CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

OFFICIAL NOTICE
FOR THE CITY OF CALABASAS
PLEASE READ IMMEDIATELY

AMENDMENT TO THE PROCLAMATION OF EMERGENCY PROGRAM FOR THE SPONGY MOTH

Between October 04, 2023, and July 22, 2024, the California Department of Food and Agriculture (CDFA) confirmed that 16 spongy moths (SM), *Lymantria dispar dispar* (L.), were trapped in the City of Calabasas in Los Angeles County. Based on these detections, pest biology, information from the CDFA Spongy Moth Science Advisory Panel (SMSAP), recommendations provided by CDFA Primary State Entomologist, and CDFA "Action Plan for Spongy Moth *Lymantria dispar* (L.)", the CDFA concludes that an infestation of SM exists in the area. This pest presents a significant, clear, and imminent threat to the natural environment, agriculture, and economy of California. Unless emergency action is taken, there is high potential for sudden future detections in Los Angeles County.

Immediate action is needed to protect California from the negative economic and environmental impact the establishment of this pest would cause. SM is a serious invasive insect pest that is not native to California. SM originates in Europe and northern Africa, and has been introduced to, and is now established in the eastern United States. SM is a serious defoliator of many trees and shrubs, both hardwoods and conifers. It has over 150 primary hosts but can feed on over 500 plants. Tests on western plants have shown native and common California species such as manzanita, western hemlock, Douglas fir and live oaks are common hosts. In addition, many ornamental trees commonly planted in California urban landscapes are primary hosts of the larvae. This defoliation not only kills and weakens trees, but also alters forest composition and destroys habitat for mammals and birds. SM infestations negatively affect recreational use of forests, parks, and backyards. Swarms of SM caterpillars discourage tourism and many other outdoor activities. In urban areas, the economic impact includes clean-up costs, tree replacement costs and loss of property values.

The emergency eradication project is based on a work plan developed in consultation with the Pest Prevention Committee of the California Agricultural Commissioners and Sealers Association, the United States Department of Agriculture, and scientists on the SMSAP. Pursuant to sections 407, 5321 and 5761 - 5764 of the Food and Agricultural Code (FAC), the Secretary is mandated to thoroughly investigate the existence of pests, determine the probability of the spread of pests spreading, adopt regulations (Title 3 of the California Code of Regulations, Section 3591.6) that are reasonably necessary to carry out the provisions of the FAC, abate pests from established eradication areas, and prevent economic damage caused by pests.

In accordance with integrated pest management principles, the CDFA has evaluated possible eradication methods and determined that there are no physical, cultural, or biological methods available to eradicate SM. Therefore, the CDFA will need to employ insecticide treatment. Based on the success of past spongy moth eradications in California, the treatment is expected to be complete by September 1, 2026, but it is possible that it may need to be extended past that date.

Surveillance and treatment:

To support eradication of SM from this area, a detailed survey will be conducted according to the work plan as follows:

- An egg mass survey will be initiated around all detection sites when detections indicate a possible infestation. The survey takes place at the end of the trapping season and ends before March 1. An egg mass survey is a visual inspection of all properties up to a 400-meter radius around the moth detection site(s). Up to 10 egg masses can be caged in the field and monitored for larval emergence to better time control measures. Any remaining egg masses will be removed and destroyed.

To eradicate SM from this area, the treatment portion of the work plan (apart from the destruction of eggs, which is described in the previous paragraph) is as follows:

- The foliage of host trees and shrubs within 400 meters of each detection site will be treated with an organic formulation of *Bacillus thuringiensis kurstaki* (Btk) using hand spray or hydraulic spray equipment. Btk is a naturally occurring bacterium which, when ingested by caterpillars, leads to the death of the insect. The formulations of Btk currently used are Dipel® Pro DF and Thuricide Bt, and one or both will be used in the following situations: ornamental plantings, fruit bearing plants, and forest areas. Up to three applications will be applied, with treatment being repeated every seven to 14 days. Treatment minimums and re-application will comply with pesticide label requirements to maintain efficacy Significant rainfall (0.10 inch or more) will justify re-treatment at a shorter interval than seven days.

Public Notification:

Residents of affected properties shall be invited to a public meeting or contacted directly by CDFA staff. Consultation with the California Department of Pesticide Regulation, the Office of Environmental Health Hazard Assessment, and the county agricultural commissioner's office will be provided at the public meeting or upon request to address residents' questions and concerns.

Any resident whose property will be surveyed for SM will be notified in writing at least 48 hours in advance of any survey, in accordance with FAC Section 5779. Following the survey, completion notices are left with homeowners. Notification is given to the general public via mass media outlets such as newspapers or press releases, and information is posted on CDFA's website at https://www.cdfa.ca.gov/plant/SpongyMoth_FlightedSpongyMoth/ .

Information concerning the SM project will be conveyed directly to concerned local and State political representatives and authorities via letters, emails, and/or faxes. Press releases, if issued, are prepared by the CDFA information officer and the county agricultural commissioner, in close coordination with the project leader responsible for treatment. Either the county agricultural commissioner or the public information officer serves as the primary contact to the media.

For assistance with questions related to the project, please contact the CDFA toll-free hotline at 800-491-1899. This telephone number is also listed on all treatment notices.

Enclosed are the finding regarding the survey plan, work plan, map of the treatment area, integrated pest management (IPM) alternatives analysis, and a pest profile with a host list.

FINDINGS OF AN EMERGENCY FOR THE SPONGY MOTH

Between October 04, 2023 and July 22, 2024, the California Department of Food and Agriculture (CDFA) confirmed that 16 spongy moths (SM), *Lymantria dispar dispar* (L.), were trapped in the City of Calabasas in Los Angeles County. Based on these detections, pest biology, information from the CDFA Spongy Moth Science Advisory Panel (SMSAP), recommendations provided by the CDFA Primary State Entomologist, and the CDFA "Action Plan for Spongy Moth *Lymantria dispar* (L.)", CDFA concludes that an infestation of SM exists in the area. This pest presents a significant, clear, and imminent threat to the natural environment, agriculture, and economy of California.

SM is not known to occur naturally in California or in the western United States (U.S.) Isolated infestations are periodically discovered in the western U.S. as the result of accidental human-mediated movement (likely from the eastern U.S.) and are subject to eradicative efforts to prevent permanent establishment. The current distribution in the U.S. includes the northeast states and West Virginia, North Carolina, Tennessee, Michigan, Ohio and Illinois. This pest is native to Europe and northern Africa. SM first became established in the U.S. in 1869 in Massachusetts after it escaped from cages where it was being kept for a silk production experiment.

SM is a serious defoliator of many trees and shrubs, both hardwoods and conifers. It has over 150 primary hosts, but can feed on over 500 plants. Young larvae feed primarily on oaks, aspen, birch, willows and alder. Older larvae feed on a broader range of trees including cedars, pines, spruces and firs. Tests on western plants have shown native and common California species such as manzanita, western hemlock, Douglas fir and live oaks are hosts. In addition, many ornamental trees commonly planted in California urban landscapes are primary hosts of the larvae.

When populations are high, the SM can defoliate millions of acres of forest and urban trees. This defoliation not only kills and weakens trees, but also alters forest composition and destroys habitat for mammals and birds. SM infestations negatively affect recreational use of forests, parks, and backyards. Swarms of caterpillars discourage tourism and many other outdoor activities. In urban areas, the economic impact includes clean-up costs, tree replacement costs and loss of property values.

Based upon the likely environmental and economic damage that would be inflicted by this infestation of SM, I have concluded that it is incumbent upon me to address this threat. SM is considered the most destructive pest of hardwood forest and shade trees in the United States.

My duty to act, and this decision, is based upon authority set forth in Sections 24.5, 401.5, 403, 407, 408, 5401 - 5405, and 5761 - 5764 of the Food and Agricultural Code (FAC), which authorize and mandate that CDFA thoroughly investigate the existence of pests, determine the probability of pests spreading, adopt regulations (Title 3 of the California Code of Regulations, Section 3591.6) that are reasonably necessary to carry out the provisions of the FAC, to abate the pests from established eradication areas, and prevent economic damage caused by pests. The enclosed project Work Plan describes actions to be taken by CDFA that are necessary to eradicate this pest.

This decision to proceed with an eradication program is based upon a realistic evaluation that it may be possible to eradicate SM using currently available technology in a manner that is based on the enclosed work plan developed in consultation with the Pest Prevention Committee of the California Agricultural Commissioners and Sealers Association, the United States Department of Agriculture (USDA), and scientists on the SMSAP. Due to the size of the infested area and the number of SM detected, historical data indicates that eradication is possible. The first California infestation occurred in Santa Clara County in 1977, and since that time, several re-introductions

have been delimited and successfully eradicated.

Based upon input from my professional staff and outside experts familiar with SM, I have concluded that there are no physical, cultural, or biological controls that will eradicate SM and thus allow CDFA to meet its statutory obligations. To support eradication of SM, I am ordering an egg mass survey to be conducted. This survey may include egg mass removal if egg masses are found. A description of this survey is below and contained in the attached Work Plan. To eradicate SM, I am ordering ground-applied foliar sprays. Foliar spray treatments consist of a formulation of *Bacillus thuringiensis kurstaki* (Btk) applied to host plants using ground-based equipment. A description of this treatment is below and contained in the attached Work Plan.

Sensitive Areas

The treatment area has been reviewed through CDFA consultation with the California Department of Fish and Wildlife's California Natural Diversity Database for threatened or endangered species, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife when rare and endangered species are located within the treatment area. Mitigation measures will be implemented as needed. The CDFA shall not apply pesticides to bodies of water.

Eradication Plan

The eradication area includes those portions of Los Angeles County which fall within an approximate 400-meter (0.25 mile) radius around each property on which a moth has been trapped or on which another life stage of the insect is detected. A map of the detection site(s) with eradication boundaries and the proposed eradication work plan are attached. The Work Plan consists of the following elements:

1. Delimitation. Intensive trapping is triggered after any life stage of SM is detected. Following confirmation of the specimen's identify, trap densities are increased to 25 traps per square mile over a four-square mile area centered on the detection site. Trap densities are increased to protocol levels within 48 hours of the detection. Traps are serviced weekly for the remainder of the season which concludes September 30th. The success of the eradication program is monitored by intensive trapping for two seasons following treatment. If no moths are found, a successful eradication is declared, and trap numbers return to the baseline detection levels determined by each county. A find in the any treatment area triggers re-treatment. An egg mass survey will be initiated around all detection sites when detections indicate a possible infestation. An infestation is determined by either a) the presence of egg masses or other immature life stages, or b) 5 or more adult moths detected within a 400-meter (1/4 mile) radius during the consecutive year following the initial detection. The survey takes place at the end of the trapping season and ends before March 1. An egg mass survey is a visual inspection of all properties up to a 400-meter radius around the SM detection site(s). Up to 10 egg masses can be caged in the field and monitored for larval emergence to better time control measures. Any remaining egg masses will be removed and destroyed.

2. Treatment takes place when early instar larvae are projected to occur, typically between March and May, depending on climate. In the event that timing of treatment is uncertain, up to ten suspect egg masses discovered during visual survey may be left on site but contained in hard shell cages (PVC pipe, wood box, etc.). The cages have a wire mesh

wall so that the egg masses are exposed to temperature/humidity, which allows larval emergence to be monitored and treatments properly timed. A fragment of each egg mass will be sent for identification. Alternatively, to allow for proper timing of treatments, irradiated egg masses may be obtained from the United States Department of Agriculture and used in the cages. Caged egg masses are monitored for larval emergence, and destroyed when emerging caterpillars provide sufficient emergence data. The protocol for treatment is below.

- The foliage of host trees and shrubs within 400 meters of each detection site will be treated with an organic formulation of *Bacillus thuringiensis kurstaki* (Btk) using hand spray or hydraulic spray equipment. Btk is a naturally occurring bacterium which, when ingested by caterpillars, leads to the death of the insect. The formulations of Btk currently used are Dipel® Pro DF and Thuricide Bt, and one or both will be used in the following situations: ornamental plantings, fruit bearing plants, and forest areas. Up to three applications will be applied, with treatment being repeated every seven to 14 days. Treatment minimums and re-application will comply with pesticide label requirements to maintain efficacy Significant rainfall (0.10 inch or more) will justify re-treatment at a shorter interval than seven days.

Public Notification

Residents of affected properties shall be invited to a public meeting or contacted directly by CDFA staff. Consultation with the California Department of Pesticide Regulation, the Office of Environmental Health Hazard Assessment, and the county agricultural commissioner's office will be provided at the public meeting or upon request to address residents' questions and concerns.

Any resident whose property will be visually surveyed for egg masses will be notified in writing at least 48 hours in advance of any survey, in accordance with FAC Section 5779. Following the treatment, completion notices are left with homeowners detailing precautions to take and post-harvest intervals applicable to any fruit on the property. Notification is given to the general public via mass media outlets such as newspapers or press releases, and information is posted on CDFA's website at https://www.cdfa.ca.gov/plant/SpongyMoth_FlightedSpongyMoth.

Information concerning the SM project will be conveyed directly to concerned local and State political representatives and authorities via letters and/or emails. Press releases, if issued, are prepared by the CDFA information officer and the county agricultural commissioner, in close coordination with the project leader responsible for treatment. Either the county agricultural commissioner or the public information officer serves as the primary contact to the media.

For assistance with questions related to the project, please contact the CDFA toll-free hotline at 800-491-1899. This telephone number is also listed on all treatment notices.

Findings

The SM poses a significant, clear, and imminent threat to California's natural environment, agriculture, public and private property, and its economy.

Unless emergency action is taken to disrupt the SM life cycle, there is a high potential for sudden future detections in Los Angeles County and other areas.

The work plan involving egg mass survey and mechanical and chemical control of this pest is necessary to prevent loss and damage to California's natural environment, native resources, private and public property, and forests.

Therefore, I am invoking Public Resources Code Section 21080(b)(4) to carry out immediate emergency action to prevent this loss and damage.

My decision to adopt findings and take action is based on FAC sections 24.5, 401.5, 403, 407, 408, 5401-5405, and 5761-5763 and Title 3 California Code of Regulations section 3591.6.

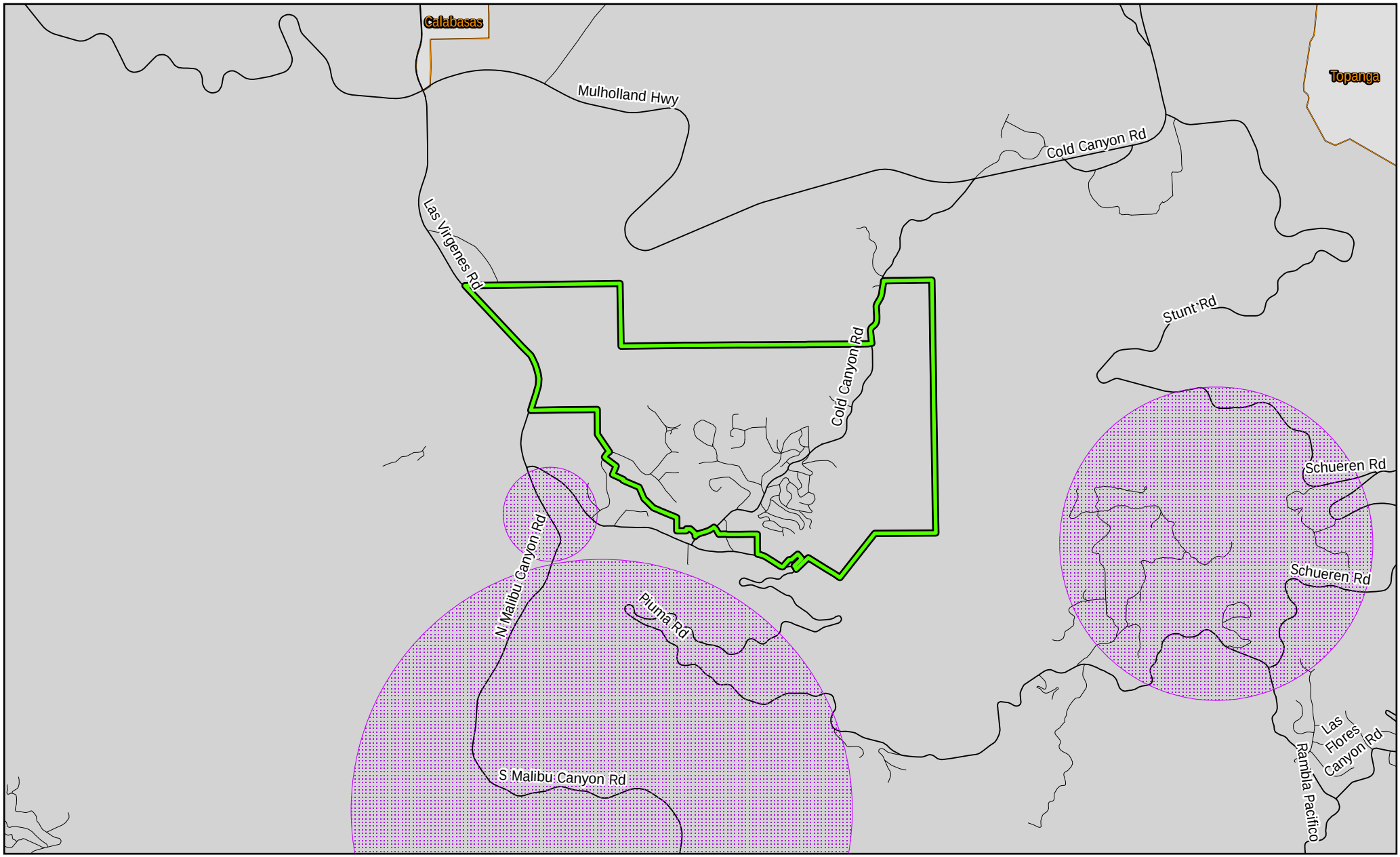
Signature on File

Karen Ross, Secretary

1/22/25

Date

Spongy Moth Eradication Project
Calabasas, Los Angeles County
2024



cdfa

0 1 2 mi

400m Treatment Area

Sensitive Environmental Area/ Treatment Mitigation In Place

N W E S

ERADICATION PROJECT WORK PLAN FOR SPONGY MOTH

DETECTION

1. Detection Trapping

The California Department of Food and Agriculture (CDFA) maintains a cooperative State/County trapping program for various invasive pests to provide early detection of any infestation in the California. Traps are serviced by either County or State personnel and funded by CDFA. The Spongy Moth program uses a green delta cardboard sticky trap baited with a synthetic sex pheromone named disparlure. The trap is attractive to males. Traps are fastened to the trunks of host trees statewide. The general detection density is two traps per square mile. Traps are placed at sites at high risk for introductions, such as campgrounds, recreational areas, mobile homes, recreational vehicle parks, and state and federal parks. County or State employees inspect these traps every six weeks from June through August.

2. Intensive Trapping

Intensive trapping is triggered after a single moth is detected. Following confirmation of the specimen, trap densities are increased to 25 traps per square mile over a four-square mile area centered on the detection. Trap densities are increased to protocol levels within 48 hours of the detection. Traps are serviced weekly for the remainder of the season which concludes September 30th. If no additional moths are trapped during the first season (i.e., the same trapping season the moth was originally trapped), intensive trapping will continue the following season (second season) with servicing at two-week intervals. If no moths are trapped during the second season, the trap density is reduced to the normal detection level for the third season.

3. Post-Treatment Monitoring

The success of the eradication program is monitored by intensive trapping for two seasons following treatment. If no moths are found, eradication is declared, and trap numbers return to normal detection levels. A find in any treatment area may trigger re-treatment.

4. Egg Mass Survey

An egg mass survey will be initiated around all detection sites when detections indicate a possible infestation. An infestation is determined by either a) the presence of egg masses or other immature life stages, or b) 5 or more adult moths detected within a 400-meter (1/4 mile) radius during the consecutive year following the initial detection. The survey takes place at the end of the trapping season and ends before March 1. An egg mass survey is a visual inspection of all properties up to a 400-meter radius around the moth detection site(s). Suspect egg masses discovered by the survey are removed, except when needed for timing treatments (see Treatment section below).

TREATMENT

Treatment takes place when early instar larvae are projected to occur, typically between March and May, depending on climate. In the event that timing of treatment is uncertain, up to ten

suspect egg masses discovered during visual survey may be left on site but contained in hard shell cages (PVC pipe, wood box, etc.). The cages have a wire mesh wall so that the egg masses are exposed to temperature/humidity, which allows larval emergence to be monitored and treatments properly timed. A fragment of each egg mass will be sent for identification. Alternatively, to allow for proper timing of treatments, irradiated egg masses may be obtained from the United States Department of Agriculture and used in the cages. Caged egg masses are monitored for larval emergence, and destroyed when emerging caterpillars provide sufficient emergence data.

1. **Ground-based Foliar Spray**

   The foliage of host trees and shrubs within 400 meters of each detection site will be treated with an organic formulation of *Bacillus thuringiensis kurstaki* (Btk) using hand spray or hydraulic spray equipment. Btk is a naturally occurring bacterium which, when ingested by caterpillars, leads to the death of the insect. The formulations of Btk currently used are Dipel® Pro DF and Thuricide Bt, and one or both will be used in the following situations: ornamental plantings, fruit bearing plants, and forest areas. Up to three applications will be applied every seven to 14 days. Treatment minimums and re-application will comply with pesticide label requirements to maintain efficacy. Significant rainfall (0.10 inch or more) will justify re-treatment at a shorter interval than seven days.

SENSITIVE AREAS

The treatment area has been reviewed through CDFA consultation with the California Department of Fish and Wildlife's California Natural Diversity Database for threatened or endangered species, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife when rare and endangered species are located within the treatment area. Mitigation measures will be implemented as needed. The CDFA will not apply pesticides to bodies of water.

PUBLIC NOTIFICATION

Residents of affected properties shall be invited to a public meeting or contacted directly by CDFA staff. Consultation with the California Department of Pesticide Regulation, the Office of Environmental Health Hazard Assessment, and the county agricultural commissioner's office will be provided at the public meeting or upon request to address residents' questions and concerns

Any resident whose property will be visually surveyed for egg masses or treated via foliar sprays will be notified in writing at least 48 hours in advance of any survey or treatment, in accordance with Food and Agricultural Code Sections 5779. Following the survey or treatment, completion notices are left with homeowners. Notification is given to the general public via mass media outlets such as newspapers or press releases, and information is posted on the CDFA website at https://www.cdfa.ca.gov/plant/SpongyMoth_FlightedSpongyMoth/.

Information concerning the project will be conveyed directly to concerned local and State political representatives and authorities via letters and/or emails. Press releases, if issued, are prepared by the CDFA information officer and the county agricultural commissioner, in close coordination with the project leader responsible for treatment. Either the county agricultural commissioner or the public information officer serves as the primary contact to the media.

INTEGRATED PEST MANAGEMENT ANALYSIS OF ALTERNATIVE TREATMENT METHODS TO ERADICATE SPONGY MOTH
August 2024

The treatment program used by the California Department of Food and Agriculture (CDFA) for control of the Spongy Moth (SM), *Lymantria dispar* (Lepidoptera: Lymantriidae), primarily employs a targeted foliar spray treatment using an organic pesticide.

Below is an evaluation of alternatives treatment methods for SM which have been considered for eradication programs in California.

A. PHYSICAL CONTROL

Mass Trapping. This method involves placing a high density of traps in an attempt to physically remove the males before they mate with females. The traps are baited with disparlure, which mimics the female sex pheromone. The recommended trap density is nine to ten per acre, or 5760 to 6400 per square mile. Even at this density, males may mate before going to a trap if females are plentiful, so this method is most effective against very small populations where the traps can outcompete all of the females present. Females need only to mate once, and a single female can lay over 1000 eggs, so there is no room for error if eradication is the goal. SM is not established in California, so the population density of a new infestation is not accurately known because there is no historical monitoring data of the population. Because of this lack of information on population density, mass trapping is not the preferred treatment for new infestations.

Active Moth Removal. Males are mobile daytime fliers, and could theoretically be netted or collected off of foliage and other surfaces. However, females do not fly, so additional visual survey would be needed to detect them on trees, etc. Due to the male's ability to fly when disturbed, and the laborious and time prohibitive task of collecting insects from numerous properties by hand, it would be highly improbable that all of the adults could be captured and removed. Larvae feed on leaves, including those at the tops of trees, so removal of all larvae would also be highly improbable. For these reasons, active moth removal is not considered to be an effective alternative.

Barriers. The construction of traps or barriers around trunks of host trees capitalizes on the movements of first and late instar larvae. Four general types of barriers are available: sticky band, slippery band, burlap band, and loose adhesive. The following general comments apply to all types of barriers: 1) efficacy is strongly influenced by the number of resting sites on the tree above the barrier; 2) effectiveness may be decreased when larval densities are high since the diurnal migratory behavior is suppressed in favor of continued feeding when larvae are overcrowded; 3) barriers perform best when placed on trees with isolated canopies; and 4) although banding has been shown to reduce defoliation, there is no firm evidence that the technique inhibits population growth. For these reasons, barriers are not considered an effective alternative.

Host Plant Removal. Removal of host plants involves the large-scale destruction of plants by either physical removal or phytotoxic herbicides. Host plant removal is considered an economically inefficient option for area-wide treatment because it is so labor intensive. It is also intrusive to residents, who may oppose losing their plants. Additionally, this method may possibly promote the dispersal of the moths, thus spreading the infestation if other treatments are not used outside the host plant removal area. Host plant removal may eliminate habitat or food sources for

nontarget organisms. As such, host plant removal can have greater environmental impacts than use of an organic pesticide that targets only a limited number of species (in this case Lepidoptera).

B. CULTURAL CONTROL

Cultural Control. Cultural controls involve the manipulation of cultivation practices to reduce the prevalence of pest populations. These include crop rotation, early harvest (i.e., harvesting green fruit before it is suitable for oviposition), using pest-resistant varieties, and intercropping with pest-repellent plants. None of these options are applicable for SM eradications in a residential environment with multiple hosts, and may only serve to drive the moths outside the treatment area, thus spreading the infestation.

C. BIOLOGICAL CONTROL

Microorganisms. Two microbes have been shown to be effective at controlling SM, but have not been used in California for various reasons.

1. A fungus, Entomophaga maimaiga, from Asia was first established in North America in 1989. It can cause high mortality of older larvae, but control efficacy has been highly variable. There is no commercial product for this microbe. Rather, it can only be spread artificially by collecting and moving infected caterpillar carcasses. For these reasons, this fungus has not been used for eradication projects in California.

2. A virus, necleopolyhedrosis virus, occurs naturally and is specific to SM. The United States Forest Service (USFS) has formulated this virus into a sprayable insecticide named Gypchek. Gypchek is only available from USFS and is available in limited quantities. It still considered experimental for eradication programs and so far has only been used for suppression. It is not registered by the California Department of Pesticide Regulation for use in California. For these reasons, Gypchek has not been used for eradication projects in California.

Nematodes. No nematodes have been shown to be effective at controlling SM.

Parasites and Predators. Parasites and predators are not considered an effective stand alone eradication method because their success is density dependent; they are more effective against dense prey populations than against light populations, so their effectiveness decreases as the prey populations decline. Eleven non-native parasitic flies and wasps and one predator have been introduced and become established in the eastern U.S., but they have had relatively little impact on SM populations. Because the effects of these biocontrol agents have been minimal in the eastern United States they have not been used in California.

Sterile Insect Technique. The sterile insect technique (SIT) involves the production and release of reproductively sterile insects, with the goal of preventing reproduction in a pest population via the mating of the sterile insects with the existing field population. SIT becomes more effective as the population density decreases. SIT for SM would require the production of large numbers of sterilized male moths for release. An inability to demonstrate the efficacy of this technique as an eradication tool and operational problems has severely hampered field application. Substantial

production and logistical problems would need to be overcome because field implementation requires the mass production of short lived, non-feeding adults that must be quickly transported to the target locale for release. A further complicating factor is that sufficient quantities of sterilized moths must be available for an extended period of time to cover the entirety of the flight period. For these reasons, SIT has not been used in California or elsewhere in the United States

D. CHEMICAL CONTROL

Ground-Applied Foliar Treatment. Foliar treatments use an insecticide in order to kill larvae. The CDFA uses this treatment as the preferred control measure against SM. The foliage of host trees and shrubs within 400 meters of each detection site is treated with an organic formulation of *Bacillus thuringiensis kurstaki* (Btk) using hand spray or hydraulic spray equipment. Btk is a naturally occurring bacterium which, when ingested by caterpillars, becomes toxic in the gut and leads to the eventual starvation and death of the insect. It is most effective against young larvae because their gut walls are thinner than older larvae. The product does not harm insects other than the caterpillars of moths and butterflies. The formulations of Btk currently used are Dipel® Pro DF and Thuricide Bt, and one or both will be used in the following situations: ornamental plantings, fruit bearing plants, and forest areas. The applications are timed so that they occur during the early larval stages shortly after they hatch from their eggs, which in warmer areas of California is usually in March. Up to three applications are applied every seven to 14 days. Treatment minimums and re-application will comply with pesticide label requirements to maintain efficacy. Significant rainfall (0.10 inch or more) will justify re-treatment at a shorter interval than seven days.

Aerial-Applied Foliar Treatment. Aerial application of an insecticide has been used by the CDFA in the past for SM control, but has not been used since 2001 when Btk was used in Marin County. The treatment is applied by aircraft in an 800-meter radius (1/2 mile) of each detection site. Future use would likely be in response to infestations which are either too large to treat from the ground in a biologically relevant time period, or in which the hosts are inaccessible to ground-based equipment (e.g., rugged terrain or tall trees). CDFA's detection system should prevent the first situation, but the second situation will remain a possibility.

Mating disruption. This treatment consists of the application of disparlure, a synthetic SM sex pheromone, in sufficient quantities so as to obscure the pheromone trails emitted from females. This masking prevents males from following the trails and locating females, thereby preventing mating and subsequent reproduction. Mating disruption, like mass trapping and SIT, becomes more effective as the population density decreases. Mating disruption is currently used in the USDA Slow The Spread campaign along the leading edges of the eastern U.S. populations. There, a polymeric flake impregnated with disparlure is applied via low-flying aircraft over large swaths. This technology has not been used in California because the density of new infestations is not known (as discussed under mass trapping) and because of public concern over the aerial application of pesticides over residential areas.

E. RESOURCES

California Department of Food and Agriculture. 1992. Gypsy Moth, *Lymantria dispar* (L.) Eradication Program in California. Final Environmental Impact Report. State of California, Department of Food and Agriculture, Sacramento, California. State Clearinghouse Number 90021090, January 17, 1992. 340 pp.

United States Department of Agriculture. 1995. Gypsy Moth Management in the United States: A Cooperative Approach. Final Environmental Impact Statement Summary. 26 pp. https://www.aphis.usda.gov/sites/default/files/gm-1995-final-eis.pdf .

United States Department of Agriculture. 2009. Gypsy Moth Cooperative Eradication Program in California: Environmental Assessment February 2009. 20 pp. http://www.aphis.usda.gov/plant_health/ea/downloads/gypsymoth-ea-ojai.pdf

PEST PROFILE

Common Name: Spongy moth

Scientific Name: *Lymantria dispar dispar* (L.)

Order and Family: Lepidoptera, Lymantriidae

Description: The adult male spongy moth (SM) has a 3.7 centimeter (1.5 inches) wingspan, brown wings with dark saw-toothed patterns, and is a strong flier. The female has white wings with a five centimeter wingspan (two inches) with similar markings as the male, and does not fly. Newly hatched larvae are covered with long black hairs. Older larvae develop a distinctive color pattern of five pairs of blue dots followed by six pairs of red dots along their backs. The eggs are laid in masses of 100 to 1,000 and are covered with hair, forming a soft tan patch about the size of a quarter.

History and Economic Importance: Spongy moth is native to Europe and northern Africa. Spongy moth first became established in the United States in 1869 in Massachusetts, when larvae escaped from cages where they had been kept for a silk production experiment. It spread rapidly throughout the Northeast and has become the most destructive pest of hardwood forest and shade trees in the United States. When populations are high, the spongy moth can defoliate millions of acres of forest and urban trees. This defoliation not only kills and weakens trees, but also alters forest composition and destroys habitat for mammals and birds. Spongy moth infestations negatively affect recreational use of forests, parks, and backyards. Swarms of caterpillars discourage tourism and many other outdoor activities, and their hairs can cause allergic reactions. In urban areas, the economic impact includes clean-up costs, tree replacement costs and loss of property values.

Distribution: Spongy moth is native to Europe and northern Africa. The current distribution in the United States includes the northeast states and West Virginia, North Carolina, and Tennessee, Michigan, Ohio, and Illinois. Isolated infestations are periodically discovered in the western U.S. as the result of accidental human-mediated movement from the eastern U.S., and are subject to eradicative efforts to prevent permanent establishment.

Life Cycle: Spongy moth has a one year life cycle. Adults are active during the summer. The female emits a sex attractant which allows the male to find her. After mating, the female lays a single egg mass on any available surface including trees, rocks, fences, and other outdoor articles. This egg mass may contain more than 1000 eggs. Adult moths do not feed, and die shortly after mating and egg laying. The eggs go dormant and overwinter, subsequently hatching in late February through April of the following year. Emerging larvae move to the tops of trees and hang down from branches on silken threads. These larvae may then be carried several miles on wind currents, and this wind-aided dispersal is the primary natural dispersal mechanism. After five to six molts, larvae pupate under bark or in other sheltered locations. Adults normally emerge between June and August but may emerge slightly earlier or later depending on climate.

Hosts and Damage: Spongy moth is a serious defoliator of many trees and shrubs, both hardwoods and conifers. It has over 150 primary hosts, but can feed on over 500 plants. Young larvae feed primarily on oaks, aspen, birch, willows, and alder. Older larvae feed on a broader range of trees including cedars, pines, spruces, and firs. Tests on western plants have shown native and common California species such as manzanita, western hemlock, Douglas fir and live oaks are good hosts. In addition, many ornamental trees commonly planted in California urban landscapes are primary hosts of the larvae.

Partial Favored Host List

Common Name	**Scientific Name**
Alders	*Alnus* spp.
Apples	*Malus* spp.
Aspens	*Populus* spp.
Avocado	*Persea americana*
Basswoods	*Tilia* spp.
Birches	*Betula* spp.
Argentine peppertree	*Schinus molle*
Camphor tree	*Cinnamomum camphora*
Coast redwood	*Sequoia sempervirens*
Cottonwoods	*Populus* spp.
Crab apple	*Malus* spp.
Douglas fir	*Pseudotsuga menziesii*
Elms	*Ulmus* spp.
Eucalyptus	*Eucalyptus* spp.
Giant sequoia	*Sequoiadendron giganteum*
Hazelnuts	*Corylus* spp.
Hemlocks	*Tsuga* spp.
Hickories	*Carya* spp.
Hawthorns	*Crataegus* spp.
Larches	*Larix* spp.
Lindens	*Tilia* spp.
Maples	*Acer* spp.
Mountain ash	*Sorbus* spp.
Oaks	*Quercus* spp.
Pacific madrone	*Arbutus menziesii*
Peach	*Prunus persica*
Pear	*Pyrus communis*
Pecan	*Carya illinoensis*
Pistachio	*Pistacia vera*
Poplars	*Populus* spp.
Rose	*Rosa* spp.
Smoketrees	*Cotinus* spp.
Sumac	*Rhus* spp.
Sweetgum	*Liquidambar styraciflua*
Tanoak	*Lithocarpus densiflorus*
Willow	*Salix* spp.
Witch-hazel	*Hamamelis virginiana*