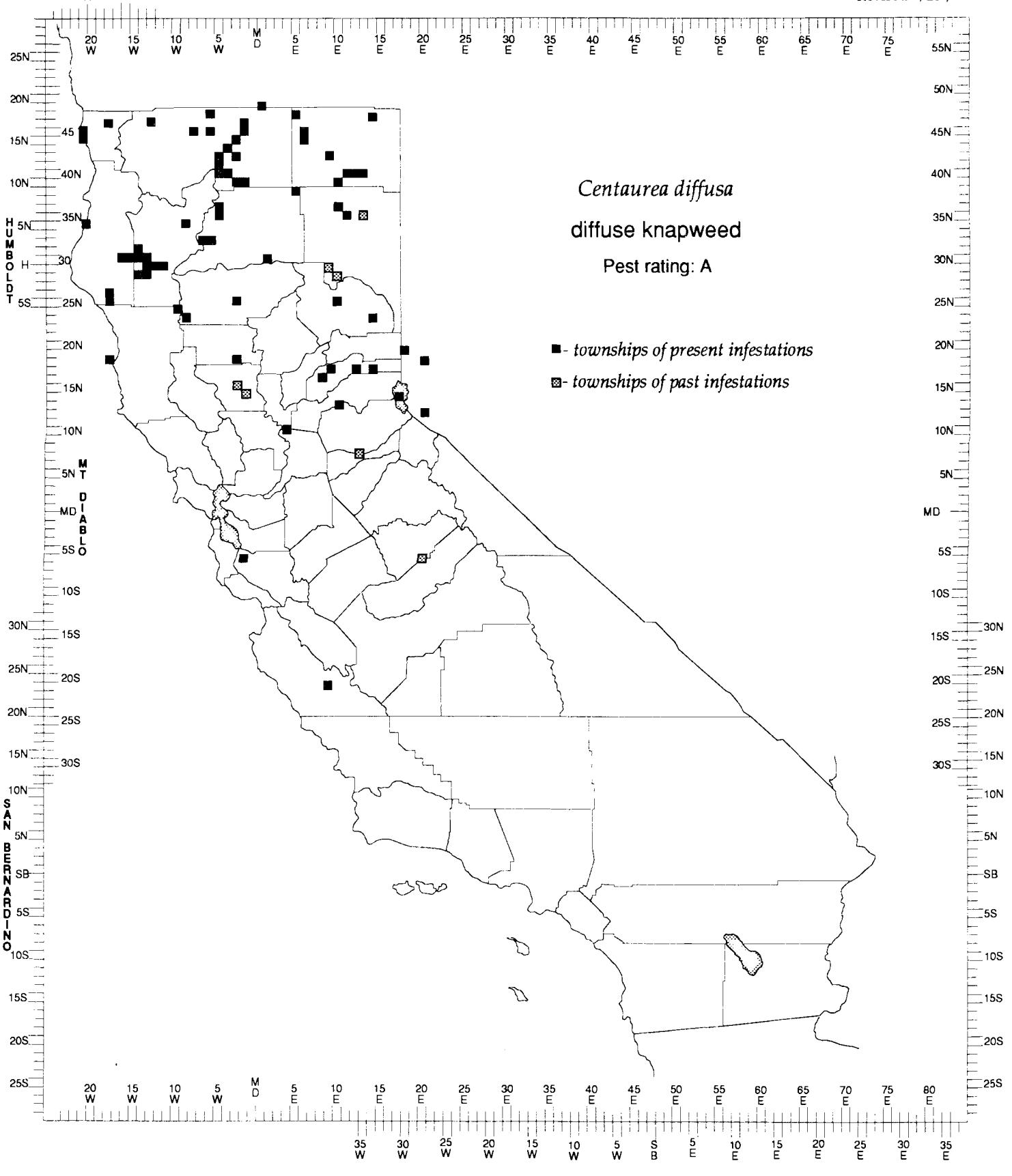
DETECTION MANUAL
D. T. 6:23a
Revised 7/28 /92



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DETECTION MANUAL
D. T. 6:37a
Revised 6/18/92