Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Bactrocera spp. Cooperative Eradication Program

Santa Clara County, California

Environmental Assessment, October 2021

Agency Contact:
Dr. Richard N. Johnson
Fruit Fly National Policy Manager
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 26
Riverdale, MD 20737–1232

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

Mention of companies or commercial products in this report does not imply recommendation or endorsement by the U.S. Department of Agriculture (USDA) over others not mentioned. USDA neither guarantees nor warrants the standard of any product mentioned. Product names are mentioned solely to report factually on available data and to provide specific information.

This publication reports research involving pesticides. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish and other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended label practices for the use and disposal of pesticides and pesticide container

Table of Contents

List of Figures

List of Tables

Abbreviations and Acronyms Used in This Document

Abbreviation or Acronym	Meaning
B.	Genus *Bactrocera*
BA	Biological assessment
CC	Climate change
CDFA	California Department of Food and Agriculture
CFR	Code of Federal Regulations
ChE	Cholinesterase
CO_2	Carbon dioxide
EA	Environmental assessment
EO	Executive Order
ESA	The Endangered Species Act
EXTOXNET	Extension Toxicology Network
FAST	Federal Automotive Statistical Tool
FEMA	Federal Emergency Management Agency
FFEIS	USDA-APHIS' November 2018 environmental impact statement for cooperative fruit fly control programs
FIFRA	The Federal Insecticide, Fungicide, and Rodenticide Act
GE	Genetically engineered
IPaC	Information for Planning and Consultation
IPM	Integrated pest management
LC	Lambda cyhalothrin
MB	Methyl bromide
ME	Methyl eugenol
MOU	Memorandum of Understanding

Abbreviation or Acronym	Meaning
MT	Metric ton
MWh	Megawatt hour
n.d.	Not dated
NAPIS	National Agricultural Pest Information System
NEPA	The National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPIC	National Pesticide Information Center
NPS	U.S. National Park Service
OFF	Oriental fruit fly, *B. dorsalis*
SHPO	State Historic Preservation Officer
SLN	Special Local Need
spp.	Species (plural)
UFL	University of Florida
U.S.C.	United States Code
USCB	U.S. Census Bureau
USDA-APHIS	U.S. Department of Agriculture, Animal and Plant Health Inspection Service
USDOJ	U.S. Department of Justice
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WEF	Water Education Foundation

I. Purpose and Need for the Proposed Action

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) is considering actions that will assist in the eradication of *Bactrocera* spp. in California. Fruit flies in the *Bactrocera* genus are not native to the United States; their ongoing detection in or near U.S. ports of entry presents a risk to cultivated and naturally-occurring plant hosts in the United States.

The genus includes approximately 500 species, many of which are known or believed to have the potential to damage a diverse array of important crops (Weeks et al., 2012). *Bactrocera* spp. of concern to the United States include:

- Asian fruit fly, *B. invadens*
- Carambola fly, *B. carambolae*
- Chinese citrus fruit fly, *B. minax*
- Guava fruit fly, *B. correcta*
- Olive fruit fly, *B. oleae*
- Oriental fruit fly, *B. dorsalis* (OFF)
- Peach fruit fly, *B. zonata*
- Queensland fruit fly, *B. tryoni*
- Solanum or Malaysian fruit fly, *B. latifrons*

The majority of *Bactrocera* spp. are native to Southeast Asia, Australia, and the South Pacific (Weeks et al., 2012). In the past decade, the increase in detections of OFF in California and Florida demonstrates the potential for establishment of this pest in the United States. Two *Bactrocera* species (OFF and *B. latifrons*) are established in Hawaii; they are a constant threat to the U.S. mainland. *Bactrocera oleae* is an example of a species in this genus that has become established in commercial olive production and ornamental plants in California and threatens virtually all commercial and fruit-bearing ornamental olive plantings. OFF has spread rapidly through the Near East and Africa and threatens to colonize areas of the Western Hemisphere (USDA-APHIS, 2020a).

The trigger for a U.S. federal *Bactrocera* spp. quarantine occurs either at confirmation of a breeding population, or when there is capture of two to eight wild flies within a certain radius during one life cycle, or (see species particulars in Table 1). Eradication is initiated prior to reaching a federal quarantine. (USDA-APHIS, 2020b).

Seven adult male OFF were collected from seven Jackson traps in the City of San Jose, California between September 13 and September 24, 2021 (CDFA, 2021a, 2021b, 2021c, 2021d, 2021e, 2021f, 2021g). The traps were in apple, fig, lime, orange, peach, and tangerine trees. There are eight acres of commercial host production (eggplant, pepper, squash, tomato) within a 4.5 mile radius of the OFF detections. The timing and location of the first six detections triggered Federal participation in a new regulatory quarantine and pest eradication program for the San Jose region, involving a portion of Santa Clara County. *Bactrocera* spp. detection and control programs are currently operating in other parts of California (see Appendix A). Because California Department of Food and Agriculture (CDFA) authorities consider the San Jose OFF outbreak a serious

agricultural threat and because they cannot rely exclusively on state and local funding to control invasive fruit fly populations, they contacted USDA-APHIS.

Table 1. Cooperative Fruit Fly Emergency Response Triggers.

Pest species	Trigger for Delimitation	Duration of Delimitation (i.e. number of generations per single fly find)	Trigger for Eradication	Trigger for Quarantine
Bactrocera dorsalis (oriental fruit fly) Other *Bactrocera* spp. responding to ME: *B. zonata* (peach fruit fly), *B. correcta* (Guava fruit fly), etc.	1 fly	2 generations	2 flies within a 3 mile (4.8 km) radius during 1 life cycle	If ALL finds are >4.5 miles (7.2 km) from commercial host production area: 8 flies (either sex) within a 3-mile radius during 1 life cycle. If any find is <4.5 miles (7.2 km) from commercial host production area: 6 flies within a 3-mile radius during 1 life cycle.
Other *Bactrocera* spp. that do not respond to ME: *B. latifrons* (Solanum fruit fly), *B. albistrigata* (white-striped fruit fly), etc.	1 fly	3 generations	2 flies within a 3 mile (4.8 km) radius during 1 life cycle	2-5 flies within a 3 mile radius during 1 life cycle
Mated female of any genus and species of fruit fly presumed or known to be mated to a wild male; a larva or pupa	1 mated female or immature stage	3 generations	1 mated female or immature stage	1 mated female or immature stage

Source: USDA-APHIS, 2020b

USDA-APHIS recognizes there may be added urgency to curtail exotic fruit fly populations in the United States. During the first year of the coronavirus pandemic, we[1] received reports of untended groves in Texas where field workers ceased working (Blasizzo, 2020). Untended groves take on the characteristics of abandoned groves over time, where heavy weed growth prevents entry of ground equipment for fruit fly eradication treatments. States may have no program treatments or fruit removal methods approved for use in abandoned groves, and managed groves may not receive treatments as soon as fruit is harvested. Also, dooryards in residential areas may produce host fruit that could sustain fruit fly populations into the next commercial harvest season. Such situations require additional measures to reduce or eliminate fruit fly infestations in residual fruit. Increasing public awareness could help reduce invasive fruit fly infestations in these locations if people acted to remove the residual fruit and properly dispose of it.

Bactrocera dorsalis is a destructive agricultural pest in many parts of the world. It has a long history of being a serious pest of tropical and subtropical fruits in Southwest Asia and most of the Pacific Islands. Following introduction into the Hawaiian Islands in the 1940s (NAPIS, 2017), OFF multiplied rapidly; it currently is known to infest more than 125 different host fruits in the State of Hawaii. Worldwide, OFF has been recorded infesting at least 478 fruit and vegetable species, a few of which are apricot, avocado, banana, citrus, coffee, fig, guava, loquat, mango, roseapple, papaya, passion fruit, peach, pear, persimmon, pineapple, surinam cherry, and tomato (Weems et al., 2016). OFF adults can travel 30 miles in search of food and breeding sites; one female OFF can lay 1,000 to more than 3,000 eggs in her lifetime. These abilities allow OFF to infest new areas quickly, and make OFF establishment potentially disastrous to agricultural production in regions where host plants are grown (Weems et al., 2016; CDFA, 2018, 2004). Although OFF is not known to be established in California, new infestations are detected on almost an annual basis since it was first identified in California in 1960. Reintroduction is most often due to infected fruits and vegetables brought across the border without proper inspection. *Bactrocera* spp. can produce many generations in one year (Weeks et al., 2012). OFF has a four-stage life cycle: egg, larva, pupa, and adult. Breeding is continuous, with several annual generations. An adult OFF lives 90 days on average; developmental stages may be extended by periods of cool weather (CDFA, 2018; Weems et al., 2016).

A. Requestor's Goal

CDFA seeks to eradicate *Bactrocera* spp. from the State of California. CDFA seeks funding and other federal support needed to eradicate the San Jose OFF outbreak.

B. Agency Authority

USDA-APHIS cooperates with States and U.S. territories in implementing pest control programs that prevent the spread of exotic fruit flies to noninfested areas of the United States. Our authority for pest control and grower support programs is the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000, 7 United States Code (U.S.C.) §§ 7701–7786). Various sections authorize operations to control insect pests (§ 7714); conduct pest detection, surveillance (§ 7721), and inspections (§ 7731); compile information, conduct enforcement investigations (§ 7732), enter into agreements (§ 7752), transfer funds (§ 7772); and to use emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United

[1] In this document, uses of "we" and "our" refer specifically to USDA-APHIS.

States (§§ 7715, 7721). In particular, the Secretary of Agriculture may cooperate with state authorities or other persons in the administration of programs for the improvement of plants, plant products, and biological control organisms (§ 7751(d)). In connection with an emergency in which a plant pest or noxious weed threatens any segment of the agricultural production of the United States, the Secretary may transfer from other appropriations or funds amounts as the Secretary considers necessary to be available in the emergency for the arrest, control, eradication, and prevention of the spread of the plant pest or noxious weed, and for related expenses (§ 7772(a)).

After a comprehensive review of existing and potential action alternatives, USDA-APHIS published an environmental impact statement (FFEIS) in November 2018 for our fruit fly cooperative control programs (USDA-APHIS, 2018a). The FFEIS addresses technological and scientific advances made in the 17 years since publication of our first cooperative fruit fly program environmental impact statement (USDA-APHIS, 2001), and incorporates feedback received during the public comment period. This environmental assessment (EA) incorporates by reference the contents of the FFEIS in its entirety.

This EA analyzes the environmental consequences of alternatives considered for eradication of a *Bactrocera* spp. population, and analyzes modifications proposed for the existing program. USDA-APHIS is making this EA available to the public, will consider comments received, and will review the program, updating the NEPA analysis and supporting documentation as necessary.

We prepared this document to comply with the provisions of the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. §§ 4321 *et seq*.), NEPA implementing regulations (40 Code of Federal Regulations (CFR) parts 1500-1508), and USDA-APHIS' implementing procedures (7 CFR parts1b and 372) for the purpose of evaluating the potential effects of the proposed action on the human environment. Human environment means comprehensively the natural and physical environment and the relationship of present and future generations of Americans with that environment (40 CFR § 1508.1(m)).

Our fruit fly chemical risk assessments (USDA-APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) discuss and comprehensively analyze the eradication measures being considered for implementation in the potential program area. In this document, the "program area" is everywhere inside the quarantine boundary, including eradication treatment cores and regulatory control zones. This EA incorporates the fruit fly chemical risk assessments by reference in their entirety. (Environmental documentation for USDA-APHIS' fruit fly control programs is available online via the following links: USDA-APHIS fruit fly control program environmental documentation and USDA-APHIS GE control applications for plant health.)

USDA-APHIS and cooperating agencies communicate to interested parties the potential for implementation of a pest emergency program to affect the quality of the human environment. The public involvement process for fruit fly emergency programs typically includes notices to industry, public meetings, and door-to-door interviews with growers and residents. Further, USDA-APHIS coordinates with federal, state, county and Tribal governments and international trade partners to provide advance notice to people who may be affected by program activities.

Environmental documentation is available upon request. Where a choice of actions is possible, USDA-APHIS adjusts the local provisions of the cooperative pest control program to mitigate potentially adverse effects to affected entities, and avoid conflict with local law or requirements.

Working cooperatively with States and U.S. territories, USDA-APHIS identifies and eradicates *Bactrocera* infestations. To date we have cooperated with the California, Florida, Puerto Rico, and Texas Departments of Agriculture on exotic fruit fly eradication programs.

II. Alternatives

USDA-APHIS considered three action alternatives:

A. No action
B. Quarantine and commodity certification
C. Eradication using an integrated pest management (IPM) approach that includes multiple eradication treatment options ("preferred alternative")

These alternatives and their component methods were considered in FFEIS (USDA-APHIS, 2018a) as related to emergency eradication efforts. Under all of these alternatives, trapping and host surveys for *Bactrocera* spp. would continue as a way to measure baseline pest populations. All of the alternatives would involve the use of regulatory controls and chemical pesticides to facilitate the timely elimination of the identified *Bactrocera* infestation. For all alternatives, the standard operating procedures and mitigation measures would remain as described in the prior analyses. Alternatives may select pesticides from among those analyzed in the FFEIS (USDA-APHIS, 2018a). The preferred alternative would use pesticide eradication treatments only in certain locations based on the site-specific needs; applications would be targeted and ground-based.

All pesticide use in USDA-APHIS programs complies with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1910 as amended (7 U.S.C. chapter 6). To fulfill obligations under this statute, we ensure that a full pesticide registration (i.e., a Section 3 Registration), a special local needs registration (i.e., a Section 24(c) Registration) and/or an emergency quarantine exemption (i.e., a Section 18 Exemption) are approved by the U.S. Environmental Protection Agency (USEPA) for each pesticide use pattern in fruit fly program applications.

A. No Action

Under the no action alternative, there would be no federal efforts to eradicate *Bactrocera* spp. or restrict expansion of a *Bactrocera* population from an infested area. Federal involvement may end, for example, if there is a change in federal regulation, loss of program funding, or lack of sufficient resources to eradicate an invasive quarantine pest. In the absence of a federal effort, fruit fly quarantine and control would be left to state and local governments, grower groups, and individuals. Expansion of the infestation would be influenced by any quarantines and controls, by the proximity of host plants, and by climatic conditions.

CDFA monitors for *Bactrocera* spp. in counties of California where there are susceptible host plants and a conducive environment for fruit fly establishment. CDFA initiates delimitation and eradication programs in locations where the number of *Bactrocera* spp. detections are not yet sufficient to trigger quarantine regulatory actions. The state program intensifies surveys in the neighborhood of each confirmed *Bactrocera* detection until triggering a quarantine or the immediate fruit fly threat ends.

Under the no action alternative, USDA-APHIS would not fiscally support control actions that are part of CDFA's detection trapping program and research. (For details about the State's program to control OFF, please use the following link: CDFA OFF project information.)

B. Quarantine and Commodity Certification

This alternative combines a quarantine with commodity treatment and certification, as described in 7 CFR § 301.32. Regulated commodities harvested within the quarantine area would not be allowed to move outside the quarantine boundary prior to treatment with prescribed applications and certification for movement outside the area.

Intensive quarantine enforcement activities would be necessary for areas with a large infestation. Activities could include safeguarding of local fruit stands, mandatory baggage inspection at airports and seaports, and judicious use of road patrols and regulatory checks. The quarantine actions of this alternative are expected to (a) reduce *Bactrocera* spp. movement beyond treated areas, and (b) reduce human-mediated transport of *Bactrocera* in host-plant materials to areas outside the quarantine. Any *Bactrocera* spp. eradication efforts would be managed by, and wholly under the control of, CDFA. Consequently, infestations within the quarantine boundaries would not be directly addressed by federal action. Successful eradication of fruit fly populations by the State's action under this alternative could lead to short-term reductions in the overall area under quarantine, but this would not dimish the trapping and survey activities.

Under this alternative, the interstate movement of regulated commodities would require the issuance of a limited permit contingent on commodity treatment. The grower or shipper would need to comply with specific conditions to minimize the pest risk and prevent the spread of *Bactrocera*. Eradication methods that may be used in this alternative include treatment with (1) regulated chemicals, (2) cold, (3) vapor heat, and (4) irradiation. Treatments of certain produce, as a requirement for certification and shipping, would occur in USDA-APHIS inspected and approved facilities. Program chemicals and their use would be as described in the FFEIS (USDA-APHIS, 2018a). Chemical treatments could include ground-based foliar application of bait sprays or fumigation of harvested regulated commodities with methyl bromide (MB).

C. Eradication Using an IPM Approach (Preferred Alternative)

USDA-APHIS and CDFA propose a cooperative program to eradicate the San Jose OFF population. Eradication using an IPM approach was selected as the preferred alternative by considering biological effectiveness combined with acceptable levels of intrusion on the public, cost, and effects to the environment (USDA-APHIS, 2001). Our cooperative *Bactrocera* eradication programs in California rely on surveillance, targeted chemical applications, and host fruit removal.

The proposed quarantine for the San Jose OFF Program covers a portion of Santa Clara County (map in Appendix A). Program areas and activities would center on confirmed *Bactrocera* detection sites. USDA-APHIS and CDFA would expand surveillance, quarantine, and treatment boundaries as necessary when there are additional detections of *Bactrocera* spp.

All our cooperative programs to eradicate exotic fruit fly populations use established procedures and treatments (USDA-APHIS, 2018a, 2004). The following subsections briefly review existing program components (USDA-APHIS, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) and updated information.

Delimitation

To delimit an infestation and monitor posttreatment fly populations, placement of McPhail food bait traps and Jackson pheromone lure traps occurs in varying densities throughout the program area. The McPhail trap is an invaginated glass flask baited with Torula yeast and borax in water. The cardboard Jackson sticky trap is baited with the attractant methyl eugenol (ME) mixed with a pesticide (naled). The baited Jackson trap is strongly attractive to sexually maturing males, while the baited McPhail trap is attractive to both sexes of the fly (CDFA, 2021h). Mass trapping involves program use of natural or synthetic lures to attract fruit flies to traps, bait stations, sticky panels, wicks, or fiberboard squares. Killing occurs either by fruit flies becoming stuck to a sticky substance, by drowning, or by being exposed to minute quantities of pesticide (USDA-APHIS, 2018a). Servicing of the San Jose OFF Program traps would occur on a regular schedule for a period equal to three generations beyond the date of the last OFF find (CDFA, 2021h).

As part of the ongoing surveillance inside the quarantine boundary, program personnel examine fruit of potential host plants within a 100-meter radius around each *Bactrocera* detection site for the presence of eggs and larvae (USDA-APHIS, 2021a). Suspect *Bactrocera* are sent to a program laboratory for further examination. Sampled fruit is disposed of as described in the FFEIS (USDA-APHIS, 2018a).

Eradication Treatments

For many species of exotic fruit flies, there are no effective nonchemical control or eradication techniques (USDA-APHIS, 2001). Other less effective techniques may not allow CDFA or USDA-APHIS to achieve eradication of *Bactrocera* infestations. Consequently, USDA-APHIS' eradication strategies for the proposed *Bactrocera* cooperative eradication program rely on combinations of the following mitigation measures:

- no action
- regulatory quarantine treatment, and movement control of host materials and regulated articles
- host survey for evidence of breeding *Bactrocera*
- host removal
- eradication chemical applications
- mass trapping to delimit the infestation and monitor post-treatment *Bactrocera* populations

"No action" may be the only reasonable alternative for sensitive sites within a proposed program area. Eradication efforts would occur only along the perimeter of sensitive sites to prevent expansion of a *Bactrocera* population. USDA-APHIS considers sites as sensitive when there are biological or regulatory reasons to avoid treating an area. Examples include the unavoidable presence of children, critical habitat, or threatened or endangered species in the area (USDA-APHIS, 2018a).

Male attractant technique (MAT) is the standard eradication treatment practice for *Bactrocera* spp. Up to 600 small, gel-like bait stations per square mile are applied to utility poles and street trees six to eight feet above the ground. Traps may be used where there are no suitable inanimate surfaces to place bait stations. MAT applications are repeated every two weeks for one life cycle if no quarantine is triggered (typically two to three months), and for two life cycles if a quarantine is triggered (typically four to six months). Life cycle durations are dependent on temperature (CDFA, 2021h). The MAT compound contains a male attractant (ME) that is mixed with a small amount of the pesticide spinosad. The bait stations attract and kill male OFF looking for an opportunity to breed and feed on the attractant. OFF females go unmated and, therefore, offspring are not produced, effectively eradicating an OFF population. For the San Jose OFF Program, MAT would be deployed for nine square miles around each OFF detection site (USDA-APHIS, 2021a).

Indication of a breeding population (i.e. detection of an immature *Bactrocera* life stage (pupa or larva), or detection of a mated *Bactrocera* female) triggers fruit removal from host plant species growing at or near the detection site. Upon confirmation of a mated female OFF, a single immature OFF life stage, or multiple OFF finds, program personnel would remove all potential host fruit from the property within a 100-meter radius of the detection (USDA-APHIS, 2021a).

Confirmation of a breeding OFF population also leads to application of a foliar bait treatment to host trees and plants as a targeted, ground-based spray to potential host plants within a 200-meter radius of each detection site. This highly localized spot spray consists of an organic formulation of spinosad (pesticide), and protein hydrolysate (a food bait) (CDFA, 2021h). Protein hydrolysate is a common food bait used in fruit fly treatments, increasing the efficacy of chemical applications and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). Attraction to the protein hydrolysate (which can be derived from plants or yeast), gives pest fruit flies a lethal exposure to the pesticide that is mixed with the attractant. USDA-APHIS and CDFA would repeat treatments every one to two weeks for one life cycle of the fly (typically two to three months, depending on local temperatures) (USDA-APHIS, 2021a; CDFA, 2021h).

We recognize that, in areas receiving repetitive treatments with only the insecticide spinosad, there may be development of chemical resistance in surviving fruit fly populations (El-Gendy, 2018; Kakani et al., 2010; Hsu and Feng, 2006). Alternating spinosad treatments with treatments containing a different insecticide may be necessary to eradicate resistant fly populations. Spinosad resistance has been developed under laboratory conditions and may exist in the State of Hawaii. Spinosad tolerance rather than resistance was demonstrated in *B. oleae* in California. As of October 1, 2021, USDA-APHIS has no evidence of *B. dorsalis* resistance to spinosad treatments made in the conterminous United States (R. Johnson, personal communication, 2021-10-18).

Another USDA-APHIS cooperatative eradication program reported multiple fruit fly populations in pesticide-treated areas of the Rio Grande Valley (Texas) during 2021. USDA-APHIS added two treatment alternatives to the Texas program: lambda cyhalothrin (LC) (as a soil drench) and malathion bait spray (as an alternative to spinosad bait spray) (USDA-APHIS, 2021b). LC targets immature fly life stages. The rotation of malathion and spinosad foliar applications also helps prevent the development of chemical resistance (USDA-APHIS, 2021b). The State of California does not currently authorize these treatment options due to concerns about adverse impacts to nontarget species and soil quality.

Establishment of the quarantine boundary will ensure any host material that leaves the program area is free from infestation by OFF. Harvested regulated materials may be treated in enclosed areas or containers with the prescribed cold temperature, vapor heat, irradiation, or MB fumigation (USDA-APHIS, 2018a, 2004). Harvested fruit may be moved out of the quarantined area under a temporary certificate to enclosed facilities for packing only after the fruit receives a USDA-APHIS-approved treatment on the premise. If a *Bactrocera* quarantine spreads to federally protected sites or Tribal lands, then program treatments would be modified to meet the needs of those sites.

Before eradication actions begin, program officials inform the public and potentially effected industry via press releases, meetings, and other forms of communication appropriate for the recipients. USDA-APHIS notifies our foreign trading partners as we identify fruit fly outbreaks. Notification of residents whose property would be treated, or whose fruit must be removed, occurs at least 48 hours in advance of treatment or fruit removal (CDFA, 2021h). Given the potential for effects to commercial production, owners or operators of groves, packing sheds, nurseries, vendors, and industry operations handling host material would be notified of quarantine locations and treatment scheduled in their area.

III. The Affected Environment and Potential Effects to the Environment

NEPA requires federal agencies to assess the potential effects of their proposed actions on the human environment prior to making decisions. This EA analyzes the potential environmental consequences of alternatives considered for a program of *Bactrocera* spp. control and eradication in California. For the purpose of our NEPA analysis, the affected environment includes the City of San Jose and Santa Clara County. We considered the site-specific characteristics of the potential program area with respect to the way implementation of the preferred alternative might affect environmental quality, human health, and nontarget species (including threatened and endangered species). Potentially sensitive sites are accommodated through the selection of eradication methods and mitigation measures.

A. Affected Environment

This section briefly discusses pertinent physical and demographic features of the potential program area in the San Jose OFF Program. The background information provides context for specific program areas as they arise.

Land and Demographics

Many OFF-host plant species are grown in San Jose and adjacent regions, which increases the potential environmental impact of the current infestation. Commercial production of host commodities occurs within 4.5 miles of the September 2021 OFF detections (USDA-APHIS, 2021a). The location of those detections determines the quarantine boundary for the San Jose OFF Program; at the outset, the proposed quarantine would encompass 94 square miles (map in Appendix A).

Santa Clara County is highly developed and reported 1,936,259 residents in 2020 (USCB, 2021). The Mediterranean climate of the region remains temperate year round due to the area's geography and its proximity to the Pacific Ocean. The area is warm and dry much of the year; temperatures seldom drop below freezing. Rain generally occurs during the winter months while snowfall is limited to the tops of the Mt. Hamilton Range to the east and the Santa Cruz Mountains to the west. Santa Clara County is located at the southern end of the San Francisco Bay and encompasses 1,312 square miles. The fertile Santa Clara Valley and rolling hills run the length of the County from north to south. Salt marshes and wetlands lie in the northwestern part of the County, adjacent to the waters of San Francisco Bay. A large portion of the County's land area is unincorporated ranch and farmland. Nearly 92% of the population lives in cities (County of Santa Clara, 2019).

Santa Clara County is part of the U.S. technology development region known as “Silicon Valley” which is a major employment center. The County has one of the highest median family incomes in the United States, and a wide diversity of cultures. Residents and visitors come from all over the world; over 100 languages and dialects are spoken. The County's population is one of the largest in California. Numerous public and private golf courses are located throughout the County, as well as 28 parks covering more than 50,000 acres including scenic lakes, streams, and miles of hiking and biking trails. The County is home to three universities as well as community colleges, museums, art galleries, and many venues for the performing arts (County of Santa Clara, 2019).

The City of San Jose has a population of 1,013,240 (USCB, 2021) and is the administrative site of the County’s government. San Jose was California’s first state capital and today considers itself the heart of Silicon Valley. The city is home to teams for professional soccer, minor league baseball and ice hockey, among others. Residents and tourists make use of the many hiking and biking trails, and visit the city’s gardens and parks (Team San Jose, 2021).

Major roadways in the immediate program area include Interstate Routes 680 and 280, U.S. 101, California Routes 82, 85, 87 and 130, and the Capitol Expressway. The OFF infestation currently is concentrated in a residential district (USDA-APHIS, 2021h); schools, municipal parks, cemeteries, and public and private recreational facilities occur within or near the program area. Potential host vegetation in the proposed program area occurs on both private and public property.

The National Agricultural Statistics Service reports a wide variety of land uses for the area under consideration for the San Jose OFF Program. Land in the proposed treatment area is developed primarily for urban and suburban use. Land within the quarantine boundary may be used for agricultural production. Commercial crops produced in the past included known OFF-host spp.

such as cherry, grape, peach, plum, tomato and walnut; growers also cultivated alfalfa, almond, clover/wildflower, corn, legumes, hay, oat, olive, rye, strawberry, winter wheat, and other crops (see Appendix B for data source).

Most of the acreage within the proposed *Bactrocera* quarantine is developed (including over 1,795 acres of developed open space). There are also roughly 21 acres of barren land, 1.8 acres of fallow/idle cropland, 120 acres of open water, and more than 1,185 acres of shrubland/wetland/forest/grass/pasture/wetland (see Appendix B for data source). Table 2 shows the proximity of the San Jose OFF Program area to other land sites of potential concern.

Table 2. Distance from *Bactrocera* Detection Cores to Select Land Sites.*

Designated Land Use	Location	Distance Rounded Off to Nearest Tenth of a Mile
Certified Organic Production and Farmers' Markets	• Sun Basket	1.9
	• The Rejuvenation Company	2.5
	• Organica Fresh	3.4
	• Olivera Egg Ranch, LLC	6.3
	• Adeline Chemicals LLC	7.2
Local, State and Federal Lands	• Hellyer Park & Coyote Creek Trail	0.1
	• Kelley Park Disc Golf Course	1.0
	• Coyote Creek Park Chain	1.0
	• Martial Cottle Park	2.0
	• Guadalupe River Trail	3.5
	• Lake Cunningham Park	3.7
	• Joseph D Grant County Park	5.0
Nearest Aiports and Seaports	• Norman Y. Mineta San Jose International Airport	2.5
	• Reid-Hillview Airport	2.6
	• Moffett Federal Airfield	10.0
	• Metropolitan Oakland International Airport	32.0
	• San Francisco International Airport	33.0
	• Port of San Francisco	46.0
	• Salinas Municipal Aiport	49.4
	• Monterey Peninsula Airport	52.1
	• Stockton Metropolitan Airport	52.6
	• Modesto City Co-Harry Sham Field	55.3
	• Charles M. Schulz Sonoma County Airport	95.0
	• Sacramento International Airport	95.1
Nearest Historic Sites	• Spillman Engineering 3-Abreast Carousel	2.3
	• Hayes Mansion	2.5
	• Ashworth-Remillard House	2.6

Designated Land Use	Location	Distance Rounded Off to Nearest Tenth of a Mile
	• Ross House	3.2
	• Troy Laundry	3.3
	• Dohrmann Building	3.7
	• Renzel, Ernest & Emily, House	3.7
	• Twohy Building	3.8
	• Hotel Montgomery	3.8
	• Hotel Sainte Claire	3.8
	• Free, Arthur Monroe, House	3.8
	• East San Jose Carnegie Library	3.9
	• Our Lady of Guadalupe Mission Chapel	3.9
	• Civic Art Gallery	3.9
	• St. Joseph's Roman Catholic Church	3.9
	• Roberto--Sunol Adobe	4.1
	• De Anza Hotel	4.1
	• First Unitarian Universalist Church	4.2
	• Roma Bakery	4.2
	• Peralta, Luis Maria, Adobe	4.2
	• Moir Building	4.3
	• Leib Carriage House	4.7
	• Galindo-Leigh House	4.9
Nearest Native American Lands	• Ceded land – site 1	0.0
	• Ceded land – site 2	3.3
Nearest U.S./Mexico Border	_____	434.0

* See Appendix B for data sources.

Water Resources

Ground water and surface water resources in the proposed program area are affected by weather events, such as drought and hurricanes. There is a projected decline in natural water resources in the State; to promote water conservation and to reallocate water resources California governors periodically call for voluntary reductions in water use or set water use limits.

San Jose is located in the South Bay region of California. Much of the surface water used for the region's electric power, irrigation, and drinking water is imported from the Mokelumne, Tuolumne, Sacramento and Feather rivers. The city's water supply relies on water supplied via the Central Valley Project, the State Water Project, the Hetch Hetchy Project, the East Bay Municipal Utility District, groundwater, and local streams and reservoirs (WEF, 2021).

Five watersheds (a portion of land whose runoff drains into a creek, river, or other body of water) occur in the proposed program area. Water located beneath the proposed treatment area for the San Jose OFF Program, or surface water that drains off of it, may enter the following watersheds: Canoas Creek, Guadalupe River, Metcalf Canyon-Coyote Creek, San Jose State University-Frontal San Francisco Bay Estuaries, Silver Creek (data source in Appendix B).

Riverine, freshwater forested/shrub, freshwater pond, and freshwater emergent wetlands occupy over 229.7 acres of the proposed treatment area; in the quarantine there are over 1,377.7 acres of lake, riverine, freshwater forested/shrub, freshwater pond, freshwater emergent, and other types of wetland (data source in Appendix B). Table 3 shows distances between the proposed OFF program and water resources of potential concern.

Table 3. Distance from *Bactrocera* Detection Cores to Select Water Resources.*

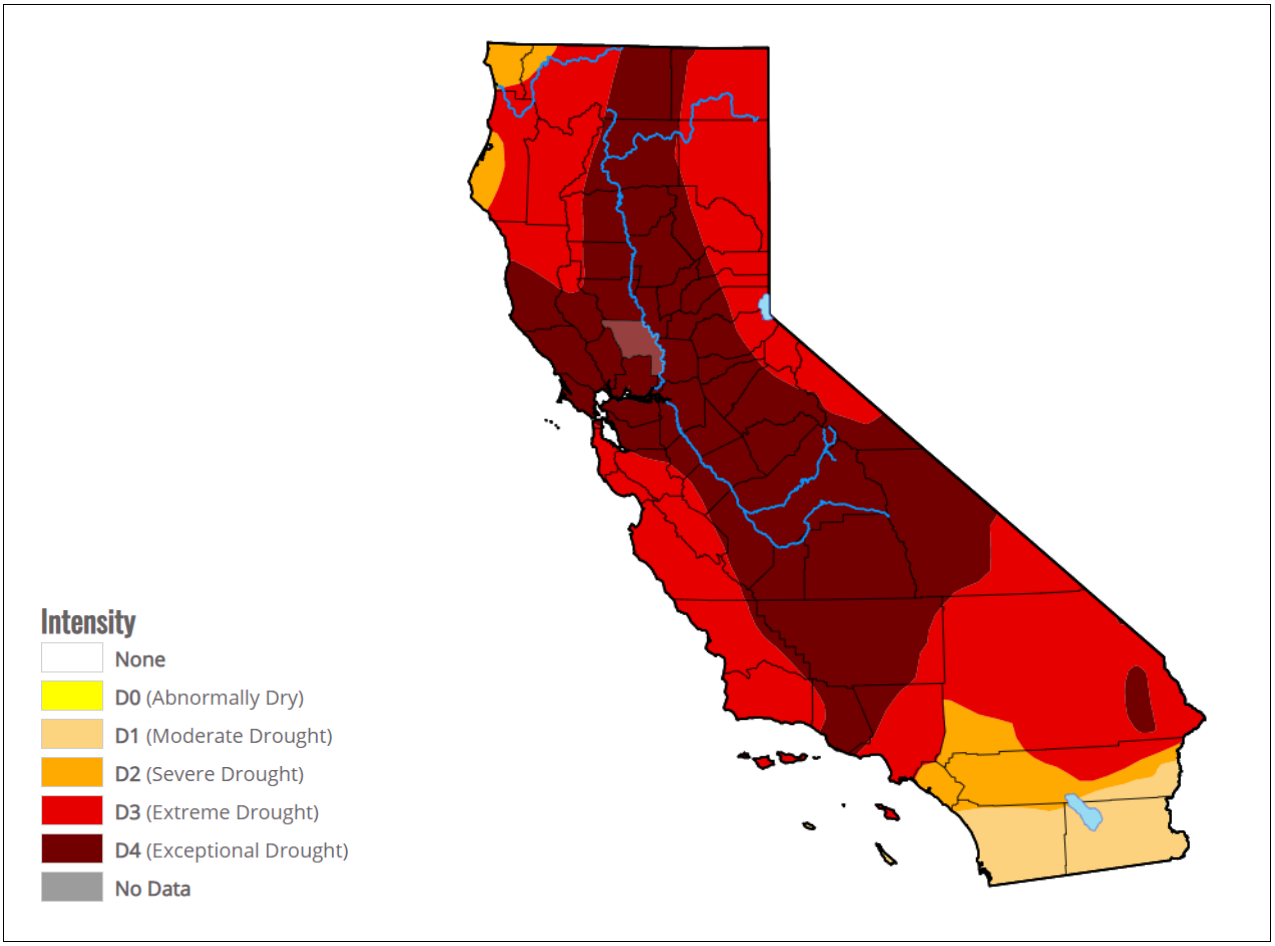
Type of Resource	Location	Distance Rounded Off to Nearest Tenth of a Mile
Impaired Waters	• Lake Cunningham	3.0
	• Almaden Lake	4.2
Waterbodies	• Coyote Creek	0.3
	• Cottonwood Lake	1.7
	• Canoas Creek	1.8
	• Thompson Creek	1.9
	• Frontier Village Lake	2.3
	• Guadalupe River	2.4
	• Ross Creek	2.6
	• Lake Cunningham	3.0
	• Silver Creek	3.1
	• Flint Creek	3.1
	• Fowler Creek	3.2
	• Quimby Creek	3.2
	• Thompson Creek	3.4
	• Flint Creek	3.5
	• Yerba Buena Creek	3.5
	• Norwood Creek	3.5
	• Silver Creek	3.6
	• South Babb Creek	3.6
	• Los Gatos Creek	3.7
	• Guadalupe Creek	3.9
	• Almaden Lake	4.2

* See Appendix B for data sources.

In 1985, California enacted legislation to protect the potability of its ground water; potential contaminants are identified and pesticide use restrictions are implemented for vulnerable areas (State of California, 2021a). The State and Regional Water Boards assess water quality data for California's waters every two years to determine if they contain pollutants at levels that exceed protective water quality criteria and standards (State of California, 2021b). The proposed *Bactrocera* program calls for highly localized chemical applications in designated properties, and treatment buffers around all sensitive areas, including all waterbodies. This method of application is designed to minimize the potential for introduction of program chemicals to local water resources.

We consider recurring drought to be an important influence on the San Jose OFF Program's affected environment. The climate in the proposed program area is variable; droughts of notable duration and/or intensity occur periodically. As of September 21, 2021, most of the western United States were drier than normal, and several wildfires continued to burn in California. Extreme drought conditions exist across Santa Clara County and the San Jose OFF Program area. Drought is creating both short and long term impacts on the entire State (National Drought Mitigation Center, 2021; see Figure 1). Wildfire damage, lack of potable water, hot weather, and a threatened power grid are ongoing issues for residents; CDFA predicts that 500,000 acres will have to lie fallow in 2021 due to water shortages (Canon, 2021). In May 2021, the California governor stated that "climate change is intensifying the impacts of droughts on our communities, environment, and economy" (see Table 4) while proclaiming a state of emergency and implementing regulations restricting water supply (State of California, 2021c). USDA-APHIS' fruit fly control program activities are designed to have minimal to no impact to water supply and water quality.

Figure 1. Map of Recent Drought Conditions in California.



Source: National Drought Mitigation Center, 2021.

Table 4. Drought Impacts Specific to California.

Intensity	Historically observed impacts
D0	• Soil is dry; irrigation delivery begins early. • Dryland crop germination is stunted. • Active fire season begins. • Winter resort visitation is low; snowpack is minimal.
D1	• Dryland pasture growth is stunted; producers give supplemental feed to cattle. • Landscaping and gardens need irrigation earlier; wildlife patterns begin to change. • Stock ponds and creeks are lower than usual.

Intensity	Historically observed impacts
D2	• Grazing land is inadequate. • Producers increase water efficiency methods and drought-resistant crops. • Producers increase water efficiency methods and drought-resistant crops. • Fire season is longer, with high burn intensity, dry fuels, large fire spatial extent; more fire crews are on staff. • Wine country tourism increases; lake- and river-based tourism declines; boat ramps close. • Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase. • Water temperature increases; programs to divert water to protect fish begin. • River flows decrease; reservoir levels are low and banks are exposed.
D3	• Livestock need expensive supplemental feed, cattle and horses are sold; little pasture remains, producers find it difficult to maintain organic meat requirements. • Fruit trees bud early; producers begin irrigating in the winter. • Federal water is not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive. • Dairy operations close. • Fire season lasts year-round; fires occur in typically wet parts of the State; burn bans are implemented. • Ski and rafting business is low, mountain communities suffer. • Orchard removal and well drilling company business increase; panning for gold increases. • Low river levels impede fish migration and cause lower survival rates. • Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less. • Water sanitation is a concern, reservoir levels drop significantly, surface water is nearly dry, flows are very low; water theft occurs. • Wells and aquifer levels decrease; homeowners drill new wells. • Water conservation rebate programs increase; water use restrictions are implemented; water transfers increase. • Water is inadequate for agriculture, wildlife, and urban needs; reservoirs are extremely low; hydropower is restricted.
D4	• Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small. • Fire season is very costly; number of fires and area burned are extensive. • Many recreational activities are affected. • Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; survival of native plants and animals is low; fewer wildflowers bloom; wildlife death is widespread; algae blooms appear. • Policy change; agriculture unemployment is high, food aid is needed. • Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile Virus outbreaks rise. • Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are extremely low; junior water rights are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor.

Source: National Drought Mitigation Center, 2021.

B. Potential Effects Associated with the No Action Alternative

Under the no action alternative, uncoordinated or insufficient eradication efforts could result in the survival and establishment of *Bactrocera* spp. within the contiguous United States. If there are established *Bactrocera* populations we expect substantial economic effects to U.S. growers, processors, shippers, and consumers. *Bactrocera* feeding damages fruit and reduces harvestable yield, resulting in commodity scarcity, higher costs for production and purchase, agricultural land abandonment, and the temporary or permanent loss of domestic and foreign markets for U.S. grown commodities.

Lack of federal action would place the burden of fruit fly control on the State of California and members of the agricultural industry. While the State is likely to retain surveillance and trapping activities, members of the agricultural industry are likely to increase pesticide use to protect their crops. Crop producers may experience a reduced capability to comply with organic crop production practices. The likelihood of potential pesticide impacts on consumers would increase. Increased use of pesticide to protect host plants would risk faster development of pesticide resistance in *Bactrocera* spp. *Bactrocera* populations would continue to increase and disseminate until achieving an environmental equilibrium with host availability.

C. Potential Effects Associated with the Quarantine and Commodity Certification Alternative

This alternative would reduce the human-mediated movement of *Bactrocera* spp. by preventing the transportation of uninspected host plant materials beyond the quarantine boundary. Under this alternative, USDA-APHIS expects resident pest populations would persist within the quarantine boundary. A persistent infestation threatens the survival of host species in California and may lead to fruit fly populations with increased resistance to pesticides. Any failure in quarantine actions could lead to *Bactrocera* establishment outside quarantine boundaries via natural spread or human-assisted transport. In response, new or expanded quarantine areas would be needed to contain pest populations. Ongoing surveillance outside of quarantine areas would be needed to identify and respond to natural spread.

We also expect there would be adverse effects to U.S. agriculture and the economy from an ongoing exotic fruit fly infestation in California. Commodity certification requirements would create a necessary additional layer of governmental presence in the marketplace. This situation could create inspection jobs; however, trade would be restricted until the produce was inspected and certified for sale. Infested crops would be destroyed, reducing the volume of marketable fruit. Crop loss due to uncontrolled fruit fly populations is likely to lead to commodity scarcity and higher costs for U.S. consumers. A persistent *Bactrocera* population that is not under an official control program is likely to jeopardize U.S. trade relations. Implementation of this alternative is likely to increase the marketing and transportation costs passed to consumers.

D. Potential Effects Associated with the Preferred Alternative

This section considers potential effects to the human environment that are associated with implementation of the preferred alternative. This section also summarizes our findings on the potential effects associated with the eradication measures in the preferred alternative.

Eradication using an IPM approach, is the preferred alternative that would employ any or a combination of the following measures:

- no action
- regulatory treatments and movement control
- host survey
- host removal
- chemical control
- mass trapping to delimit and monitor *Bactrocera* presence

No Action is an option at sensitive sites where other components of the integrated management system cannot be accommodated. Sensitive sites are locations where unique features of the site could lead to significant environmental impacts. Eradication of *Bactrocera* from sensitive sites would be difficult, requiring ongoing commitments of personnel and resources to contain the infestation within site boundaries. Failure to contain these pests would likely lead to the *Bactrocera* population's expansion into previously uninfested areas of California and the surrounding region.

Fruit fly program risk assessments included a thorough analysis of trap application technology and use (USDA-APHIS, 2018c, 2018f, 2018g). USEPA approval of new materials and chemical formulations precedes USDA-APHIS revision of trap application information. Our review of the treatment protocols found the small quantity of chemical formulations used as fruit fly pheromone lures and food baits is unlikely to result in adverse environmental or human health risks, due to low toxicity in animal testing, high target specificity, and low exposure to humans and the general environment (USDA-APHIS, 2018c, 2018e, 2018f, 2018g, 2014, 2003; Reilly, 2003).

USDA-APHIS expects the traps approved for *Bactrocera* spp. to pose little threat to nontarget plants and animals when used as directed. We anticipate the small number of nontarget arthropods that may be caught in program traps would have a minimal and transitory effect on the overall populations of their species. Program traps are placed out of the reach of the public so individuals living in the treatment areas are not likely to be exposed to chemical compounds used in the traps. To inform the public, traps display the appropriate warning on the label for the level of chemical risk. There is minimal exposure risk to applicators during trap preparation and placement based on the required use of personal protective equipment and adherence to proper application procedures. Depending on the frequency of trap placement and monitoring, there could be minimal disturbance of the soil surface or vegetation from vehicular and foot traffic.

The traps and chemical treatments administered by our fruit fly programs pose minimal risk to the human environment, as determined in our FFEIS (USDA-APHIS, 2018a) and associated risk assessments (USDA-APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003). The described uses of bait spray, bait stations, and MB would likely result in shorter periods of quarantine and/or commodity certification requirements, potentially reducing effects to agriculture and trade-related industries. The discussion in the remainder of this chapter focuses on the eradication measures of the preferred alternative.

Effects Associated with Chemical Treatments

USDA-APHIS seeks to minimize the risk of environmental contamination to air and water associated with chemical treatment of *Bactrocera* spp. A controlled release of chemicals into the environment is inherent in the limited program use of pesticides.

Environmental Fate

The environmental fate of a chemical depends on the combination of the chemical's properties with the prevailing environmental characteristics (temperature, pH, dilution, etc.). Both direct contact with waterbodies and runoff of program pesticides into water are highly unlikely due to the targeted application methods, the use of distance buffers, and the environmental fate of the pesticides selected for use in the program. The methods used to mitigate for adverse effects to waterbodies are described in FFEIS (USDA-APHIS, 2018a). Our fruit fly program operations allow unique sites to depart from standard operating procedures while providing effective pest control. Typically, the selection of control methods and use of specific mitigation measures accommodates sensitive sites in pest program areas.

We compared the active ingredients in the treatment options with respect to their potential to affect the human environment, and found the combined risk for all the pesticides in the preferred alternative is minimal. A well-coordinated eradication program using IPM technologies would result in the overall least use of pesticides. Taking no action, or limiting program actions to quarantine and commodity certification, would likely result in an expanding infestations. This would lead to more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse effects to human health and ecosystems. Implementation of the preferred alternative is likely to eliminate a *Bactrocera* spp. population more effectively than the other alternatives, and consequently, the program would make fewer pesticide applications over time.

The remainder of this section reviews the active ingredients in the prescribed pesticides by summarizing information in prior NEPA analyses and chemical risk assessments (i.e. USDA-APHIS, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2008, 2007, 2003, 2002, 2001), but should not be considered encyclopedic. Please consult USEPA pesticide registration documentation for additional information.

- MB fumigation could be used as a commodity treatment prior to certification, but will not be used as it is not an eradication treatment. This type of use would occur under a FIFRA Section 18 Quarantine Exemption and USDA-APHIS would meet all reporting requirements. Fumigation chambers vent the small quantities used to treat for OFF. MB volatilizes into air from soil and water, and is known to contribute to stratospheric ozone depletion. Volatilization of MB from surface soil is rapid, with a half-life ranging from 0.2 to 0.5 days. The degradation half-life of MB in soil ranges from 31 to 55 days. MB has a low affinity to bind to soils; however, it is not considered a major contaminant of ground water (NPIC, 2000). The volatilization half-life for MB from surface water ranges from 3.1 hours to 5 days. The degradation half-life of MB in water ranges from 20 to 38 days, depending on temperature and pH.

- Naled degrades quickly in the environment to dichlorvos (a registered insecticide) and dichloroacetic acid via chemical hydrolysis and biodegradation. Studies show that naled dissipates rapidly with half-lives of less than two days under terrestrial, aquatic, and forestry field conditions. The dissipation is also rapid for dichlorvos. The presence of sunlight accelerates degradation with photolysis half-lives of 0.4 days (soil) and 4.4 to 4.7 days (aqueous). The bioaccumulation potential for naled and dichlorvos is expected to be low (USDA-APHIS, 2018c, 2018f). Soil microbes break down most of the naled in the soil and, therefore, it should not present a hazard to ground water. The half-life of naled on foliage ranges from 2.3 to 2.5 days. Plants remove bromine from naled to form dichlorvos which may evaporate or be further metabolized (Extoxnet, 1996).

- Spinosad is not considered mobile in soil as it adsorbs strongly to soil particles and is unlikely to leach to great depths. Dissipation half-lives for spinosad in the field may last 0.3 to 0.5 days. It is photodegraded quickly on soil exposed to sunlight. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Spinosad is not sensitive to hydrolysis, but aqueous photolysis is rapid in natural sunlight (half-life of less than 1.0 to 1.6 days), and is the primary route of degradation in aquatic systems exposed to sunlight. Under anaerobic conditions, the degradation rate is slower, between 161 and 250 days. Spinosad has a half-life of 2.0 to 11.7 days on plant surfaces. After initial photodegradation, residues are available for metabolism by plant biochemical processes. Effects from residues of individual treatments are no longer detectable in environmental substrates within a few weeks of application (USDA-APHIS, 2014; Kollman, 2003).

Additional chemical considerations

Attractants in USDA-APHIS fruit fly program treatments (i.e., fruit fly pheromone lures and food baits) minimally effect air, water, and land resources, based on USEPA-approved use patterns and the rapid degradation of the ingredients. In general, the environmental fate associated with the active ingredients (as described in subsection (a) forms the basis for any effects from the overall attractant. We take care to keep animals away from spray solutions containing food bait and toxic pesticides if animals might be attracted to a solution to drink it. In accordance with CDFA's National Pollutant Discharge Elimination System best management practices, the program establishes a 30-foot treatment buffer around all waterways. The program also delays foliar treatments if there is a 40% or higher chance of rain forecast to occur in the next 24 hours, or if wind speeds are over 10 miles per hour (D. Kelch, personal communication, 2021-10-01). USDA-APHIS follows all pesticide label and registered use requirements to minimize the potential for effects to the environment.

Overall, we expect limited potential for pesticide interaction or for multiple exposures. The San Jose OFF Program will coordinate with other pest programs in California to avoid any overlap of toxic eradication treatments.

- As of October 20, 2021, in addition to the San Jose OFF Program proposed for Santa Clara County, there are no other active quarantines targeting fruit flies in California. CDFA is working to eradicate *Bactrocera* populations in areas of Los Angeles and

Orange Counties before they can trigger a quarantine (N. Mullaly, personal communication, 2021-10-20). The distance from the proposed San Jose OFF treatment core to Los Angeles County (which has the nearest active fruit fly eradication program) is 234 miles. The shortest distance between Santa Clara County and Los Angeles County is 195 miles. Under the preferred alternative, CDFA's Santa Clara eradication program would be incorporated in USDA-APHIS' proposed cooperative quarantine and eradication program.

Current and future in-state *Bactrocera* control programs could merge into one larger program area, depending on fruit fly dissemination and weather influences. We expect the combination of Bactrocera trapping and eradication actions across California counties to have beneficial effects from the reduction in fruit fly populations causing damage to fruit, and from overall reductions in chemical treatments.

- We considered implementation of the preferred alternative in the context of, and in conjunction with, other pest eradication and quarantine projects that might occur in the program area (e.g., Japanese beetle, light brown apple moth and glassy-winged sharpshooter control efforts). USDA-APHIS does not expect significant additive or synergistic effects from pesticide use by these programs, due to differences in pesticide mechanisms of toxic action, targets for pesticide application, affected species and resources, and application timing. Other pest control programs currently active in the proposed program area may apply the same or similar chemical treatments (including, but not limited to, naled or spinosad formulations and MB fumigation). These programs are applying eradication treatments for for Asian citrus psyllid in 11 counties, including Santa Clara County; glassy-winged sharpshooter in Fresno, Madera, and Tulare Counties; OFF and peach fruit fly in Los Angeles and Orange Counties, respectively (CDFA, 2021i, 2021j, 2021k).

- CDFA is currently carrying out delimitation trapping programs for guava fruit fly, Mexican fruit fly, OFF, and peach fruit fly in seven California counties, including Santa Clara County; trap grids are centered on detection sites. CDFA is also conducting an OFF eradication program in Los Angeles County and a peach fruit fly eradication program in Orange County; neither location has reached a quarantine level of detections (N. Mullaly, personal communication, 2021-10-21). Whether or not there is an active federal quarantine for fruit flies in California, trapping and surveys for *Bactrocera* spp. continue under the State's fruit fly detection and monitoring program. Adverse environmental impacts have not been reported or are expected to occur from these ongoing actions.

- A cooperative fruit fly eradication program (also targeting OFF) in Santa Clara County was successfully completed; USDA-APHIS lifted the quarantine in November 2015 (USDA-APHIS, 2015a). The most recent *Bactrocera* cooperative eradication program in California (in portions of Sacramento and Yolo Counties) was completed in May 2019 (USDA-APHIS, 2019a). Chemical residues from past *Bactrocera* programs degrade over time in the prevailing weather conditions in California, so it is highly unlikely that

their pesticide applications would have additive or synergistic effects with San Jose OFF Program applications.

Active ingredients for the proposed treatments

MB is a regulatory commodity treatment used to allow movement of *Bactrocera*-host materials outside the quarantined area. MB is an organobromine compound used as a broad spectrum fumigant to control insects, mites, rodents, plant pathogens, nematodes, termites, and weeds. It can be used as a soil fumigant, as a post-harvest treatment of commodities, and for structural fumigation (USEPA, 2008). Additional uses were removed because MB is an odorless, colorless gas that depletes the ozone layer in Earth's atmosphere, allowing increased ultraviolet radiation to reach the planet's surface. USDA-APHIS determined that use of MB as a fruit fly quarantine treatment poses negligible potential for additive or synergistic effects to the environment (USDA-APHIS, 2002, 2007). Currently, there is limited use of MB as a pesticide for certain agriculture, quarantine and pre-shipment purposes.

Naled is an organophosphate insecticide that would be used in California's OFF program Jackson traps. It is also used as an insecticide for large-area mosquito control and as an acaricide to kill mites and ticks. Naled is registered to control blackflies and leaf-eating insects on a variety of fruits, vegetables, and nuts; it may be used in barns, greenhouses, and at processing plants. Naled has been used to treat dogs for nematode infestation (PubChem, 2021; USDA-APHIS, 2018f). USDA-APHIS' cooperative OFF eradication programs would use naled in traps or bait stations (USDA-APHIS, 2018f).

Spinosad would be used in the prescribed bait stations and as a targeted foliar spray. It is a natural substance made by a soil bacterium that can be lethal to insects (NPIC, 2014). As a neurotoxin, spinosad works by disrupting nicotinic acetylcholine receptors (USEPA, 2016). It has other labeled food and non-food uses including the control of fire ants, beetles, caterpillars, termites, and thrips (USDA-APHIS, 2014; Merchant, 2004). Implementation of a governmental OFF eradication program could lead to an increase in spinosad use (as a bait spray) and the possible overlap of USDA-APHIS and non-USDA-APHIS program treatments.

We do not know the types or amounts of pesticide use by private entities in the proposed program area. Despite this, USDA-APHIS does not expect there to be significant additive or synergistic effects as a consequence of implementing the preferred alternative or its component treatment measures based on the very limited amount of pesticides used during this program. Under the preferred alternative, program pesticide applications are designed to avoid overlapping treatment cores, and to prevent nontarget exposure until pesticide residues degrade. Therefore we did not identify any reasonably foreseeable future actions that could result in incremental increases in environmental effects.

Human Health

The principal concerns for human health are related to potential program use of chemical pesticides. Factors that affect the human health risk include pesticide toxicity and the potential for human exposure. Pesticide toxicity varies with the mode of action. These factors are

influenced by the use pattern and the environmental fate for each particular pesticide. The analyses and data of FFEIS and the associated human health risk assessments indicate exposures to pesticides from normal program operations are not likely to result in substantial adverse human health effects. (Refer to the FFEIS (USDA-APHIS, 2018a) and the human health sections of the supporting risk assessments (USDA-APHIS, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) for additional information on risks to human health.)

USDA-APHIS determined that risks to human health from the proposed pesticide treatments are minimal, based on the low probability of exposure to people and the environment by adherence to label requirements, the use of personal protective equipment, favorable environmental fate and effects data, and the program's proposed use pattern.

- MB binds to DNA, fats, and proteins (NPIC, 2000). Human exposure to high concentrations of MB can cause central nervous system and respiratory system failures and can harm the lungs, eyes, and skin. Should treatment by MB fumigation be indicated, adherence to USEPA label restrictions and application in enclosed areas or containers would protect applicators and the public from risk of exposure to the fumigant (USDA-APHIS, 2007, 2002). In USDA-APHIS's cooperative fruit fly programs, MB chamber fumigations are performed on picked fruit at the packing sheds and are never conducted in fields where malathion and/or spinosad treatments take place (G. Gracia, personal communication, 2021-02-05). In the State of California, MB is never used in the field (R. Johnson, personal communication, 2021-10-13).

- Naled is a cholinesterase (ChE) inhibitor that disrupts the nervous system. Symptoms of ChE inhibition in humans include nausea, dizziness, and confusion. Exposure to high doses of naled, which could occur during an accident or major spill, can result in respiratory paralysis and death. Program application methods (inside traps or bait stations) and adherence to label requirements substantially reduce the potential for exposure. Adverse health risks to workers are not expected when applications are made according according to label directions. Adverse health risks to the general public are not expected based on the requirements for public notification as specified on the label, and the placement of traps out of the normal reach of children (USDA-APHIS, 2018f).

- Spinosad targets the nervous system of invertebrates. Contact may irritate human skin and eyes (NPIC, 2014) but overall spinosad has low acute toxicity for oral, dermal, and inhalation routes of exposures. USEPA studies indicate spinosad is unlikely to be neurotoxic, mutagenic, carcinogenic, or immunotoxic in mammals. Ground-based targeted applications of spinosad (as bait stations or foliar spray) by our fruit fly eradication programs are unlikely to pose adverse risks to human health, due to spinosad's low toxicity as well as the low risk of exposure when applications are made in accordance with USEPA label instructions (USDA-APHIS, 2014, 2003). After pesticide application, the potential for the public's exposure is low because spinosad does not persist in the environment (USDA-APHIS, 2014; Kollman, 2003).

Of the alternatives considered, a well-coordinated eradication program using IPM technologies results in the least use of chemical pesticides and minimizes their potential to adversely affect human health. Workers who mix, load, and apply pesticides, and members of the public who live in or visit a *Bactrocera* spp. eradication area, are the potentially exposed human populations. Exposure of program workers is not expected based on the proper use of personal protective equipment and engineering controls. Accidental exposure is the most likely route of exposure to program workers during pesticide mixing, loading, and spraying. The risk of accidental exposure is minimal because only certified applicators working with federal and state agencies or persons under their guidance, would handle chemicals in the San Jose OFF Program.

Pesticide exposure by the public is unlikely based on program adherence to pesticide label requirements and mitigations. We do not expect adverse health risks to the public because there is a notification process that occurs in advance of the treatment, ground-treatments are highly localized, and the program maintains restricted entry and post-harvest intervals. Public notification includes sharing information concerning program control actions via press releases and media announcements. Depending on the treatment area, either the County's agricultural commissioner, extension agent, or public information officer serves as the primary media liaison. Any resident with property to be treated would be directly contacted or be notified in writing at least 48 hours prior to treatment of the property. Program personnel also leave notices on property after treatment. The notices detail any precautions people should take, and identify any intervals of time that should elapse before harvesting fruit on the property. USDA-APHIS and CDFA provide information about the program to property owners and residents, via translators and printed door hangers if available. The risks to the public associated with dietary consumption of fruit from treated plants are low, based on the program's removal of fruit in treated areas and the notification processes.

In addition, program site inspections ensure chemical treatments are not likely to affect humans and ecosystems. Trap placement and chemical applications may be rescheduled if strong winds or rainfall is forecast for the program area or nearby areas. These procedures reduce the potential for pesticide movement in water and air to nontarget locations. The destruction or relocation of traps and treatments due to weather events is unlikely to adversely effect the human environment because the amount of pesticide is diluted during the storm's water and air movement. The program establishes no-spray buffer areas to reduce the potential for pesticide drift and runoff. Traps would be incinerated in a wildfire. For these reasons, program operations are highly unlikely to effect soil and water features in the affected environment.

USDA-APHIS recognizes a small portion of the population may have greater than usual sensitivity to certain chemicals, and program treatments may pose heightened risks to these individuals. To mitigate these risks, program personnel will communicate with individuals identified as sensitive before making treatments to their properties, and will notify the public before treating public-access areas.

Nontarget Species

For the no action alternative and the quarantine/commodity certification alternative, potential environmental effects on nontarget species could include loss of animal and plant life and habitat from unregulated pesticide use by the public, or from *Bactrocera* host damage.

The cooperative eradication program in Santa Clara County would be limited to targeted bait spray applications to host foliage and placement of gel bait stations in order to control invasive OFF populations. These treatments would target OFF life stages in a manner that minimizes potential exposure and associated risks to nontarget species.

- Baits: The pheromones and food baits approved for our *Bactrocera* program traps and treatments may attract certain nontarget species, exposing them to the pesticide ingredient. When used in accordance with USEPA label requirements, OFF Program baits (methyl eugenol and Torula yeast) are expected to have only minimal, transient impacts on nontarget animal populations (USDA-APHIS, 2018g).

- Protein hydrolysate is a common attractant used in fruit fly treatments, increasing the efficacy of chemical applications and reducing the area of pesticide treatments needed for control (Prokopy et al., 1992). OFF attracted to the protein hydrolysate receive a lethal dose of the pesticide spinosad that is mixed with the attractant. The protein hydrolysate selected for program use is expected to have minimal impacts to environmental quality based on its use pattern and rapid degradation; because of its low toxicity, impacts to nontarget species are unlikely.

- Spinosad has low to moderate toxicity to wild mammals and birds. Spinosad toxicity to fish is moderate, while aquatic invertebrates are more sensitive in acute and chronic exposures. Toxicity to terrestrial invertebrates is variable; however, spinosad is considered highly toxic to honey bees. Risks to nontarget fish and wildlife are anticipated to be negligible based on the proposed use pattern that would result in a low potential for exposure to most taxa. A favorable environmental fate profile and low toxicity to most nontarget organisms further reduces the risk to terrestrial and aquatic animals (USDA-APHIS, 2014).

- Naled is toxic to birds, terrestrial and aquatic vertebrates, and terrestrial invertebrates, including pollinators (USDA-APHIS, 2018f). However, the potential exposure of aquatic or terrestrial species to the naled used in Jackson traps is expected to be low (USDA-APHIS, 2018f).

USDA-APHIS finds the program insecticides under the preferred alternative have a low potential for adverse effects to nontarget species. MB fumigation methods protect nontarget species by preventing exposure to this pesticide (USDA-APHIS, 2007, 2002). When deployed according to label instructions, the delimitation and monitoring traps pose little threat to nontarget plants and animals. The small number of nontarget arthropods that may be caught in program traps would have a minimal effect on the overall population of their species (USDA-APHIS, 2018f). Program performance of the prescribed surveys and fruit removal will not have adverse effects nontarget species.

Conservation areas in Santa Clara County provide important habitat for a wide variety of wildlife that cannot be seen anywhere else in the United States. The proposed program area in Santa Clara County contains state, county, and local parks such as Hellyer Park and Coyote Creek Trail, Coyote Creek Park Chain, Martial Cottle Park, Guadalupe River Trail, Lake Cunningham

Park, and Joseph D. Grant County Park. Sensitive sites could include irrigation canals, coastal wetlands, and salt lakes of potential ecological importance. Program chemical applications would not occur at these sites or within refuges or other protected areas. Otherwise, program activities at these sites would include surveillance trapping and fruit stripping by hand if OFF. detections occur.

Migratory Birds

Unless permitted by regulation, the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703–712) prohibits intentional take[2] of migratory birds or any part, nest, or egg of migratory birds.

Executive Order (EO) 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," directs federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to promote the conservation the conservation of migratory bird populations. On August 2, 2012, USDA-APHIS and USFWS signed an MOU to facilitate the implementation of this EO.

More than 400 species of birds have been recorded in Santa Clara County (Bousman, 2016). This region of California, which is part of the Pacific Flyway, is an important migration corridor providing suitable habitat for many bird species.

USDA-APHIS evaluated the proposed OFF program in terms of potential impact on migratory avian species. Acute and chronic toxicity to birds from spinosad is low (USDA-APHIS, 2014). The localized and direct application of spinosad baits to host plants would not affect wild bird foods based on the targeted application of the spinosad baits to *Bactrocera* spp. host plants. Birds would not be exposed to MB treatments because the vented gas is rapidly dispersed and diluted in the air. Also, birds would not be exposed to naled inside Jackson traps or spinosad in MAT applications. The proposed program would not involve removal or disturbance of any trees, shrubs, or other vegetation on the project site that could be used by birds. No purposeful take of any migratory bird is part of the proposed program.

Endangered Species Act

Section 7 of the ESA (16 U.S.C. §§1531 et seq.) and its implementing regulations (50 CFR Part 402) require federal agencies to consult with USFWS and/or the National Marine Fisheries Service (NMFS) to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat. If listed species or critical habitat are present in the area and program activities may affect them, USDA-APHIS consults with USFWS and NMFS, as appropriate.

[2] "Intentional take" means the unlawful pursuit, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner.

We reviewed the program area and proposed treatment activities for potential co-occurrence of federally listed species and critical habitat under USFWS jurisdiction to determine if any proposed program treatments may affect listed species or critical habitat. According to the Information for Planning and Consultation (IPaC) official species list for the program area (USFWS, 2021), the species to consider in the program area are: San Joaquin kit fox (*Vulpes macrotis mutica*), California least tern (*Sterna antillarum browni*), California clapper rail (*Rallus longirostris obsoletus*), marbled murrelet (*Brachyramphus marmoratus*), California red-legged frog (*Rana draytonii*), California tiger salamander (Central California Distinct Population Segment) (*Ambystoma californiense*), delta smelt (*Hypomesus transpacificus*), tidewater goby (*Eucyclogobius newberryi*), Bay checkerspot butterfly and its critical habitat, Contra Costa goldfields, coyote ceanothus, Metcalf Canyon jewelflower, robust spineflower, and Santa Clara dudleya. Only critical habitat for Bay checkerspot butterfly occurs in the program area.

USDA-APHIS does not intend to treat areas lacking host plants, such as open or riparian habitats, wild lands, valley and foothill grasslands or riparian areas (including marshes and swamps). Additionally, there are no plans to treat near freeway bridge abutments or drainage ponds. A minimum 30-foot buffer will be used around all waterbodies for spinosad treatments. All program vehicles will use existing roads.

USDA-APHIS contacted the Sacramento USFWS field office requesting concurrence that the proposed program would not adversely affect listed species in the program area and USFWS concurred in an email (T. Maurer, USFWS, personal communication, 2021-10-05).

We completed a programmatic consultation with NMFS for exotic fruit fly eradication programs in California (NMFS, 2018). From the consultation, no-treatment buffers (see Table 5) for spinosad (foliar bait and MAT) and naled-baited Jackson traps will be applied to waterbodies, including designated critical habitat, for certain species under NMFS jurisdiction. These no-treatment buffers are designed to protect listed fish from direct effects of program treatments, as well as any indirect effects resulting from impacts to prey items and habitat.

Table 5. No-Treatment Minimum Distances for Various Chemical Application Methods.

Chemical	Application Method	Application No-Treatment Buffer (in feet)
Naled	Jackson trap	10
Spinosad	Bait station	10
Spinosad	Foliar spot spray	30

Source: NMFS, 2018

USDA-APHIS used NMFS California species list datasets (see Appendix B for data source) to determine the listed species and designated critical habitat under NMFS jurisdiction in the program area. Central California Coast steelhead (*Oncorhynchus mykiss*) critical habitat is located within the treatment area (Coyote Creek). With the implementation of the no-treatment buffers included in Table 5 the program is not likely to adversely affect that species or its

designated critical habitat (NMFS, 2018).

A complete administrative record of this review is available upon request. If the San Jose OFF Program area expands, additional species become federally-listed as threatened or endangered, or critical habitat is designated in the program area, USDA-APHIS will reinitiate consultation with USFWS or NMFS, as necessary.

Other Aspects of the Human Environment

A lack of federal action ("no action") could result in adverse economic and public health impacts on affected producers and consumers, including decreased harvests, higher consumer prices, loss of local employment, reduced nutritional options, loss of market share, compromised mental and physical health, and loss of property. These reasonably foreseeable effects may occur to a lesser extent under the quarantine and commodity certification alternative. USDA-APHIS does not anticipate these types of adverse effects as a result of carrying out the preferred alternative's surveillance activities, trapping, and the program chemical applications.

Climate

Climate change (CC) refers to long-term shifts in average weather patterns that define the Earth's local, regional, and global climates. This includes changes in average daytime and nighttime temperature, precipitation, drought periods, periodicity of tornadoes and rainfall, polar ice melting, and ocean/sea level rise. Human-produced impact on global temperature (also known as anthropogenic global warming) may be avoided or reduced by government agencies through consideration of CC during the NEPA process. NEPA requires U.S. federal agencies to examine the reasonably foreseeable effects of a proposed action on the human environment (40 CFR § 1508.1(g)). Federal agencies comply with EOs 13990 ("Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis") and 14008 ("Tackling the Climate Crisis at Home and Abroad") by considering:

(1) the effects of CC on a proposed action,
(2) the potential effects of a proposed action on CC, and
(3) potential mitigation measures that could be applied to the proposed action.

Direct effects of CC on the fruit fly eradication program include increased likelihood of introduction and modification of the incidence, prevalence, persistence, and locations of fruit fly outbreaks. Over time, biological modifications to *Bactrocera* spp. are highly likely to include more generations per year, increased reproductive rates, and populations that survive over winter. Extreme precipitation and soil erosion coupled with overall drought increase the risk of crop exposure to heat events that reduce productivity. All these direct effects elevate risks to U.S. agricultural and natural resources.

Specific examples of impacts to program operations include: (1) extreme weather events may interfere with the servicing of traps and application of treatments, (2) higher temperatures and drought may reduce pesticide persistence in the traps triggering the need for shorter replacement intervals, and increasing program costs (3) fruit fly program funding may be redirected to disaster relief and other emergency responses.

Pertinent findings from the USDA-APHIS Annual Energy Report for 2019 (USDA-APHIS, 2019b) are summarized in Table 6. This is the last "pre-COVID pandemic" year with available data on all USDA-APHIS activities, including contracted services. The electricity use in all buildings totaled 14,275.1 megawatts (MWh). There were zero emissions reported for fugitive fluorinated gases, on-site landfills and municipal solid waste facilities, and industrial process emissions. There were zero indirect emissions reported for purchased steam and hot water, and chilled water. There was no impact due to market-based renewable purchases. While increased greenhouse gas (GHG) emissions from videoconferencing or media streaming during COVID-19 outbreaks could be attributed to agency activities, these emissions would likely occur during telework and are not likely to be part of future agency building emission estimates.

Our cooperative fruit fly eradication programs may use small, fixed-wing Cessna airplanes with IO-520 285 horsepower (213 kilowatt) engines to release sterile insects and to make aerial pesticide applications, as part of an integrated pest management program. USDA-APHIS based its calculation of fruit fly program aviation GHG emissions on the annual fuel quantity used by that type of aircraft (see Table 6).

Table 6. Summary of 2019 USDA-APHIS Reported GHG Emissions.

Categories				Total GHG in metric tons (MT) CO_2 equivalents[1]
Standard Operations: Total purchased electricity consumption in buildings				11,401.4
Standard Operations: Mobile Emissions from the Federal Automotive Statistical Tool FAST for petroleum (diesel and gasoline)				25,222.5
Non-Standard Operations: Mobile Emissions from the Federal Automotive Statistical Tool for high intensity operations				64.1
Total Biogenic CO_2 emissions				1,308.8
Total Agency Non-Aviation GHG Emissions				**37,996.8**
Total Standard Operations: vehicles and equipment (aviation gas and jet fuel)				**115.7**
Program	**Fuel Used**	**Estimated GHG Emissions**		**Total GHG in metric tons (MT) CO_2 equivalents[1]**
Fruit Fly	13,873.8 gallons	CO_2 = (8.31 kg/gal)(13,873.8 gal)(1000g/kg) +	115,291,300+	115.7
		N_2O = (0.07 g/gal)(13,873.8 gal)(298 factor to convert to CO_2) +	289,417.6+	
		CH_4 = (0.36 g/gal)(13,873.8 gal)(25 factor to convert to CO_2)	124,865 g	

[1]Sources: USDA-APHIS, 2019b, 2019c; USEPA, 2020

The combined agency total for Standard and Non-Standard Operations and Total Biogenic emissions is less than 40,000 metric tons (MT) CO_2 equivalent (see Table 6). Based on the

number of USDA-APHIS programs, shared use of facilities, and assuming proportionate fleet uses, the fruit fly program emissions would be less than the former 25,000 MT CO_2 equivalent threshold for a quantitative analysis suggested by the President's Council for Environmental Quality (USDA-APHIS, 2019b; USEPA, 2020).

Potential sources of GHG emissions inherent in fruit fly control or eradication activities include:

- Land vehicles and aircraft used during program delivery
- MB fumigation of commodities
- Pesticide manufacture

We considered the following mitigations to reduce GHG emissions resulting from fruit fly program activities:

- Efficiently combining vehicle trips by personnel
- Elimination of MB as a treatment option for commodities
- Obtaining and storing pesticides locally to reduce transportation emmisions

At the present time, the San Jose OFF Program does not anticipate the need to conduct MB fumigation of fruit fly host commodities on a frequent or extensive basis. Efficient vehicle use and improvements in fleet efficiency appear to be the most promising measures that could reduce fruit fly program-related GHG emissions.

Socioeconomics and Environmental Justice

This section analyzes the attributes of the economy and social life that promote the general welfare in the City of San Jose, county seat of Santa Clara County. With an area of 176.53 square miles and a 2020 population of 1,013,240, this city has a human density of 5,740 people per square mile (USCB, 2021), making it the third-most populous in California (after Los Angeles and San Diego) and the tenth most populous place nationwide (City of San Jose, n.d.).

Young people under 18 years old represent 22.4% of the city's population while adults 65 or older represent 12.5%. There are 325,144 households in San Jose and 57% of the housing units are homeowners. Race and ethnicity composition is as follows: 26.7% White, 34.2% Asian, 32.8% Hispanic, 2.8% Black, 3.5% others (USCB, 2021; City of San Jose, n.d.).

San Jose has many parks and recreation facilities that support the local economy and social life of residents and visitors. Public attractions include museums, historic sites, botanical gardens, zoos, theatrical and musical performances, etc. The city is also home to professional athletic teams and national leagues (City of San Jose, n.d.).

U.S. Census data (USCB, 2021) shows that overall, residents of San Jose are educated (84.6% High school graduates or higher and 43.7% Bachelor's degree or higher), and most households have access to computer (95.2%) and broadband internet (91.2%). Residents with over 5 years of speaking a language other than English represent 57.2% of the population, while foreign-born residents represent 39.7% and veterans 26.3% of the population. San Jose State

University, Silicon Valley University, and other area schools (University of California Berkeley, University of California Santa Cruz, San Francisco State, Santa Clara University, Stanford University, etc.) are sources of graduates in all fields (including engineering and computer science), most of whom are employed by high-tech companies such as Cisco Systems, eBay, Adobe Inc., IBM, Hitachi, BD Bioscience, which leads to an unemployment rate (3.4%) that is lower than the rates in California (5.2%) and the U.S. (4.7%) (City of San Jose, n.d.). In 2016 high-tech companies produced 1,083,100 industrial jobs, of which 99.5% were high-tech jobs (City of San Jose, n.d.).

The average per capita income of San Jose is $46,599 and the median household income is $109,593, which are much higher than the incomes in California: $36,955 and $75,235, respectively (USCB, 2021). Of the 77,832 businesses listed in San Jose in 2012, 45,686 were minority-owned, 4,729 veteran-owned, and 28,981 women-owned (City of San Jose, n.d.).

Direct economic impacts to crop producers from pest fruit fly damage (i.e., reductions in the amount and quality of the crop) are lower farm cash receipts. This causes an indirect impact: the grower must spend a greater percentage of available income to remain in crop production. Over time, these economic impacts may lead producers to switch crops or cease growing crops. Land becomes less productive, and the agricultural economy in the fruit fly affected areas becomes stressed.

In addition to the economic impacts to agriculture associated with fruit fly infestations, socioeconomic effects would ripple through the local economies. People relying on the affected crops for food, forage, or fuel would pay more as the supply decreases or must be supplemented by transported/imported goods. This leads to changes in expenditures of disposable income. Examples include:

- There could be reduced participation in recreational sports, agricultural shows, and local festivals as people in the affected area work harder to compensate for fruit fly-induced reductions in income.
- Local jurisdictions and non-profit organizations could lose funding if residents and businesses move away in search of better economic conditions.
- Abandoned and deteriorating properties could result in an increase in disease, pest prevalence, and crime.

The proposed action is not anticipated to pose a public health risk because of the low potential for exposure to program activities and favorable toxicity profile for the selected chemicals (USDA-APHIS, 2018a). In compliance with EO 13045 (“Protection of Children from Environmental Health Risks and Safety Risks”), USDA-APHIS’ program personnel will place fruit fly traps at specific locations within residential areas where fruit flies are detected, and not in schools, playgrounds, amusement parks, athletic fields, or outdoor community facilities frequented by children.

The proposed program will not impact transportation systems, social activities (e.g., leagues and recreations), local jobs and businesses, etc. Program personnel will notify the communities residing in the treatment area so they may avoid any exposure during bait placement and

maintenance. Program personnel will meaningfully engage the communities through outreach meetings to increase public awareness. The County has the highest percentage of foreign born residents in California (County of Santa Clara, 2021). Although the majority of San Jose residents are high school graduates, 57.2% speak languages other than English at home (USCB, 2021). USDA-APHIS program personnel will comply with EO 13166 ("Improving Access to Services for Persons with Limited English Proficiency") by notifying the public in multiple languages (such as English, Spanish, Vietnamese, Chinese, and Tagalog) and possibly using translators at meetings, if funding is available. Likewise, the program personnel will comply with both EO 12898 ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") and EO 13985 ("Advancing Racial Equity and Support for Underserved Communities Through the Federal Government") by using formulations and treatment methods (USDA-APHIS, 2018a) that do not disproportionately impact San Jose minority-owned businesses (e.g., women- and veteran-owned), the unemployed, and low-income residents, and that secure racial equity and support for underserved communities within the program area.

Tribal Domains

In compliance with EO 13175 ("Consultation and Coordination with Indian Tribal Governments"), EO 13007 ("Indian Sacred Sites"), and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-mm), USDA-APHIS communicates and collaborates with Tribal officials whenever its proposed actions have potential implications on tribes; archaeological resources on public and Tribal lands; and Indian religious practices at sacred sites.

Using the online mapping tool *ArcGIS.com* (see Appendix B for data source) to assess possible Indian domains in the proposed program area, USDA-APHIS found no Federally recognized Tribal lands in Santa Clara County, California. Another map resource from the Bureau of Indian Affairs (data source in Appendix B) confirms this assessment.

A review of archived records (Bureau of American Ethnology, 1899) indicates that the proposed program area is part of lands that Indian Tribes occupied centuries ago, but that were ceded to the U.S. Government in 1851. The designated Tribal entities for the two ceded sites are:

- *Ko-ya-te; New-chow-we; Pal-wis-ha; Po-ken-well; Wack-sa-che; Wo-la-si; Ya-wil-chine* (present day tribes are *Picayune Rancheria of Chukchansi Indians of California; Santa Rosa Indian Community of the Santa Rosa Rancheria; Santa Rosa Indian Community of the Santa Rosa Rancheria, California; Table Mountain Rancheria of California; Tule River Indian Tribe of the Tule River Reservation; Tule River Indian Tribe of the Tule River Reservation, California; Tuolumne Band of Me-Wuk Indians of the Tuolumne Rancheria).*
- *A-pang-asse; Aplache; A-wall-a-che; Co-co-noon; Po-to-yan-ti; Si-yan-te* (present day tribes are *California Valley Miwok Tribe, California; Ione Band of Miwok Indians of California; Picayune Rancheria of Chukchansi Indians of California; Santa Rosa Indian Community of the Santa Rosa Rancheria, California; Shingle Springs Band of Miwok Indians, Shingle Springs Rancheria (Verona Tract), California; Table Mountain Rancheria of California).*

USDA-APHIS' Plant Protection and Quarantine will correspond with representatives of these Tribes to ascertain if they wish further consultation and collaboration.

The proposed action will not disturb the ground, so program implementation is unlikely to affect Native American sites or artifacts. If program personnel discover any archaeological resources, they will notify the appropriate individuals. If there is an ongoing presence of fruit flies that leads to the expansion of program activities onto Tribal lands, program officials will initiate consultation with the governing Tribal authorities and local Tribal Historic Preservation Officers before taking further action. USDA-APHIS will continue to work closely with the County Historical Commission Chairs in Santa Clara County and any Tribal entities as appropriate.

Registered Historic Sites

The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq*.), requires Federal agencies to consider the potential impact of their proposed actions on properties on, or eligible for inclusion on, the National Register of Historic Places (36 CFR parts 63 and 800). The visual resources for the listed counties in California include buildings, street patterns and road characteristics, viewsheds, and vistas. The visual resources also include parks, other public properties, and backyards that may serve as habitat for animals.

Fruit fly eradication program activities do not use heavy equipment that creates noise levels requiring auditory protection. There would be minimal to no ground disturbance. Any visual, atmospheric, or auditory effects during application of program chemicals would be limited in duration, intensity, and area. The proposed OFF program activities do not alter, change (restore or rehabilitate), modify, relocate, abandon, or destroy any historic buildings, edifices, or nearby infrastructure, therefore, implementing the preferred alternative will not directly or indirectly alter the characteristics of a historic place that qualify it for inclusion on the National Register.

USDA-APHIS considers all federally listed historic properties within each County where the fruit fly control program is established before consulting with the appropriate State Historic Preservation Officer (SHPO). The SHPO in the California State Historic Preservation Office concurred with our finding that historic properties are not affected by the proposed fruit fly program activities in Santa Clara County in 2015 (USDA-APHIS, 2015b). USDA-APHIS proposes the same types of activities for the OFF program planned for Santa Clara County. If we discover there are unanticipated effects on historic properties in the program area, the owner/operator of the property shall be immediately contacted, and based on their recommendation, we will inform the SHPO and cease activities.

For the overall area (including the quarantine area) historic places generally consist of a variety of buildings (e.g., courthouses, schools, historic districts, and period dwellings) that may have host plants in the surrounding landscaping (see Appendix B for data source). There is one

historic place in a MAT treatment area: Fairglen Additions (Units 1, 2, and 3). No MAT bait stations will be applied to these structures.

The following are registered historic places (data source in Appendix B) that fall outside of the proposed treatment areas but are inside the OFF quarantine boundary.

- Twohy Building
- Free, Arthur Monroe, House
- Hotel Montgomery
- Ainsley, John Colpitts, House No. 3
- St. Joseph's Roman Catholic Church
- Dohrmann Building
- East San Jose Carnegie Library
- Hayes Mansion
- Peralta, Luis Maria, Adobe
- Our Lady of Guadalupe Mission Chapel (1953-1960)
- Moir Building
- Spillman Engineering 3-Abreast Carousel
- Renzel, Ernest & Emily, House
- Young, Earl and Virginia, House
- Our Lady of Guadalupe Mission Chapel (1953-1960)
- Campbell Union High School Historic District
- De Anza Hotel
- Civic Art Gallery
- Roma Bakery
- Hamilton, Capt. James A., House
- Campbell Union Grammar School
- Ross House
- Building at 27-29 Fountain Alley
- Galindo-Leigh House
- Winchester House

In general, USDA-APHIS' fruit fly eradication activities are compatible with the preservation of historic sites because control activities into the site are discreetly integrated; the proposed program activities will not disturb the ground, and the treatments do not affect human-made structures. Program treatments and activities are restricted to an as-needed basis and normal program activities at historically significant locations can be modified to reduce pesticide use. If the program discovers any archaeological resources, USDA-APHIS or CDFA will notify the appropriate individuals.

IV. Agencies Consulted

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Environmental Policy and Compliance
1220 N Street, Room 221
Sacramento, CA 95814

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Pest Detection/Emergency Projects
1220 N Street, Room 315
Sacramento, CA 95814

State Historic Preservation Officer
California State Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

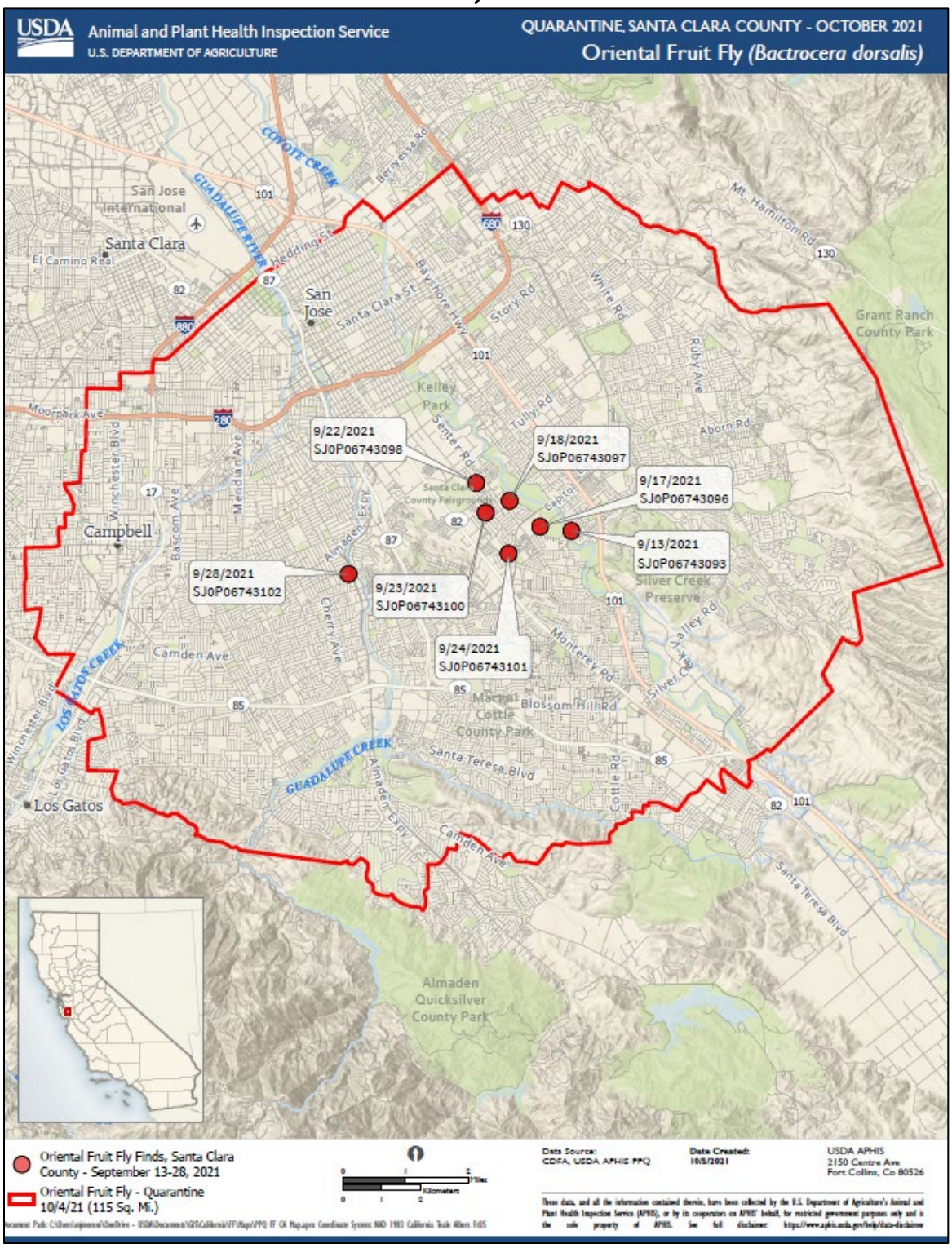
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Plant Health Programs–Pest Management
4700 River Road, Unit 26
Riverdale, MD 20737

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

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

Appendix A. Proposed San Jose OFF Program area as of October 1, 2021.



Map source: USDA-APHIS

Appendix B. Geospatial Data Resources Used in Cooperative Fruit Fly Program NEPA Analysis

Web-Based Mapping Application for Environmental Assessments

- **NepaAssist:** http://nepassisttool.epa.gov/nepassist/entry.aspx

For Information on—

- **Airports:** www.googlemaps.com
- **Bing Maps Road:** http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html
- **Boundaries:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Boundaries/MapServer
- **Census Populations:** https://www.census.gov/data.html
- **Crop Data:** http://nassgeodata.gmu.edu/CropScape/
- **Environmental Justice:** www.epa.gov/ejscreen **and** https://ejscreen.epa.gov/mapper/.
- **Farmers Markets:** https://www.ams.usda.gov/local-food-directories/farmersmarkets
- **Historic Sites:** https://www.nps.gov/subjects/nationalregister
- **Land Use:** http://nassgeodata.gmu.edu/CropScape/
- **Local Parks:** www.googlemaps.com
- **National Wildlife Refuges:** http://viewer.nationalmap.gov/
- **Native American Areas:** http://viewer.nationalmap.gov/ **and** http://viewer.nationalmap.gov/
- **NMFS California Species List Datasets:** https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=7514c715b8594944a6e468dd25aaacc9
- **Nonattainment Areas:** http://geoplatform2.epa.gov/arcgis/rest/services/PM_Designations_Mapping/Nonattainment_Areas/MapServer
- **Nurseries and Garden Centers:** www.googlemaps.com
- **Organic Farms:** http://www.ams.usda.gov/AMSv1.0/nop
- **Places:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Places/MapServer

- **Pesticides**: https://cida.usgs.gov/warp/about/
- **Seaports:** www.googlemaps.com
- **Transportation:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Transportation/MapServer
- **Tribal Ceded Lands and Tribal Areas:**
  https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f2fbc6413393487883dd44cb3e907616 **and**
  https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.arcgis.com%2Fapps%2Fwebappviewer%2Findex.html%3Fid%3Dfe311f69cb1d43558227d73bc34f3a32&data=04%7C01%7C%7C0d1129e7b54145c152ba08d98a7f0d71%7Ced5b36e701ee4ebc867ee03cfa0d4697%7C0%7C0%7C637693100557167362%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=l2eyQ51I9Uq1sPdJPdUuNepNIdIDsPnPjPsWzTh83r4%3D&reserved=0 **and**
  https://www.bia.gov/sites/bia.gov/files/assets/bia/ots/webteam/pdf/idc1-028635.pdf
- **USFWS (Critical Habitat, Migratory Birds):** http://ecos.fws.gov/crithab **and**
  http://ecos.fws.gov/ipac/
- **Water:** http://epamap9.epa.gov/arcgis/rest/services/NEPAssist/Water/MapServer
- **Wetlands:** http://nassgeodata.gmu.edu/CropScape/

Appendix C. References

Blasizzo, J.K., 2020. Justification for use of Malathion ULV in dooryards and groves in South Texas: Summary. Last modified by R.R. Guerra on October 7, 2020.

Bousman, B., 2016. A Checklist of the Birds of Santa Clara County. [Online: Accessed on September 29, 2021 at Santa_Clara_County_Checklist_Searchable_30_Sep_2016.pdf (squarespace.com)].

Bureau of American Ethnology, 1899. 18th Annual Report to the Secretary of the Smithsonian Institution. 1896-'97. By J.W. Powell, Director. Two Parts-Part 2. Washington, DC. 746 pp. [Online: Accessed on October 8, 2021 at https://ia600206.us.archive.org/2/items/annualreportofbu218smit/annualreportofbu218smit.pdf].

California Department of Food and Agriculture, 2021a. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743093. Date collected: 9/13/2021.

California Department of Food and Agriculture, 2021b. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743096. Date collected: 9/17/2021.

California Department of Food and Agriculture, 2021c. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743097. Date collected: 9/18/2021.

California Department of Food and Agriculture, 2021d. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743098. Date collected: 9/22/2021.

California Department of Food and Agriculture, 2021e. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743100. Date collected: 9/23/2021.

California Department of Food and Agriculture, 2021f. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743101. Date collected: 9/24/2021.

California Department of Food and Agriculture, 2021g. Plant Health and Pest Prevention Services Pest and Damage Record. PDR Number SJ0P06743102. Date collected: 9/28/2021.

California Department of Food and Agriculture, 2021h. Official Notice for the City of San Jose. Amendment to the notice of treatment for the oriental fruit fly. Signed October 8, 2021 by Karen Ross. 17 pp.

California Department of Food and Agriculture, 2021i. Plant Health Division webpages containing information about pest quarantines, regulations, and response. [Online: Accessed on October 4, 2021 at https://www.cdfa.ca.gov/plant/pest_programs.html].

California Department of Food and Agriculture, 2021j. Glassy-winged Sharpshooter (GWSS) Treatment Information. 3 pp. [Online: Accessed on October 4, 2021 at https://www.cdfa.ca.gov/pdcp/PD_GWSS_NOT_Mtg.html]

California Department of Food and Agriculture, 2021k. Asian Citrus Psyllid (ACP). 15 pp. [Online: Accessed on October 4, 2021 at https://www.cdfa.ca.gov/citrus/pests_diseases/acp/regulation.html *and at* https://www.cdfa.ca.gov/citrus/pests_diseases/acp/treatment_maps.html]

California Department of Food and Agriculture, 2018. Oriental fruit fly fact sheet. Last updated 8/30/18. [Online: Accessed on October 4, 2021 at http://www.cdfa.ca.gov/plant/pdep/target_pest_disease_profiles/oriental_ff_profile.html].

California Department of Food and Agriculture, 2004. Oriental Fruit Fly: Impact on You.Bilingual brochure produced by the County Agriculture Commissioner's Office, CDFA, and USDA. December 2004.

Canon, G., 2021. 'Truly an emergency': how drought returned to California – and what lies ahead. [Online: Accessed on October 4, 2021 at https://www.theguardian.com/us-news/2021/jun/07/california-drought-oregon-west-climate-change].

City of San Jose, n.d. Fact Sheet: History & Geography. 10 pp. [Online: Accessed on October 4, 2021 at https://www.sanjoseca.gov/home/showpublisheddocument/23765/636689378693570000].

County of Santa Clara, 2021. Office of Cultural Competency. Language Access. 3 pp. [Online: Accessed on October 8. 2021 at https://occ.sccgov.org/language-access].

County of Santa Clara, 2019. About the County. 3 pp. [Online: Accessed on September 26, 2021 at https://www.sccgov.org/sites/scc/Pages/About-the-County.aspx].

El-Gendy, I.R., 2018. Insecticide Resistance of a Field Strain of Mediterranean Fruit Fly, *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) in Egypt. Journal of Applied Sciences, 18 (7): 25-32.

Extension Toxicology Network, 1996. Pesticide information profile: Naled. 3 pp.

Hsu, J-C., and Feng, H-T., 2006. Development of Resistance to Spinosad in Oriental Fruit Fly (Diptera: Tephritidae) in Laboratory Selection and Cross-Resistance. Journal of Economic Entomology Vol. 99, no. 3: 931-936.

Kakani, E.G., Zygouridis, N.E., Tsoumani, K.T., Seraphides, N., Zalom, F.G., and Mathiopoulosa, K.D., 2010. Spinosad resistance development in wild olive fruit fly *Bactrocera oleae* (Diptera: Tephritidae) populations in California. Pest Management Science (2010) 66: 447–453.

Kollman, W.S., 2003. Environmental fate of spinosad. California Department of Pesticide Regulation, Environmental Monitoring Branch. [Online: Accessed on 2021-10-01 at http://www.cdpr.ca.gov/docs/emon/pubs/fatememo/spinosad_fate.pdf].

Merchant, M., 2004. Spinosad: an insecticide to make organic gardeners smile. Texas Cooperative Extension, Texas A&M University/College Station, Texas: Horticulture Update. March 2004. 1 page.

National Agricultural Pest Information System, 2017. Pest tracker: Exotic pest reporting. Oriental fruit fly (OFF), *Bactrocera dorsalis.* [Online: Accessed on 2018-August-26 at http://pest.ceris.purdue.edu/pest.php?code=IOBMAFA].

National Drought Mitigation Center, 2021. National Drought Summary for September 21, 2021. California Drought Map for September 23, 2021. Historic Impacts. [Accessed on 9/26/2021 at https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA].

National Marine Fisheries Service, West Coast Region, 2018. Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Programmatic Biological Assessment for Eradication of Exotic Fruit Flies in 45 California Counties. June 15, 2018.

National Pesticide Information Center, 2014. Spinosad. General fact sheet. [Online: Accessed on October 4, 2021 at http://npic.orst.edu/factsheets/spinosadgen.html].

National Pesticide Information Center, 2000. Methyl bromide. General fact sheet. [Online: Accessed on October 4, 2021 at http://npic.orst.edu/factsheets/MBgen.pdf].

Prokopy, R.J., Papaj, D.R., Hendrichs, J., and Wong, T.T.Y., 1992. Behavioral responses of Ceratitis capitata flies to bait spray droplets and natural food. Entomologia Experimentalis et Applicata 64: 247–257.

PubChem, 2021. Compound Summary: Naled. [Online: Accessed on October 4, 2021 at https://pubchem.ncbi.nlm.nih.gov/compound/Naled#section=Drug-and-Medication-Information].

Reilly, S.K., 2003. Pheromones: risk assessment and decision making. U.S. Environmental Protection Agency presentation to the NAFTA Technical Working Group on Pesticides. 15 MS PowerPoint slides.

State of California, 2021a. Department of Pesticide Regulation. Ground water protection program: Regulations. [Online: Accessed on October 4, 2021 at http://www.cdpr.ca.gov/docs/emon/grndwtr/gwp_regs.htm].

State of California, 2021b. California Integrated Report. 3 pp. [Online: Accessed on October 4, 2021 at https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/integrated_report.html].

State of California, 2021c. Proclamation of a State of Emergency. Signed by Governor Gavin Newsom on May 10, 2021. 5 pp.

Team San Jose, 2021. History. Outdoors and Nature. [Online: Accessed on September 26, 2021 at https://www.sanjose.org/things-to-do].

U.S. Census Bureau, 2021. QuickFacts. Statistics for four regions: the City of San Jose; Santa Clara County; the State of California; the United States. 4 pp. [Online: Accessed September 26, 2021 at https://www.census.gov/quickfacts/fact/table/sanjosecitycalifornia,santaclaracountycalifornia,CA,US/PST045219].

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2021a. Plant Protection and Quarantine. Fruit Fly Quarantine 96 hour report. San Jose (Santa Clara County). Oriental fruit fly (*Bactrocera dorsalis*). September 30, 2021.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2021b. *Anastrepha* spp. Cooperative Eradication Program, Rio Grande Valley, Texas. Final Programmatic Environmental Assessment, May 2021. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2020a. Fruit flies. [Online: Accessed October 9, 2021 at https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-diseaseprograms/pests-and-diseases/fruit-flies].

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2020b. Cooperative fruit fly emergency response triggers & guidelines. 2 pp. Last modified December 4, 2020. [Online: Accessed September 27, 2021 at https://www.aphis.usda.gov/plant_health/plant_pest_info/fruit_flies/downloads/FruitFlyTriggersGuidelines.pdf].

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2019a. FOR INFORMATION AND ACTION. DA-2019-12. June 4, 2019. Subject: APHIS Removes the Oriental Fruit Fly (*Bactrocera dorsalis*) Quarantine in Sacramento Area of Sacramento and Yolo Counties, California. To State and Territory Agricultural Regulatory Officials from Osama El-Lissy, Deputy Administrator, Plant Protection and Quarantine. 1 page.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2019b. APHIS Annual Energy Report. U.S. Department of Agriculture, APHIS Sustainability Program, and the APHIS MRPBS Fleet and Property Team. 1 page.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2019c. 2018 and 2019 Aviation and Fleet: internal reports on aviation use. 8 pp.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018a. Fruit fly cooperative control program. Final programmatic environmental impact statement—November 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018b. Draft Human Health and Ecological Risk Assessment for Diazinon in Exotic Fruit Fly Applications. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018c. Human Health and Ecological Risk Assessment for Dichlorvos (DDVP) in Exotic Fruit Fly Applications. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018d. Human Health and Ecological Risk Assessment for Lambda-cyhalothrin in Exotic Fruit Fly Applications. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018e. Human Health and Ecological Risk Assessment for Malathion in Exotic Fruit Fly Applications. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018f. Human Health and Ecological Risk Assessment for Naled in Exotic Fruit Fly Applications. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2018g. Draft Risk Evaluation Summaries for Attractants Used in the Fruit Fly Eradication Program. April 2018. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2015a. FOR INFORMATION AND ACTION. DA-2015-62. December 10, 2015. Subject: Removal of Oriental Fruit Fly (*Bactrocera dorsalis*) Quarantine Area in the Cupertino of Santa Clara County, California. To State and Territory Agricultural Regulatory Officials from Osama El-Lissy, Deputy Administrator, Plant Protection and Quarantine. 1 page.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2015b. Oriental Fruit Fly Cooperative Eradication Program, Santa Clara County, California. Environmental Assessment—July 2015. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2014. Human health and ecological risk assessment for STATIC™ spinosad ME bait applications. March 2014. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2007. Importation of solid wood packing material. Supplement to the final environmental impact statement—October 2007. Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2004. General reference for fruit fly programs: Tephritidae. March 2004. Prepared by Jeffrey N.L. Stibbick.

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

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2002. Rule for the importation of unmanufactured wood articles from Mexico, with consideration for cumulative impact of methyl bromide use. Final environmental impact statement—September 2002. Riverdale, MD.

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

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, West Coast Region, 2018. Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Programmatic Biological Assessment for Eradication of Exotic Fruit Flies in 45 California Counties. Dated June 15, 2018. 9 pp.

U.S. Environmental Protection Agency, 2020. Emission Factors for Greenhouse Gas Inventories. Last Modified: 26 March 2020. [Online: Accessed on October 4, 2021 at https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_mar2020.pdf].

U.S. Environmental Protection Agency, 2016. Memorandum – Spinosad and Spinetoram: Draft Human Health Risk Assessment for Registration Review. 75 pp. [Online. Accessed on 2019-May-14 at https://www.regulations.gov/document?D=EPA-HQ-OPP-2011-0667-0027].

U.S. Environmental Protection Agency, 2008. RED Fact Sheet for Methyl Bromide. July 10, 2008. Office of Pesticide Programs. Archive document regarding methyl bromide soil uses. 9 pp.

U.S. Fish and Wildlife Service, 2021. OFF, Sacramento County, CA. IPaC (Information for Planning and Consultation) Official Species List. [Online report generated September 28, 2021 at https://ecos.fws.gov/ipac/].

Water Education Foundation, 2021. Where does MY water come from? South Bay Region. San Jose. West Sacramento. 3 pp.

Weeks, J.A., Hodges, A.C., and Leppla, N.C., 2012. Citrus pests: *Bactrocera*. Last updated June 2012. [Online: Accessed on September 27, 2021 at https://idtools.org/id/citrus/pests/factsheet.php?name=Bactrocera].

Weems, H.V., Heppner, J.B., Nation, J.L., and Fasulo, T.R., 2016. Oriental fruit fly dor, *Bactrocera salis* (Hendel) (Insecta: Diptera: Tephritidae). University of Florida Publication EENY-83. Publication Date: May 1999. Latest revision: August 2016. [Online: Accessed on September 27, 2021 at http://entnemdept.ufl.edu/creatures/fruit/tropical/oriental_fruit_fly.htm].