HYDRILLA IN LAKE COUNTY
Hydrilla found in Clear Lake.
Report in Botany Highlights.
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.

Funding for this publication is provided through the Cooperative Agricultural Pest Survey, Special Project #44 USDA-APHIS-PPQ

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The California Plant Pest and Disease Report, Volume 13, Numbers 3-4, was issued on September 30, 1994 and printed November 1994.

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HYDRILLA, *Hydrilla verticillata*, -(A)- Hydrilla has been found for the first time in Lake County. The following report was prepared by Ross O'Connell:

On August 1, 1994, Weed and Vertebrate Associate Biologist Robin Breckenridge and Lake County Inspector Chris Twohy found hydrilla in Clear Lake. Initially, the infestation appeared to be relatively confined to the southwest shore of the Upper Lake area, near Lakeport. Subsequent surveys found plants scattered along the south, west, and northern shores of Upper Lake. Small infestations were also located in two small marinas near Kono Tayee and one location near Buckingham Park in the Lower Arm of the Lake.

The first chemical treatment of the infestations was make the week of August 16th, using Komeen, a copper active aquatic herbicide. Two more treatments were made in early and late September, and a fourth treatment is scheduled in early November.

Currently, approximately 300 acres are being treated to eradicate this pest plant. The lake itself is over 43,000 surface acres which makes survey arduous and time consuming. Another problem with Clear Lake is that the lake is not clear, but has poor visibility due to algae and other aquatic weeds. Also, the hydrilla found in Clear Lake is the monoecious biotype, rather than the dioecious biotype that is found in the other California locations. Monoecious hydrilla is more tolerant of colder water and can produce many more turions (axial buds) than the dioecious biotype.

Additional information was prepared by Nate Dechoretz:

State and county biologists have been surveying this lake on a regular basis since 1976. Field conditions indicate this is a young infestation, probably less than two years old.

Water in Clear Lake empties into Cache Creek which flows through Lake and Yolo counties and provides irrigation water to the Yolo County Flood Control and Water Conservation District. During periods of high water flows, Cache Creek water enters the Yolo Bypass and eventually the Sacramento River.

Treatments continue to be applied for hydrilla in Shasta, Madera, Mariposa, Imperial, Yuba, and Calaveras counties. Even though treatments continue in these counties, the current infestations are dramatically reduced from initial levels.

The cover map illustrates the extent of the current infestation in Clear Lake. Morphological characteristics of hydrilla and another aquatic weed, elodea, are presented on the next page. On page 38 is the updated California distribution map for hydrilla.
NEW COUNTY RECORD

JOINTED GOATGRASS, *Aegilops cylindrica*, -(B)- A significant find of jointed goatgrass has been made in San Bernardino County. This new county record is an unusual location for this weed typically found in the colder, drier counties of northern California. The nearest previous records are from Santa Barbara County. The current map for jointed goatgrass is located on page 39.

Our State Botanist, Doug Barbe, has been busy and provided us with 15 other updated distribution maps located on pages 40-54.
Hydrilla verticillata
hydrilla
Pest rating: A

- townships of present infestations
- townships of past infestations
Aegilops cylindrica
jointed goatgrass
Pest rating: B

- townships of past or present infestations
Acroptilon repens
[=Centaurea repens]
Russian knapweed

Pest rating: B

- Townships of past or present infestations
Aegilops triuncialis
barb goatgrass
Pest rating: B

- townships of present infestations
Carduus acanthoides
plumeless thistle
Pest rating: A

- townships of present infestations
- townships of past infestations
Carduus nutans
musk thistle
Pest rating: A

- townships of past or present infestations
Centaurea calcitrapa
purple starthistle

Pest rating: B

- townships of present infestations
- townships of past infestations
Centaurea diffusa

diffuse knapweed

Pest rating: A

- townships of present infestations
- townships of past infestations
Centaurea maculosa
spotted knapweed
Pest rating: A

- townships of present infestations
- townships of past infestations
Chondrilla juncea
skeletonweed
Pest rating: A

- township of present infestations
- township of past infestations
Cirsium arvense
Canada thistle
Pest rating: B

- townships of present infestations
- townships of past infestations
Halogeton glomeratus
halogeton

Pest rating: A

- Townships of past or present infestations
**Isatis tinctoria**

dyer's woad

Pest rating: B

- Townships of past or present infestations
Linaria genistifolia ssp. dalmatica
[=Linaria dalmatica]
Dalmatian toadflax
Pest rating: A

- townships of present infestations
- townships of past infestations
Lythrum salicaria
purple loosestrife
Pest rating: B

- townships of present infestations
- townships of past infestations
**Polygonum cuspidatum**  
Japanese knotweed  
Pest rating: B

- townships of past or present infestations
Onopordum acanthium
Scotch thistle
Pest rating: A

- townships of present infestations
- townships of past infestations
ENTOMOLOGY HIGHLIGHTS

ERRATA

In the quarantine listings in the last issue [CPPDR 13(1-2):17] an "A" rated papaya fruit fly, *Toxotrypana curvicauda*, was reported to have come from Hawaii. The origin of this fly is unknown, but it probably came from Latin America where it is native.

F. Y. I.

After months of waiting, Africanized honey bee finally was detected in California for the first time on October 24. The find from the Blythe area was determined to be the hybrid Africanized honey bee by Scott Kinnee and Tom Eichlin at CDFA and was confirmed by the USDA, ARS, U. S. Bee Research Lab. Even though the discovery postdates this issue of the CPPDR, we felt it was important enough to note. Please look for a full report on this find and any future finds in the following issues.

FRUIT FLY DETECTION TRAPPING

The following lists represent the fruit fly finds for the summer:

**MEDITERRANEAN FRUIT FLY, Ceratitis capitata, -(A)-**

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Trap</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Bernardino</td>
<td>Upland</td>
<td>07/19</td>
<td>1/0</td>
<td>McPhail</td>
<td>apricot</td>
<td>Elliott</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>San Dimas</td>
<td>07/19</td>
<td>1/0</td>
<td>McPhail</td>
<td>peach</td>
<td>Kobziiff</td>
</tr>
<tr>
<td>Ventura</td>
<td>Somis</td>
<td>09/29</td>
<td>0/2</td>
<td>McPhail</td>
<td>fig</td>
<td>Enneking</td>
</tr>
</tbody>
</table>

**ORIENTAL FRUIT FLY, Bactrocera dorsalis, -(A)-**

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Trap</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Mateo</td>
<td>Millbrae</td>
<td>07/25</td>
<td>1/0</td>
<td>Jackson</td>
<td>apple</td>
<td>Garcia</td>
</tr>
<tr>
<td>San Diego</td>
<td>Oceanside</td>
<td>08/15</td>
<td>1/0</td>
<td>Jackson</td>
<td>fig</td>
<td>Ghebretnee</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>Milpitas</td>
<td>08/29</td>
<td>1/0</td>
<td>Jackson</td>
<td>peach</td>
<td>Filice</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>Verdugo City</td>
<td>09/06</td>
<td>1/0</td>
<td>Jackson</td>
<td>apple</td>
<td>Dunham</td>
</tr>
</tbody>
</table>
MEXICAN FRUIT FLY, *Anastrepha ludens*, -(A)-

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Trap</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Barbara</td>
<td>Santa Barbara</td>
<td>08/25</td>
<td>0/1</td>
<td>McPhail</td>
<td>sapote</td>
<td>Penate</td>
</tr>
<tr>
<td>San Diego</td>
<td>San Diego</td>
<td>09/29</td>
<td>1/0</td>
<td>McPhail</td>
<td>orange</td>
<td>Smith</td>
</tr>
</tbody>
</table>

GUAVA FRUIT FLY, *Bactrocera correcta*, -(A)-

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Trap</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>Huntington Park</td>
<td>08/02</td>
<td>1/0</td>
<td>Jackson</td>
<td>peach</td>
<td>de la Hoya</td>
</tr>
</tbody>
</table>

PEACH FRUIT FLY, *Bactrocera zonatus*, -(A)-

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Trap</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverside</td>
<td>Moreno Valley</td>
<td>09/13</td>
<td>1/0</td>
<td>Jackson</td>
<td>olive</td>
<td>Madiel</td>
</tr>
</tbody>
</table>

OTHER SIGNIFICANT TRAPPING

JAPANESE BEETLE, *Popillia japonica*, -(A)- Only two Japanese beetles were trapped in the last three months. The first was trapped on an ornamental shrub in Los Angeles, Los Angeles County. Pierce made the find on July 21. The second find was made by Myers at Oakland International Airport, Alameda County, on August 10.

GYPSY MOTH, *Lymantria dispar*, -(A)- This summer's gypsy moth finds are listed in the following table:

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>#M/F/Stage</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alameda</td>
<td>Berkeley</td>
<td>07/06</td>
<td>adult</td>
<td>elm</td>
<td>Myers</td>
</tr>
<tr>
<td>Orange</td>
<td>Anaheim</td>
<td>07/19</td>
<td>adult</td>
<td>magnolia</td>
<td>Salazar</td>
</tr>
<tr>
<td>Napa</td>
<td>Angwin</td>
<td>07/19</td>
<td>adult</td>
<td>oak</td>
<td>Anderson</td>
</tr>
<tr>
<td>Sacramento</td>
<td>Citrus Heights</td>
<td>07/20</td>
<td>adult</td>
<td>lawn</td>
<td>Neal</td>
</tr>
<tr>
<td>Shasta</td>
<td>Cottonwood</td>
<td>07/21</td>
<td>adult</td>
<td>?</td>
<td>Kjos</td>
</tr>
<tr>
<td>Nevada</td>
<td>Grass Valley</td>
<td>08/02</td>
<td>adult</td>
<td>cedar</td>
<td>Knappen</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>Monte Sereno</td>
<td>08/04</td>
<td>adult</td>
<td>?</td>
<td>Brian</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>Encino</td>
<td>08/09</td>
<td>adult</td>
<td>?</td>
<td>Cardenas</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Santa Rosa</td>
<td>08/15</td>
<td>1/0</td>
<td>oak</td>
<td>Stewart</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>Los Altos Hills</td>
<td>08/15</td>
<td>1/0</td>
<td>eucalyptus</td>
<td>Walker</td>
</tr>
</tbody>
</table>
NEW STATE RECORDS

ARTICHOKE FLY, *Terellia fuscicornis*, -(Q)- An exotic fly (Tephritidae), *Terellia fuscicornis* (Loew), native to the Mediterranean Basin (southern Europe, northern Africa) has been found in California. Although often referred to as "fruit flies," such as Oriental fruit fly, many members of this Diptera family (Tephritidae) feed in flowers and seed heads of the sunflower family Asteraceae (formerly Compositae). The first collections were made in mid-July from artichoke seed fields located near Tracy, *San Joaquin* County, and Chowchilla, *Madera* County. The following report was prepared by Dick Penrose:

Distribution and Hosts in California

The first collections were made in mid-July from artichoke seed fields located near Tracy, *San Joaquin* County, and Chowchilla, *Madera* County. Specimens were submitted to CDFA for identification via the *San Joaquin* and *Monterey County* Agricultural Commissioner Offices respectively. Concurrent with these collections, Jere Schweikert, an entomologist employed by the California Academy of Sciences, San Francisco, observed and collected adults on cardoon flowers at two locations in southern *Sonoma* County. After an unsuccessful attempt to identify these flies using Foote, Blanc, and Norrbom’s recently published “Handbook of the Fruit Flies of America North of Mexico,” Jere consulted foreign taxonomic works and concluded that the flies were *Terellia fuscicornis*, a European species. After this realization, Jere collected additional specimens, including larvae from the original find site in *Sonoma* County, and hand carried them to Sacramento where F. "Louie" Blanc confirmed Jere’s identification. On August 1, Louie brought these specimens to CDFA and to the attention of biosystematist Karen Corwin, who then identified the collections from seed fields in *San Joaquin* and *Madera* counties.

Since these initial collections, surveys conducted by CDFA staff and detection entomologists in cooperation with county agricultural commissioner personnel have revealed that *T. fuscicornis* is widespread around the San Francisco Bay Region, especially in areas where artichoke grows as an escape or where artichoke thistle is of common occurrence. Currently (as of August 19, 1994), this tephritid is known to be present in feral hosts in the following counties: *Sonoma*, *Napa*, *San Mateo*, Solano, Contra Costa, Santa Clara, *Sacramento*, and *Santa Cruz*. Since all currently available material from *San Joaquin* and *Madera* counties came from commercial plantings, the question of whether the fly is established in these regions remains unanswered. Based on currently available distributional data *T. fuscicornis* is probably also present (at least) in *Marin* and *Alameda* counties. Surveys need to be conducted in coastal counties both north and south of the Bay Area to determine the extent of the fly’s range within the state.

Known California host plants include: *Cynara scolymus* (globe artichoke) and *C. cardunculus* (cardoon, artichoke thistle). Empty pupal cases which appear to be those of *T. fuscicornis* have also been recovered from the dried flower heads of milk thistle, *Silybum marianum*, near Petaluma.
These observations and the verification of the fly’s presence at least two years ago in Santa Clara County, suggests that *T. fuscicornis* is probably not a recent emigrant to California.

**Economic Impact**

*T. fuscicornis* has been reported as a pest of globe artichoke in Greece and Turkey. Field experiments testing host choice of candidate biological control agents conducted recently near Thermi, Greece, demonstrated that *T. fuscicornis* is capable of developing large populations on unprotected flower heads. During this experiment, nearly 4,800 adults were reared from 41 flower heads of artichoke varieties grown commercially in California. This gives a population density of 116,500 adults per 1,000 flower heads.

Currently, there is little artichoke seed grown in California but according to Neil DeVos, Elkhorn Research and Development, this situation may change dramatically in the future. Because of cost factors, pest problems (primarily artichoke plume moth), and the prospective loss of pesticide registrations, California artichoke growers are interested in replacing the current practice of vegetative propagation with direct seeding. Should this transition be attempted, *T. fuscicornis* could become a significant pest requiring the development of management strategies for seed producers.

In contrast to seed production, preliminary observations suggest that this fly may be of little consequence to commercial artichoke producers since it appears to attack the plant only after the artichoke heads have begun to bloom.

While this fly may be considered a pest by the artichoke producers it is widely established and larvae are moderately abundant in the seed heads of artichoke thistle, a “B” rated weed. Consequently, it may be or prove to be, a beneficial biological control agent for this and perhaps other exotic thistles.

**Recommendations**

This insect's widespread distribution, association with one (and perhaps more) generally distributed weedy thistles, and potential as a biological control agent preclude its extirpation from California. Therefore, CDFA Pest Detection/Emergency Projects Branch (PD/EP) should not attempt to eradicate/control the species. Future activities concerning this fly should be the primary responsibility of Biological Control personnel in the Integrated Pest Control (IPC) Branch. PD/EP can continue to assist in delimitation, but investigations concerning impacts on host thistles, fly bionomics, behavior, and host specificity (all of which could help growers develop management strategies) should be carried out by, or under, the supervision of IPC.

T. fuscicornis has been given a "Q" rating pending survey results, a literature search, and other information gathering activities. Preliminary observations suggest that this tephritid may be of little concern to commercial artichoke growers since egg laying appears to occur only after heads have begun to bloom. The emergence of an average of over 100 adults per artichoke head from plants grown in test plots in Greece does suggest, however, that this species has the potential of causing serious damage to unprotected commercial fields planted for seed.

The following list summarizes the initial finds of the artichoke fly in California:

<table>
<thead>
<tr>
<th>County</th>
<th>City</th>
<th>Date</th>
<th>Stage</th>
<th>Host</th>
<th>Collector</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Joaquin</td>
<td>Tracy</td>
<td>07/15</td>
<td>adult</td>
<td>C. scolymus</td>
<td>Barnes</td>
</tr>
<tr>
<td>Madera</td>
<td>Chowchilla</td>
<td>07/20</td>
<td>adult</td>
<td>C. scolymus</td>
<td>Oliver</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Sonoma</td>
<td>07/23</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Schweikert</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Sonoma</td>
<td>07/24</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Schweikert</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Sonoma</td>
<td>07/30</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Schweikert</td>
</tr>
<tr>
<td>Solano</td>
<td>Vallejo</td>
<td>08/02</td>
<td>larva/pupa</td>
<td>C. cardunculus</td>
<td>Bettiga</td>
</tr>
<tr>
<td>San Mateo</td>
<td>Redwood City</td>
<td>08/04</td>
<td>adult</td>
<td>C. scolymus</td>
<td>Finley</td>
</tr>
<tr>
<td>Solano</td>
<td>Vallejo</td>
<td>08/08</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Lubinski</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Petaluma</td>
<td>08/08</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Penrose</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Schellville</td>
<td>08/08</td>
<td>adult/pupa</td>
<td>C. scolymus</td>
<td>Lubinski</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>San Jose</td>
<td>08/09</td>
<td>adult</td>
<td>automobile</td>
<td>Clark</td>
</tr>
<tr>
<td>Mendocino</td>
<td>Talmage</td>
<td>08/09</td>
<td>pupa</td>
<td>C. cardunculus</td>
<td>Xerogeanes</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>Richmond</td>
<td>08/10</td>
<td>adult</td>
<td>C. cardunculus</td>
<td>Takahashi</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>Moraga</td>
<td>08/10</td>
<td>adult</td>
<td>C. cardunculus</td>
<td>Takahashi</td>
</tr>
<tr>
<td>Sacramento</td>
<td>Isleton</td>
<td>08/10</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Penrose</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>Watsonville</td>
<td>08/16</td>
<td>adult</td>
<td>C. cardunculus</td>
<td>Takahashi</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>San Jose</td>
<td>08/18</td>
<td>?</td>
<td>C. cardunculus</td>
<td>Bingham</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>Santa Barbara</td>
<td>08/19</td>
<td>adult</td>
<td>inside house</td>
<td>Craig</td>
</tr>
<tr>
<td>Merced</td>
<td>Merced</td>
<td>08/25</td>
<td>?</td>
<td>C. cardunculus</td>
<td>Bingham</td>
</tr>
<tr>
<td>Alameda</td>
<td>Hayward</td>
<td>08/25</td>
<td>adult</td>
<td>C. cardunculus</td>
<td>Esquivel</td>
</tr>
<tr>
<td>San Mateo</td>
<td>Redwood City</td>
<td>08/30</td>
<td>adult/larva</td>
<td>C. cardunculus</td>
<td>Swanson</td>
</tr>
<tr>
<td>San Luis Obispo</td>
<td>Paso Robles</td>
<td>09/06</td>
<td>?</td>
<td>C. scolymus</td>
<td>Little</td>
</tr>
</tbody>
</table>
Map 1. *Terellia fuscicornis* distribution.
Figs. 2 & 3. *Terellia fuscicornis*. Fig. 2. Illustration of adult female. Fig. 3. Illustration of adult male. Taken from M. Martelli, *Reperti sulla Terellia fuscicornis* (Loew) (Diptera, Trypetidae).
**NEW STATE RECORDS Continued**

**FIG WASPS,** various species, -(Q)- Four species of wasps in two families of the Chalcidoidea that can be placed loosely in the context of "fig wasp" have been found for the first time in California. The collections were made by Dr. Jack Beardsley, formerly on the entomological staff at the University of Hawaii at Manoa, and now enjoying retirement in Arcadia, California. These wasps are associated with *Ficus microcarpa*, the Chinese or tropical banyan tree [also Asian laurel fig and, incorrectly, Cuban laurel (*Ficus retusa-nitida*). Dr. Beardsley had been studying these same wasps in Hawaii and has a manuscript in press dealing with their presence there. Like the finds in California, the presence of these and other fig wasps in Hawaii constituted new state records there. Dr. Beardsley’s manuscript will soon be published in the Proceedings of the Hawaiian Entomological Society, but he has graciously agreed to let us use his identifications and other information in order to report on his findings here in California.

These wasps have been collected over a period of months by Dr. Beardsley near his home in Arcadia, **Los Angeles** County. One species, *Odontofroggatia galili* Wiebes, has apparently been recorded from California previously, but not by this department. The new wasps include:

- *Eupristina (Parapristina) verticillata* Waterston (Agaonidae),
- *Odontofroggatia ishii* Wiebes (Agaonidae),
- *Walkerella microcarpae* Boucek(Agaonidae),
- *Sycophila* sp. (Eurytomidae).

The important species, *Eupristina verticillata*, is apparently the pollinator for the banyan tree. In Hawaii, according to Beardsley, the tree did not produce viable seeds or mature fruit. This wasp species was purposely introduced into Hawaii prior to 1938 as a pollinator in an effort to use the tree in reforestation programs. Unfortunately, the tree has become somewhat of a pest because it is now growing either too profusely or in unwanted places, particularly in rock walls and other masonry. This wasp and the tree now coexist in Florida, Bermuda, Mexico, Honduras, San Salvador, and Brazil as well as in California. Dr. Beardsley suggests that the tree may well become a problem in some of these areas as well.

The other species now in California apparently feed in the fruit of the banyan. The fruit are technically called "syconia," and the wasps which feed in the fruit are called "sycophiles." The actual relationships of the wasps in the fruit are not completely known. As many as 22 different species were supposedly reared from *F. microcarpa* alone, and there are other wasps associated
with other species of *Ficus*; the blastophaga wasp of common fig is an example. Some of the species are not fruit feeders, but are probably parasites and hyperparasites of the other sycophiles. It is believed by Dr. Beardsley that there are probably other species here in California also.

Dr. Beardsley suggests that the wasps in this group are attracted readily to lights at night. Since many airplanes that fly the Pacific circuit are loaded under lights at night, it is reasonable to assume that the wasps can be transported in this manner. It is also possible that fruit could readily drop onto cargo containers and dunnage which is then off-loaded at other destinations where the banyan occurs.

According to Stange and Knight (1987), the Agaonidae can be readily recognized by a rasp-like appendage on the mandibles, a strongly grooved head, and a short hind tibia which is less than one-half the length of hind femur and hind tarsus. In *Eupristina*, the moniliform antennal segments have setae that are several times the length of the antennal segment itself (Fig. 4), the fore femur is greatly enlarged, and the head is strongly flattened dorsoventrally. The males are wingless. A line drawing is provided for *Odontofroggatia ishii* on the next page.

**Fig. 4. Eupristina antenna showing elongated setae.** Illustration taken from Stange and Knight, Fig. pollinating wasps of Florida, Florida Dept. Agric. and Consumer Serv., Div. Plant Industry, Entomol. Circ. 296. 4 p., 1980.

**Pertinent References:**


Ishii, T. 1934. Fig chalcidoids of Japan. Kontyu 8:84-102.


Timberlake, P. H. 1922. Note on insects from figs of *Ficus retusa* at Hong Kong. Proc. Hawaii. Entomol. Soc. 5:5.


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NEW COUNTY RECORDS

BLUEGUM PSYLLID, *Ctenarytaina eucalypti*, -(C)- First found in 1991, it has spread far and wide. With the recent find in Eureka, Humboldt County, the insect now occurs in all coastal California counties except Del Norte. The new record was collected by Pete Haggard on July 29.

EUCALYPTUS PSYLLID, *Blastopsylla occidentalis*, -(C)- Another recently introduced eucalyptus feeder, this psyllid has been found for the first time in Sacramento County. The collection was made in Sacramento from *Eucalyptus nicholi* by former Department of Food and Agriculture employee Stan Mather on August 20.

DOUGLAS FIR MEALYBUG, *Puto profusus*, -(C)- This mealybug is a native species that was first found and described from specimens collected in 1933 at Carrville, Trinity County. The only other known location was a collection made in 1964 at Prattville, Plumas County. The third known collection is a new record for Tulare County. The collection was made at the 6,000 foot level in the Greenhorn Mountains on June 18 by Tom Schackman. The Tulare County collection was from sugar pine, *Pinus lambertiana*, but it is also found on Abies species and on Douglas fir, *Pseudotsuga taxifolia*.

OTHER SIGNIFICANT FINDS

Populations of two species of Homoptera have been especially heavy on native oak trees this year. Numerous samples have been submitted to the laboratory this past season from various areas in northern and central California. It is not known what has caused the outbreaks.

WOOLLY OAK APHID, *Stegophylla* sp. -(C)- At least 4 collections were made at: Quincy, Plumas County (2), Los Altos, Santa Clara County and Gridley, Butte County.

OAK PHYLLOXERA, *Phylloxera* sp. -(C)- At least 5 collections were made at: Menlo Park, San Mateo County; Marysville, Yuba County; San Diego, San Diego County; Fresno, Fresno County and Davis, Yolo County.

SIGNIFICANT FINDS IN OTHER STATES AND COUNTRIES

BLACK VINE THRIPS, *Retithrips syriacus*, -(Q)- This pest of grapevines and other crop pests has recently been found in Florida.

Economic Importance: Although the species is principally a pest of grapevines, it has caused severe loss to leaves and bolls of cotton in southern India, Malawi, and Tanzania when conditions are hot and dry. Black vine thrips sucks sap from the leaves and mars the fruit of many plants. As a result, defoliation and shriveling occur. In the Near East, where this important thrips is best known as a pest of grapes, trees and shrubs, serious infestations of castorbeans have been recorded. *R. syriacus* damage generally hinders the normal development of the host plants.

Distribution: Brazil, Egypt, Ghana, India, Israel, Kenya, Lebanon, Libya, Malawi, Somalia, Sudan, Syria, Tanzania, and Uganda. (See Map 2 on next page.)

Hosts: The host list of more than 50 species includes grape, cotton, pear, plum, quince, rose, pecan, walnut, persimmon, avocado, castorbean, coffee, myrtle, vegetables and other plants.

Life History and Habits: Bionomics in Israel are as follows: Mating occurs shortly after emergence, but sometimes reproduction is parthenogenetic. The female lays a maximum of 80 eggs usually in the leaf tissue, but occasionally on the leaf surface. The egg stage lasts 10-30 days. Larvae do not wander about after hatching but feed immediately, usually in groups. As the larva feeds, it carries a droplet of feces on the tip of the abdomen. Often, the collection of feces is larger than the insect. When the material becomes too heavy, the larva deposits the drop on a leaf and a new droplet begins to form. The older the larva, the smaller the drops become. Both larvae and pupae often arrange themselves in groups of 6-50 in a circle with the heads toward the center. The larval stage lasts 6-35 days and pupal stage 2-21 days. A generation may be completed in little more than 3 weeks in late June to early September. During this time 4 generations usually occur and 3 others occur from late September to May. Adults overwinter and oviposit during warm periods. Mortality is high during the winter generations. The most favorable temperature range for development of the black vine thrips is 77-86°F. Temperatures above 98°F may be lethal to all stages.

Description: ADULT - Dark, blackish brown, with appendages lighter brown, tarsi and 5th antennal segment pale. Newly emerged adults lighter and redder. Body about 1.5 mm. long in female, 1.3 mm. in male, heavily reticulate, with no visible bristles. Antennae 8-segmented, short, with terminal style slender. Ocellar hump pronounced, overhanging frontal costa. Head and prothorax small, decidedly wider than long. Pterothorax, or wing bearing thoracic segments, of female very stout, of male stout. Abdomen stout, as broad as pterothorax at base, tapering to narrow apex. Forewings short (about 0.9 mm. in female, 0.7 mm. in male), broad; without visible bristles, with large

thickened area in basal part of fore vein and 3 smaller thickened areas distally along costal margin. PUPA - Less brilliant red than larva. Entire body truncate with sensory bristles. Wing pads longer than in prepupa. Eyes large, compound, resembling those of adult. LARVA - Vermilion red with yellow head and appendages. First 4 segments of antenna large and bulky but last 3 filiform.

**Synonymy:** *Retithrips syriacus* (Mayet) has been recorded as *Heliothrips syriacus* Mayet, *Retithrips aegyptiacus* Marchal, *Dictyothrips zanoniana* Del Guercio and *Stylothrips bondari* Morgan.

**Selected References:**

Adult illustration from Del Guercio; antennae and pupal pad from Rivnay.

**BOLL WEEVIL, Anthonomus grandis,** -(A)- Boll weevil was found in the San Luis area in Mexico on August 18. A total of 131 weevils have now been found. Three fields were treated with ULV malathion. The area is located about 12 miles south of the town of Algodones and the U. S. border, near Yuma. A quick response was made by the Imperial County Agricultural Commissioner’s Office and CDFA staff to deploy boll weevil traps in cotton growing areas and along transportation routes in Southern California.

**EXCLUSION**

The list on the following page records some of the uncommon and unusual pest interceptions made during the summer of 1994. The list is developed to keep quarantine inspectors and county officials informed on what pests are being intercepted.
## "A", "B", and "Q" Rated Arthropods and Mollusks Intercepted in Quarantine June - September 1994

<table>
<thead>
<tr>
<th>Rating</th>
<th>Species</th>
<th>Common Name</th>
<th>Date</th>
<th>Origin</th>
<th>County</th>
<th>Host Description</th>
<th>Collector(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>Rhizoecus hibisci</td>
<td>a root mealybug</td>
<td>06/06/94</td>
<td>?</td>
<td>LAX</td>
<td>Caryota sp.</td>
<td>Papilli</td>
</tr>
<tr>
<td>Q</td>
<td>Coccus acutissimus</td>
<td>slender soft scale</td>
<td>06/07/94</td>
<td>Hawaii</td>
<td>ALA</td>
<td>palm/foliage</td>
<td>Seslowe</td>
</tr>
<tr>
<td>Q</td>
<td>Rachiplusia ou</td>
<td>a plusiine looper</td>
<td>06/07/94</td>
<td>Ohio</td>
<td>LAX</td>
<td>aircraft (cargo door)</td>
<td>Pierce</td>
</tr>
<tr>
<td>Q</td>
<td>Rhizoecus hibisci</td>
<td>a root mealybug</td>
<td>06/14/94</td>
<td>Hawaii</td>
<td>ORA</td>
<td>Pheonix roebelenii</td>
<td>Fernandez</td>
</tr>
<tr>
<td>Q</td>
<td>Diploptera punctata</td>
<td>pacific beetle cockroach</td>
<td>06/14/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>automobile</td>
<td>Jackson</td>
</tr>
<tr>
<td>Q</td>
<td>Elimaea punctifera</td>
<td>narrow winged katydid</td>
<td>06/14/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>automobile</td>
<td>Jackson</td>
</tr>
<tr>
<td>Q</td>
<td>Adoretus sinicus</td>
<td>chinese rose beetle</td>
<td>06/15/94</td>
<td>Hawaii</td>
<td>SBD</td>
<td>flowers - cut</td>
<td>Clark</td>
</tr>
<tr>
<td>Q</td>
<td>Isodes ricinus</td>
<td>an ixodid tick</td>
<td>06/16/94</td>
<td>?</td>
<td>SON</td>
<td>human</td>
<td>Correio</td>
</tr>
<tr>
<td>Q</td>
<td>Zachryisia provisoria</td>
<td>a snail</td>
<td>06/16/94</td>
<td>Florida</td>
<td>LAX</td>
<td>Ficus benjamina</td>
<td>Banta</td>
</tr>
<tr>
<td>Q</td>
<td>Rhizoecus caladii</td>
<td>a soil mealybug</td>
<td>06/22/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>Raphis sp.</td>
<td>Papilli</td>
</tr>
<tr>
<td>Q</td>
<td>Zachryisia provisoria</td>
<td>a snail</td>
<td>06/22/94</td>
<td>Florida</td>
<td>LAX</td>
<td>Dracaena sp.</td>
<td>Banta</td>
</tr>
<tr>
<td>Q</td>
<td>Zachryisia provisoria</td>
<td>a snail</td>
<td>06/27/94</td>
<td>Florida</td>
<td>LAX</td>
<td>?</td>
<td>Hightower</td>
</tr>
<tr>
<td>Q</td>
<td>Coccus capparidis</td>
<td>capparis soft scale</td>
<td>06/30/94</td>
<td>Hawaii</td>
<td>SJQ</td>
<td>Schefflera arboricola</td>
<td>Williamson</td>
</tr>
<tr>
<td>Q</td>
<td>Sybra alternans</td>
<td>a longhorned beetle</td>
<td>?</td>
<td>Hawaii</td>
<td>LAX</td>
<td>automobile</td>
<td>Jackson</td>
</tr>
<tr>
<td>Q</td>
<td>Hemiberlesia diffinis</td>
<td>diffinis scale</td>
<td>07/07/94</td>
<td>Florida</td>
<td>ORA</td>
<td>Ficus benjamina</td>
<td>Fernandez</td>
</tr>
<tr>
<td>Q</td>
<td>Homalodisca coagulata</td>
<td>glassy-winged sharpshooter</td>
<td>07/08/94</td>
<td>SBA</td>
<td>SBA</td>
<td>Bauhinia varigata alba</td>
<td>Reeves</td>
</tr>
<tr>
<td>Q</td>
<td>Anomala sp.</td>
<td>oriental beetle</td>
<td>07/12/94</td>
<td>?</td>
<td>ALA</td>
<td>aircraft</td>
<td>Tran</td>
</tr>
<tr>
<td>A</td>
<td>Apis m. &quot;Africanized&quot;</td>
<td>africanized honey bee</td>
<td>07/12/94</td>
<td>Guatemala</td>
<td>LAX</td>
<td>lashing eye</td>
<td>Pearson</td>
</tr>
<tr>
<td>Q</td>
<td>Rhizoecus hibisci</td>
<td>a root mealybug</td>
<td>07/13/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>Raphis sp.</td>
<td>Mehraban</td>
</tr>
<tr>
<td>Q</td>
<td>Rhizoecus hibisci</td>
<td>a root mealybug</td>
<td>07/13/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>Ravena rivularis</td>
<td>Banta</td>
</tr>
<tr>
<td>Q</td>
<td>Philephedra tuberculosa</td>
<td>a soft scale</td>
<td>07/13/94</td>
<td>Costa Rica</td>
<td>SJQ</td>
<td>Codiaeum sp.</td>
<td>Reed</td>
</tr>
<tr>
<td>Q</td>
<td>Lineodes sp.</td>
<td>a pyralid moth</td>
<td>07/13/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>produce</td>
<td>Herrera</td>
</tr>
<tr>
<td>Q</td>
<td>Protoctia fusca</td>
<td>mango flower beetle</td>
<td>07/13/94</td>
<td>Kentucky</td>
<td>SFO</td>
<td>automobile</td>
<td>Olmsted</td>
</tr>
<tr>
<td>Q</td>
<td>Paleocallidium rufipes</td>
<td>a longhorned beetle</td>
<td>07/14/94</td>
<td>?</td>
<td>SFO</td>
<td>dunnage</td>
<td>Olmsted</td>
</tr>
<tr>
<td>Q</td>
<td>Araecerus fasciculatus</td>
<td>coffee bean weevil</td>
<td>07/18/94</td>
<td>?</td>
<td>SBA</td>
<td>dry goods</td>
<td>Tingos</td>
</tr>
<tr>
<td>Q</td>
<td>Camponotus abdominalis</td>
<td>an ant</td>
<td>07/19/94</td>
<td>Florida</td>
<td>SCL</td>
<td>Spathiphyllum sp.</td>
<td>Loux</td>
</tr>
<tr>
<td>Q</td>
<td>Aleurocerus palmae</td>
<td>palm whitefly</td>
<td>07/19/94</td>
<td>Texas</td>
<td>SAC</td>
<td>Cycas circinalis</td>
<td>Miller</td>
</tr>
<tr>
<td>Q</td>
<td>Saphonia rufofascia</td>
<td>a leafhopper</td>
<td>07/28/94</td>
<td>Hawaii</td>
<td>BUT</td>
<td>Cordyline terminalis</td>
<td>Ewing</td>
</tr>
<tr>
<td>Q</td>
<td>Anoplolepis longipes</td>
<td>longlegged ant</td>
<td>07/28/94</td>
<td>Hawaii</td>
<td>BUT</td>
<td>Cordyline terminalis</td>
<td>Ewing</td>
</tr>
<tr>
<td>Q</td>
<td>Geococcus coffeae</td>
<td>a soil mealybug</td>
<td>07/28/94</td>
<td>Hawaii</td>
<td>LAX</td>
<td>Raphis sp.</td>
<td>Sium</td>
</tr>
<tr>
<td>Q</td>
<td>Metaxaglaeia viatica</td>
<td>a noctuid moth</td>
<td>08/20/94</td>
<td>Florida</td>
<td>SMT</td>
<td>houseplants</td>
<td>Rocha</td>
</tr>
<tr>
<td>Q</td>
<td>Incisitermes immigrans</td>
<td>a termite</td>
<td>08/22/94</td>
<td>Hawaii</td>
<td>SJQ</td>
<td>wood crates</td>
<td>Carey</td>
</tr>
</tbody>
</table>
BORDER STATIONS

MEXICAN FRUIT FLY, *Anastrepha ludens, -(A)-* Live Mexican fruit fly larvae were found at the Blythe Station in commercial mangoes from Mexico. The find was made on June 24 by Mena. Also, dead Mexican fruit fly larvae were discovered in mangoes from Oregon on June 25. Adams made the find at the Smith River Station.

TROPICAL FRUIT PESTS: Foreign fruits (Asian) have been intercepted from vehicles entering California from Canada (or WA, OR). A significant percentage of this produce was found to be infested with live insect pests. These collections are particularly significant because, first, this fruit is allowed free export into Canada with no quarantine restrictions because tropical pest species would not survive in these northern latitudes. Second, these finds have been extremely important because some of the fruit entering California is carrying exotic fruit fly species. The following table outlines some of the important finds:

<table>
<thead>
<tr>
<th>Pest</th>
<th>Station</th>
<th>Date</th>
<th>Origin</th>
<th>Collector</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ant Pest - <em>Hypoclinea sp.</em></td>
<td>HO</td>
<td>08/19</td>
<td>Washington</td>
<td>McFall</td>
<td>longans</td>
</tr>
<tr>
<td>Fruit Flies - Diptera Eggs</td>
<td>HO</td>
<td>08/29</td>
<td>Canada</td>
<td>Calvery</td>
<td>longans</td>
</tr>
<tr>
<td>Fruit Fly Eggs - <em>Bactrocera sp.</em></td>
<td>HO</td>
<td>07/19</td>
<td>Washington</td>
<td>Johnson</td>
<td>longans</td>
</tr>
<tr>
<td>Fruit Fly Larvae - Acalyptratae</td>
<td>HO</td>
<td>07/17</td>
<td>Oregon</td>
<td>Calvery</td>
<td>litchi nits</td>
</tr>
<tr>
<td>Leaf Miner Moths - Gracillariidae larvae</td>
<td>HO</td>
<td>06/29</td>
<td>Oregon</td>
<td>Middleton</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/06</td>
<td>Oregon</td>
<td>Pastell</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/09</td>
<td>Washington</td>
<td>Ramsey</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/10</td>
<td>Canada</td>
<td>Hirsch</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/15</td>
<td>Oregon</td>
<td>Gamlin</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/15</td>
<td>Canada</td>
<td>Calvery</td>
<td>litchi nits</td>
</tr>
<tr>
<td>Longan Scale - <em>Thysanofiorinia nepheii</em></td>
<td>HO</td>
<td>07/04</td>
<td>Washington</td>
<td>Calvery</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/06</td>
<td>Oregon</td>
<td>Pastell</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/17</td>
<td>Canada</td>
<td>Zavala</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/18</td>
<td>Oregon</td>
<td>Calvery</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/18</td>
<td>Oregon</td>
<td>Calvery</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/21</td>
<td>Canada</td>
<td>Ramsey</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/21</td>
<td>Canada</td>
<td>Ware</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/21</td>
<td>Canada</td>
<td>Ware</td>
<td>litchi nits</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/22</td>
<td>Canada</td>
<td>Ware</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/22</td>
<td>Washington</td>
<td>Brown</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/28</td>
<td>Canada</td>
<td>Hirsch</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>07/31</td>
<td>Canada</td>
<td>Baker</td>
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<tr>
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<td>08/02</td>
<td>Canada</td>
<td>Kirby</td>
<td>longans</td>
</tr>
<tr>
<td></td>
<td>HO</td>
<td>08/14</td>
<td>Washington</td>
<td>Zavala</td>
<td>longans</td>
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<tr>
<td></td>
<td>HO</td>
<td>08/17</td>
<td>Washington</td>
<td>Smith</td>
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</tr>
<tr>
<td></td>
<td>HO</td>
<td>08/17</td>
<td>Canada</td>
<td>Hirsch</td>
<td>longans</td>
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<tr>
<td></td>
<td>HO</td>
<td>08/19</td>
<td>Washington</td>
<td>Ramsey</td>
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<tr>
<td></td>
<td>HO</td>
<td>08/19</td>
<td>Washington</td>
<td>McFall</td>
<td>longans</td>
</tr>
<tr>
<td>Mango Scale - <em>Radionaspis indica</em></td>
<td>SM</td>
<td>07/08</td>
<td>Oregon</td>
<td>Adams</td>
<td>mangoes</td>
</tr>
<tr>
<td>Mealybug - <em>Paracoccus nr. melanescus</em></td>
<td>HO</td>
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PLANT PATHOLOGY HIGHLIGHTS

Potato (Common) Scab

by

Dan Opgenorth
CDFA Plant Bacteriologist

Potato tubers with symptoms of common scab were recently submitted to our laboratory for diagnosis (Fig. 8). The common potato scab disease is not frequently observed today because fewer of the smooth skinned potato varieties are grown. The more popular russet potato varieties have considerable resistance, and improvement programs have reduced the use of infected seed. Symptoms can be variable depending on the species or strain of the pathogen and the potato variety involved. Russet scab consists of a superficial cork-like layer; raised scab is erumpent and usually 1-2 mm. high; pitted scab causes lesions up to 7 mm. deep in the tuber. The disease is unsightly, causing a reduction in grade and reduced marketability. In very severe cases of deep scab, a considerable amount of paring waste is usually encountered. Scab develops on tubers in the field while they set and enlarge, but not after harvest or in storage. However, the lesions may provide entry for other storage diseases such as soft rot.

Potato scab is caused by *Streptomyces scabies*. This bacterium grows in chains forming fine wispy filaments when cultured on potato dextrose agar (Fig. 9). While the culture may resemble a fungus, the biochemical and cell wall characteristics are like bacteria. This pathogen is a soil inhabitant and can also cause scab-like lesions on beets, radish, rutabaga, turnip, carrot and parsnip. The pathogen is an opportunist and will attack many crops. Once established in a field, it is almost impossible to eradicate.

Common scab of potato usually is most severe in soils having a high amount of organic matter, especially those that are heavily manured. Liming of soil has increased the incidence of disease while the addition of sulfur to lower the pH decreases severity. The addition of manganese and phosphorus also decreases disease severity. Cultural methods used to prevent severe outbreaks include clean seed programs, long field rotations, resistant varieties, and adequate soil moisture while potatoes form.

References:
Integrated Pest Management for Potatoes in the Western United States, University of California, Publication 3316, 1986.
Fig. 8. Symptoms of common scab on a smooth red skinned potato variety.

Fig. 9. Culture of *Streptomyces scabies* growing on potato dextrose agar.
AN AWL NEMATODE, Dolichodorus aquaticus, -(Q)- An awl nematode was identified for the first time in California from an aquatic plant nursery in San Diego County. It was from a Thala sp. growing in a pond in Chula Vista. The complete identification is the result of a special study by John Chitambar in cooperation with Pat Nolan of the Agricultural Commissioner's Office. On March 24, 1994, only a partial identification of a Dolichodorus sp. similar to D. heterocephalus, an "A" rated pest, was possible from larval specimens recovered from a sample submitted to the county office by the owner.

EXCLUSION

AN AWL NEMATODE, Dolichodorus sp., -(Q)- An awl nematode was identified from a Florida shipment of Ficus benjamina plants for a Cardiff nursery in San Diego County. Pat Nolan of the Agricultural Commissioner's Office made both the initial identifications.

A BURROWING NEMATODE, Radopholus similis, -(A)- A burrowing nematode was identified from a Fallbrook nursery in San Diego County. The infestation includes 350 Philodendron plants.

A BURROWING NEMATODE, Radopholus sp., -(Q)- This nematode was identified from a Florida shipment of eight maranta plants for a Carlsbad nursery in San Diego County. The initial identification was made by Pat Nolan.

A DAGGER NEMATODE, Xiphinema sp., -(Q)- A dagger nematode was identified from one of six samples of Bucida buceras plants from Florida at a Salinas shipping mall in Monterey County.