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Inspection
Service



White Striped Fruit Fly Cooperative Eradication Program

Los Angeles County, California

Environmental Assessment July 2009

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Agency Contact:

Wayne Burnett
Domestic Coordinator
Fruit Fly Exclusion and Detection Programs
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 137
Riverdale, MD 20737-1236

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I. Need for the Proposal

The white striped fruit fly, *Bactrocera albistrigata* (de Meijere), is a destructive agricultural pest in many parts of Asia and Oceania (NPAG, 2009). It has a history of being an important economic pest of tropical and subtropical fruits in India, Malaysia, Singapore, Thailand, and Australia. The genus *Bactrocera* is listed in the APHIS Pest Identification Database as reportable/actionable, and on the APHIS Offshore Pest Information System “B” List (NPAG, 2009). The white striped fruit fly (WSFF) has recently been detected for the first time in the United States. Between July 9 and July 21, 2009, six adult WSFF were trapped in the Los Angeles Basin area. Additional flies may be found in the future.

WSFF has a reported host range of fruits and vegetables in plant families including, but not necessarily limited to:

- Anacardiaceae: *Mangifera indica* (mango),
- Annonaceae: *Polyalthia longifolia*,
- Apocynaceae: *Neisosperma oppositifolium*,
- Clusiaceae: *Calophyllum inophyllum* (Alexandrian laurel),
- Combretaceae: *Terminalia catappa* (tropical almond) and *Terminalia procera* (Singapore almond),
- Flacourtiaceae: *Scolopia spinosa*,
- Meliaceae: *Aglaia argentea*,
- Moraceae: *Artocarpus heterophyllus* (jackfruit),
- Myrtaceae: *Psidium guajava* (guava), *Syzygium aqueum* (watery roseapple), *Syzygium aromaticum* (clove), *Syzygium jambos* (rose apple), *Syzygium malaccense* (Malayapple), *Syzygium samarangense* (water apple), and *Syzygium* sp.,
- Rubiaceae: *Guettarda speciosa* (beach gardenia),
- Sapotaceae: *Mimusops elengi* (Spanish cherry), and
- Verbenaceae: *Gmelina elliptica* (NPAG, 2009).

Four male and two female WSFF were captured in traps located in peach, lemon, nectarine, ornamental plum, calomondin/kumquat, and sapote plantings in Los Angeles County. *Bactrocera* species are known to infest conditional hosts outside their normal host range, depending on circumstances (NPAG, 2009).

The method of introduction of WSFF into the United States is still being determined. Introductions of other *Bactrocera* species to California have occurred because infested fruits and vegetables were brought across its border without inspection. Because of the species’ rapid population growth and potential for damage, and the proximity of many potential host species, a prompt response is necessary to contain and eradicate any infestation found in the contiguous United States.

The six WSFF finds between July 9 and 21 triggered Federal involvement in the eradication of this pest in the State of California. APHIS is proposing to cooperate with the California Department of Food and Agriculture (CDFA) and the Los Angeles County Department of Agriculture in a regulatory and eradication program to prevent the spread of WSFF to noninfested areas of the United States.

APHIS' authority for cooperation in the program is based upon the Plant Protection Act (7 United States Code (U.S.C.) 7701 et seq.) which authorizes the Secretary of Agriculture to carry out operations to eradicate insect pests, and to use emergency measures to prevent dissemination of plant pests new to or not widely distributed throughout the United States. The program proposes to prevent the spread and eradicate WSFF through quarantine and male fly annihilation.

This site-specific environmental assessment (EA) analyzes alternatives for the eradication and quarantine efforts for WSFF, and is tiered to the *Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001* (USDA, 2001).

This EA has been prepared consistent with the National Environmental Policy Act of 1969 (NEPA) and APHIS' NEPA implementing procedures (7 Code of Federal Regulations (CFR) part 372) for the purpose of evaluating how the proposed action, if implemented, may affect the quality of the human environment.

II. Alternatives

APHIS considered two alternatives in response to the need to eradicate and contain infestations of WSFF, (1) no action, and (2) the combination of eradication and quarantine using an integrated pest management (IPM) approach (preferred alternative). Both alternatives are described briefly in this section.

A. No Action

The no action alternative would involve no Federal eradication or regulatory effort to restrict the spread of WSFF or facilitate (certify) the commercial movement of WSFF host materials and other regulated articles. In the absence of a Federal effort, quarantine and control would be left to State government, grower groups, and individuals. Expansion of the infestation could be influenced by such factors as the proximity of host plants, the existing natural and artificial physical barriers, and by climatic conditions, among others.

B. Eradication and Quarantine (Preferred Alternative)

Eradication of WSFF is the preferred alternative. WSFF has never been found in the United States; data concerning the biology of this species and its potential environmental and economic impact on the United States is still incomplete. The proposed program of treatment analyzed in this EA is derived from known international WSFF control protocols and current mitigations recognized to be effective in California against other species in the *Bactrocera* genus.

Based on previous experience with fruit fly outbreaks in California, mass trapping with the use of removable bait stations, along with supplemental ground-level spraying of potential host plants is the preferred eradication treatment. Fruit stripping may also occur in areas where mated females or larval infestations are found.

The eradication area includes portions of Los Angeles County (see map of initial detection sites in appendix A of this document) and may be expanded if additional WSFF finds are made. Male WSFF are attracted to cue-lure, a synthetic pheromone. The population control treatment, known as the male annihilation technique, makes use of small amounts of an attractant (cue-lure) and an organophosphate insecticide (naled) to lure the male flies in a population to bait stations. The flies die when exposed to naled in the traps. The cue-lure/naled formulation will be used in

Jackson traps¹ placed at a density of 1,000 traps per square mile in the 9-square miles centering on each detection site. Additional traps will be placed throughout the area to delimit the infestation and to monitor post-treatment fly populations. These traps will be monitored on a regular schedule for a period equal to three WSFF generations beyond the date of the last fly find.

If larvae or mated females are found on a property, potential host plants on the infested and adjacent properties will be treated with spinosad bait ground sprays. Spinosad bait is a formulation of naturally produced bacterial compounds (spinosyns) and bait that

¹ The delta-shaped Jackson trap is made of plastic coated cardboard. Lure is placed on a cotton roll wick that is supported inside the trap by a wire wick holder, or a plug dispenser is placed in a dispenser holder that is supported by the hanger. A sticky insert on the bottom captures flies. The trap consists of the trap body, insert, and trap hanger. In addition, either a dispenser holder and plug dispenser or a wick holder and wick are used to hold the lure. Trap hangers and dispenser holders are reusable and should be saved.

Source: USDA-APHIS "Mediterranean Fruit Fly Action Plan" (November 2003); this can be found at http://www.aphis.usda.gov/import_export/plants/manuals/emergency/downloads/medfly_action_plan.pdf.

is effective against *Bactrocera* and other fruit fly species. These applications will extend to a 200-meter radius centering on each detection site.

A quarantine boundary has been established and movement of WSFF host material outside the State of California will be restricted. Any regulated article (listed in 7 CFR § 301.32–2) that leaves the quarantine area must be accompanied by a certificate based on inspection or treatment. Regulated articles may be treated according to the treatment options specified in 7 CFR § 301.32–10, as discussed in the *Fruit Fly Cooperative Control Program Final Environmental Impact Statement—2001* (USDA, 2001).

III. Affected Environment

Detections of WSFF have been made in the residential communities of La Verne, San Dimas, and Pomona, as of July 21, 2009. San Dimas City has a population of approximately 36,000 located approximately 35 miles east of the City of Los Angeles and the Pacific Ocean. The City of La Verne has a population of over 33,000 and lies to the east of San Dimas. Pomona lies to the southeast of La Verne and is the fifth largest city in Los Angeles County, with over 163,000 residents. These three adjoining cities occupy portions of the San Jose Hills and the San Gabriel and Pomona Valleys. Land uses are primarily industrial/commercial and residential, with some parkland, agricultural, and undeveloped areas. The elevation of the area ranges from 950 to 1,700 feet, annual rainfall totals 15 to 17 inches, and temperatures average 63 to 68 °F.

IV. Environmental Effects

A. No Action Alternative

Under the no action alternative, APHIS would not provide any financial or other assistance to CDFA or the Los Angeles County Department of Agriculture. If CDFA and the Los Angeles County Department of Agriculture are not able to eradicate WSFF from La Verne, California, it is likely that the fruit fly would become established and spread into the agricultural production areas of California. Although commercial productions of known hosts only occur in Florida, Hawaii, Puerto Rico, and the Virgin Islands, WSFF has been found in peach, lemon, nectarine, ornamental plum, calomondin/kumquat, and sapote plantings in Los Angeles County, California. It is a cause for concern, however, that *Bactrocera* species have been known to infest conditional hosts outside their normal host range (NPAG, 2009). The pathway by which WSFF entered California has not yet been determined.

Damage from fruit flies generally occurs when the female lays eggs in living, healthy plant tissue, such as in ripe or ripening fruit. These eggs hatch into larvae or maggots, which live in various plant parts, and tunnel through the flesh of the fruit making it unfit for consumption.

In addition to damage to fruits and vegetables, there may also be trade restrictions imposed on California WSFF host material that is exported to other countries, requiring additional treatments and/or limiting the amount of host material that could be exported.

The potential extent of economic damage that might be caused by this pest in the United States is not known; however, this fruit fly is considered an economic pest of significance in other countries (NPAG, 2009). These costs not only include damage to crops and the environment, but also loss of trade and the cost of treatments to prevent spread and control damage.

B. Eradication and Quarantine (Preferred Alternative)

The environmental impacts of the quarantine and the use of ground sprays and mass trapping with bait stations, as described in the proposed action, are expected to be minimal.

As described in previous sections of this EA, the quarantine activities include restriction from interstate movement with inspection or treatment in accordance with 7 CFR § 301.32–10. The site-specific characteristics of the program area were considered with respect to their potential to alter or influence the anticipated effects on human health, wildlife, and environmental quality. These environmental effects were given comprehensive consideration in the *Fruit Fly Cooperative Control Program Final Environmental Impact Statement—2001* (USDA, 2001); analysis of these treatments is incorporated by reference. There are no specific site conditions that would add to these effects. No significant direct, indirect, or cumulative impacts are expected as a consequence of the proposed quarantine or its component treatment methods except in the use of methyl bromide fumigation, which is discussed later in this document.

The eradication portion of the proposed action includes the use of male annihilation stations, which were also discussed in the *Fruit Fly Cooperative Control Program Final Environmental Impact Statement—2001* (USDA, 2001). The environmental impacts resulting from male annihilation stations has been incorporated by reference here and summarized below. Use of the cue-lure/naled formulation in the male annihilation stations and spinosad bait in the ground-spray treatments will result in limited exposure to humans and nontarget organisms due to the method of application. The use of spinosad bait was proposed to reduce the use of organophosphate insecticides, and is expected to have less

environmental impact than malathion or naled (USDA, 2001). An efficacy study was conducted and published by Vargas et al. (2008) which concluded that the use of spinosad bait is as effective as the most popular organophosphate insecticides which are commonly used for male annihilation, including naled, malathion, and 2,2-dichlorovinyl dimethyl phosphate.

For this specific program, the following issues were identified and analyzed: (1) potential effects on human health from chemical pesticide applications, (2) potential effects on wildlife (including threatened and endangered species) from program activities and treatments, and (3) potential effects on environmental quality. The site-specific characteristics of the program area were considered with respect to their potential to alter or influence the anticipated effects on human health, wildlife, and environmental quality.

The use of cue-lure in fruit fly male annihilation mass trapping is unlikely to pose any risk in the potential treatment area. A minute amount of naled is contained within the Jackson trap and, therefore, is unlikely to have more than a negligible impact on humans and other nontarget organisms.

The use of site-specific buffers will be needed to avoid drift and minimize contamination of area water bodies from the spinosad bait spray applications required as part of the eradication treatments. Standard program operational procedures and mitigative measures will be employed to avoid adverse impacts to these areas.

Similar eradication programs against other *Bactrocera* species have been implemented in the past by APHIS and cooperating agencies. The potential environmental impacts from these programs have been analyzed in previous EAs, such as the “Oriental Fruit Fly Cooperative Eradication Program, Lakewood, Los Angeles County, California—Environmental Assessment, August 2008” (USDA, 2008); “Oriental Fruit Fly Cooperative Eradication Program, Rialto, San Bernardino County, California—Environmental Assessment, October 2006” (USDA, 2006); and “Oriental Fruit Fly Cooperative Eradication Program, Westchester Area, Los Angeles County, California—Environmental Assessment, September 2004” (USDA, 2004).

- 1. Human Health** The potential effect on human health was considered with respect to the use of chemical pesticides cue-lure, naled, spinosad bait, and methyl bromide (USDA, 1998a; USDA, 1999; USDA, 2001). Three major factors influence the human health risk associated with pesticide use: fate of the pesticides in the environment, their toxicity to humans, and their exposure to humans. Each of the program pesticides is known to be toxic to humans. Exposure to program pesticides can vary, depending upon the pesticide and the use pattern.

Potential exposure is low for all applications except for spinosad bait. Program use of spinosad bait is limited to eradication treatments; such applications are applied only to host plants that are within 200 meters of detection sites. The analyses and data of the *Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001* (USDA, 2001) and the human health risk assessments (USDA, 1999; USDA, 1998a) indicate that exposures to pesticides from normal program operations are not likely to result in substantial adverse human health effects. (Refer to the environmental impact statement, the human health risk assessments, and their supporting documents for more detailed information relative to human health risk.)

The alternatives were compared with respect to their potential to affect human health. A well-coordinated eradication program using IPM technologies will result in the least use of chemical pesticides overall, and the least potential to adversely affect human health.

Some executive orders, such as Executive Order 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” and Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations,” and departmental or agency directives call for special environmental reviews in certain circumstances. No circumstance that would trigger the need for special environmental reviews is involved in implementing the preferred alternative considered in this document.

2. Nontarget Species and Endangered Species

Potential effects on nontarget species, including threatened and endangered species,)were also considered with respect to the use of program pesticides. The risk to nontarget species is related to the fate of the pesticides in the environment, their toxicity to the nontarget species, and their exposure to nontarget species. All of the pesticides are highly toxic to invertebrates, although the likelihood of exposure (and thus, impact) varies a great deal from pesticide to pesticide, and with the use pattern. A well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides overall, with minimal adverse impact to nontarget species.

The potential treatment area was considered with respect to any special characteristics that would tend to influence the effects of program operations. Potentially sensitive areas have been identified, considered, and accommodated through special selection of control methods and use of specific mitigation measures.

In compliance with section 7(a)(2) of the Endangered Species Act of 1973, as amended, APHIS reviewed the eradication zone boundaries to determine if any federally threatened or endangered species or critical habitat co-occur within the treatment area.

APHIS has consulted with the Fish and Wildlife Service to develop avoidance measures for listed species within the treatment area identified in appendix A. No program treatments will occur within 100 feet of any water body to avoid potential impacts to aquatic listed resources. In addition, limiting the application of program pesticides to host plants will avoid impacts to other listed species. In the event of future fruit fly detections or the need to expand the eradication boundaries considered herein, APHIS will repeat its review of that action to determine if the potential exists to affect federally listed resources and consult with the appropriate agency if necessary.

3. Environmental Quality

Environmental quality was considered with respect to the preservation of clean air, pure water, and a pollution-free environment. Pesticide use is always of concern to the public and the program in relation to preserving environmental quality. Although program pesticide use will be limited, especially by comparison to other existing agricultural pesticide use, the proposed action would result in a controlled release of chemicals into the environment. The fate of those chemicals varies with respect to the environmental component (air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.). The half-life of spinosad ranges from 8 to 15 days; in water, residues persist for only a few hours. The half-life of naled on foliage ranges from 2.3 to 2.5 days, however, the naled within the Jackson trap is unlikely to be released to the environment. The half-life of methyl bromide is 3 to 7 days, however, the small quantities used disperse when fumigation chambers are vented. (Refer to the *Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001*(USDA, 2001) for a more detailed consideration of each pesticide's environmental fate.)

Traps containing lures and insecticides are used for detection trapping, delimitation trapping, monitoring of populations, and mass trapping. The nature of the Jackson traps (which use a sticky substance to trap the fruit flies) minimizes the potential for adverse effects to the physical environment. No direct effects to soil or water are anticipated. Although some volatilization of naled is known to occur from some traps, the effects to air quality outside the trap are still negligible because of the small quantities involved. Depending on the frequency of monitoring and replacement of traps, slight impacts to soil could result from vehicular and foot traffic (USDA, 2001).

Risk to environmental quality is considered minimal. The proposed program area was examined to identify characteristics that would tend to influence the effects of program operations. Allowances will be made for any special site-specific characteristics that would require a departure from the standard operating procedures.

In summary, there is expected to be limited impact to human health, nontarget species, and the environment resulting from implementation of the preferred alternative. Currently, program requirements will require the use of cue-lure/naled bait stations and spinosad bait ground spraying as the primary tools for detection, control, and eradication. Use of these treatments may result in minimal adverse impacts to nontarget species as evaluated under the fruit fly environmental impact statement (USDA, 2001) and nontarget species risk assessments (USDA, 1998b; USDA, 2003).

IV. References

NPAG—See U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Center for Plant Health Science and Technology, Plant Epidemiology and Risk Analysis Laboratory, New Pest Advisory Group.

USDA—See U.S. Department of Agriculture

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2008. Oriental fruit fly cooperative eradication program, Lakewood, Los Angeles County, California—environmental assessment, August 2008. USDA, APHIS, Riverdale, MD

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2006. Oriental fruit fly cooperative eradication program, Rialto, San Bernardino County, California—environmental assessment, October 2006. USDA, APHIS, Riverdale, MD

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2004. Oriental fruit fly cooperative eradication program, Westchester Area, Los Angeles County, California—environmental assessment, September 2004. USDA, APHIS, Riverdale, MD

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2003. Spinosad bait spray application. Nontarget risk assessment, October 2003. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2001. Fruit fly cooperative control program, final environmental impact statement—2001. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999. Spinosad bait spray applications. Human health risk assessment, March 1999. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998a. Human health risk assessment for fruit fly cooperative control programs. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998b. Nontarget species risk assessment for fruit fly cooperative control programs. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Center for Plant Health Science & Technology, Plant Epidemiology and Risk Analysis Laboratory, New Pest Advisory Group, 2009. NPAG Report: *Bactrocera albistrigata* (de Meijere): White striped fruit fly. Diptera / Tephritidae. NPAG Chair Approval Date: 07/21/2009.

Vargas, Roger I., Stark, J.D., Hertlein, M., Neot, A.M., Coler, R., and Pinero, J.C., 2008. Evaluation of SPLAT with spinosad and methyl eugenol or cue-lure for “attract and kill” of oriental and melon fruit flies (Diptera: Tephritidae) in Hawaii. J. Econ Entomol. 101 (3): 759–768.

IV. Listing of Agencies Consulted

California Department of Food and Agriculture
Department of Plant Industry
Sacramento, California

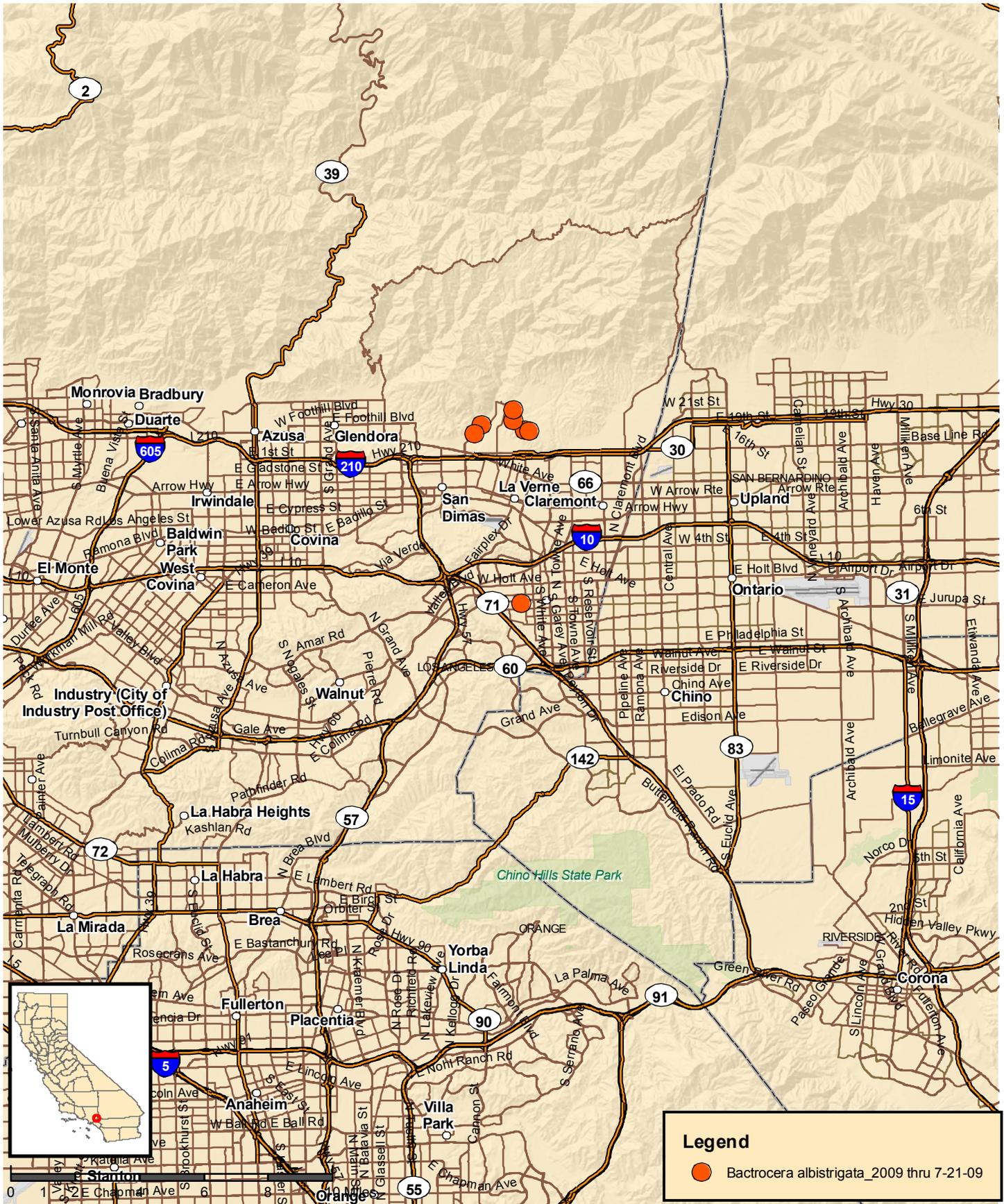
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Fruit Fly Exclusion and Detection Program
4700 River Road, Unit 137
Riverdale, MD 20737-1234

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental Services
4700 River Road, Unit 149
Riverdale, MD 20737-1238

Appendix A. White Striped Fruit Fly Detection Map

Bactrocera albistrigata (White-striped Fruit Fly)

Los Angeles County, California, 2009



**Finding of No Significant Impact
for
White Striped Fruit Fly Cooperative Eradication Program
Los Angeles County, California
Environmental Assessment
July 2009**

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) has prepared an environmental assessment (EA) that analyzed alternatives for eradication of the white striped fruit fly, an exotic agricultural pest that has been found in areas of Los Angeles County, California. The EA, incorporated by reference in this document, is available from—

USDA, APHIS, PPQ
State Plant Health Director
650 Capital Mall, Suite 6-400
Sacramento, CA 95814

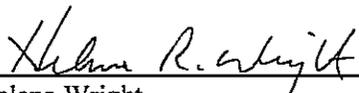
or

USDA, APHIS, PPQ
Fruit Fly Exclusion and Detection Program
4700 River Road, Unit 137
Riverdale, MD 20737-1234

The EA for this program analyzed alternatives of (1) no action, and (2) eradication and quarantine only (preferred alternative). APHIS selected the alternative of eradication and quarantine using an integrated pest management approach for the proposed program because of its capability to achieve eradication in a way that also reduces the magnitude of potential environmental consequences.

APHIS has determined that this program will have no impacts to listed species or critical habitat based on informal consultation with the Fish and Wildlife Service's Carlsbad Field Office. In the event of future detections outside the existing treatment areas, APHIS will reinitiate consultation to ensure impacts to listed species are avoided.

I find that implementation of the proposed program will not significantly impact the quality of the human environment. I have considered and based my finding of no significant impact on the quantitative and qualitative risk assessments of the proposed pesticides, and on my review of the program's operational characteristics. In addition, I find that the environmental process undertaken for this program is entirely consistent with the principles of environmental justice, as expressed in Executive Order 12898, and the protection of children, as expressed in Executive Order 13045. Lastly, because I have not found evidence of significant environmental impact associated with this proposed program, I further find that an environmental impact statement does not need to be prepared and that the program may proceed.



Helene Wright
State Plant Health Director, California
Animal and Plant Health Inspection Service
Sacramento, California

7/24/09
Date