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Light Brown Apple Moth Sterile Insect Field Evaluation Project in Sonoma and Napa, California

Environmental Assessment
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I. Introduction

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), in cooperation with the California Department of Food and Agriculture (CDFA), strive to improve the effectiveness of agency invasive plant pest control programs, and to utilize alternative integrated pest management (IPM) measures, including sterile insect technique (SIT), which has become an increasingly important component of pest suppression, eradication, and exclusion programs.

A. Light Brown Apple Moth

Light brown apple moth (LBAM), *Epiphyas postvittana* (Tortricidae), is a tortricid leafroller moth native to Australia, but now widely distributed in New Zealand, the United Kingdom, Ireland, and New Caledonia. LBAM was reported in Hawaii in the late 1800s; however, the current LBAM outbreak in California is the first detection on the United States mainland. LBAM surveys had been conducted over the last 10 years in 22 States, including California, and no moths were caught until 2007. A Cooperative Agricultural Pest Survey (CAPS) for LBAM was conducted in 2005 in which traps were placed in areas of California, including Santa Cruz, where LBAM populations were confirmed in 2007 (CAPS Program, 2009). If LBAM populations had existed in this area they would have been detected at the trapping densities used in the 2005 survey. The 2007 detection of LBAM in Alameda County, California was confirmed by USDA on March 22, 2007. LBAM trap finds continue to increase. The dramatic increase in LBAM numbers suggests that the pest is not being adequately controlled by natural predators (CDFA, 2009; USDA, 2009).

CDFA aggressively surveyed and continues to monitor the area to discover the extent of the infestation. To date, CDFA has identified the pest in 18 counties; however, currently only 16 counties have populations which are under quarantine restrictions.

LBAM is of concern because it can damage a wide range of crops and other plants, including cypress, oaks, and many other tree species commonly found in California's urban and suburban landscaping, public parks, and natural environments. The list of agricultural crops which could be damaged by this pest includes grapes, citrus, stone fruit (peaches, plums, nectarines, cherries, and apricots), and many others. Although LBAM is still in the early stages of establishment, it has already caused \$1.1 million in damage in organic blackberry fields in Santa Cruz in June, 2009 (Gary Carpenter, USDA-APHIS, pers. comm., 2009). A list of potential host plants can be found in appendix A USDA and CDFA are working aggressively to control and eradicate this pest before it has the

chance to spread, therefore requiring greater resources to protect American agriculture, as well as urban, suburban, and native landscapes.

The lifecycle of LBAM is continuous, and does not have a winter resting period (Johnson, et al., 2007). However, the colder winter temperatures considerably slow the development of the larval stage (Johnson, et al., 2007). The number of LBAM generations produced in a growing season varies from one to more than four, depending on environmental conditions (Danthanarayana, 1983; Mo et al., 2006a). It is estimated that there may be a potential for as many as five generations to occur in many areas of California (K. Hoffman, pers. com. 2007).

The egg masses can generally be found on leaves of host plants; however, the egg masses also have been known to occur on the fruit and stems of host plants (Johnson, et al., 2007). Once the larvae hatch, they construct a silken shelter and begin feeding on the host plant as they go through up to six stages of growth (Johnson, et al., 2007). The larval stages are the only feeding stages for LBAM. Young larvae are pale yellow, while the mature larvae are pale green (Mo, et al., 2006b). The larvae reach approximately $\frac{3}{4}$ inch (18 millimeters (mm)) in length before pupation (Johnson, et al., 2007).

Adults emerge after a pupation period of 1 to several weeks and mate soon after emergence (Johnson, et al., 2007). Both female and male adults are light brown in color; however, the females are distinguished by a dark spot in the center of the front wings when folded (Johnson, et al., 2007). LBAM adults are capable of flying only short distances to find a suitable host. Most moths fly no further than 330 ft (100 m), although some may fly as far as 2,000 ft (600 m) (Suckling, et al., 1994). The adult life span is 2 to 3 weeks, with longevity influenced by host plant and temperature (Johnson, et al., 2007). Female moths generally deposit egg masses containing 20 to 50 eggs (Johnson, et al., 2007). Fecundity varies—females have been known to lay up to 1,496 eggs in their lifetime, however, the average number of eggs per female LBAM is between 118 to 462 eggs (Johnson, et al., 2007).

B. Sterile Insect Technique

There is a broad international consensus that control efforts against invasive species, like LBAM, should be based on the area-wide concept of IPM (Klassen and Curtis, 2005), and that SIT can be used as a key tactic for creating pest-free areas or for pest management within IPM programs (Hendrichs et al., 2007; Pimentel, 2007).

It has been known since the 1950's that insect pests can be controlled or eradicated through a method based on SIT (Klassen and Curtis, 2005). It involves the colonization and mass-rearing of the target pest species,

sterilization of the insects through the use of gamma radiation, and their release into the field on a sustained basis and in sufficient numbers to achieve high sterile-to-wild insect over-flooding ratios. The sterile insects will mate with fertile wild insects thereby reducing the overall fecundity of the wild population and, ultimately, leading to eradication. Due to the absence of offspring, the natural pest population will decrease. The validity of this method has been demonstrated for many insect pests, including many moths, screwworms, and tsetse and fruit flies (Klassen and Curtis, 2005; Dyck et al., 2005; Hendrichs, 2001).

SIT has been successful in eradicating and preventing the establishment of several exotic pest fruit flies within the United States and in several other countries. There are many successful examples of SIT against Lepidoptera. These include operational containment, suppression and/or eradication programs against the codling moth (Canada, South Africa), pink bollworm (southwestern United States and northern Mexico), cactus moth (United States and Mexico), painted apple moth (New Zealand), and false codling moth (South Africa) (Bloem et al., 2005; Carpenter et al., 2005; Suckling et al., 2007; Simmons et al., 2009; Krafur, 1998; and Klausen, 2005).

The use of SIT has many advantages including species specificity and compatibility with the use of other area-wide control tactics, such as biological control, other forms of mating disruption, cultural control methods, and the use of bio-rational pesticides¹ (Dyck et al., 2005; Carpenter, 2000).

Adult stage insects are sterilized to ensure they will not produce viable offspring. Prior to field release, the insects are exposed to gamma rays. All irradiation treatments are conducted in an approved facility in accordance with stringent safety guidelines. Radiation doses are species-specific, and are evaluated in the laboratory to determine the exact dose which results in sterility but will still allow treated insects to be sexually competitive with non-sterilized insects. Sterilization of insects does not result in radioactivity of the treated insects (Bakri et al., 2005; Whitten and Mahon, 2005). For the evaluation releases, adult moths will be sterilized prior to transport and released in the agricultural fields of the project area.

To ensure that moths are sterile, standard operating procedures used for sterile insect release programs include measuring the received dose of each container of moths with a tool called a dosimeter to ensure that the correct sterilizing dose is delivered to the moths. They also include monitoring of the sterility of irradiated moths with regular quality assurance testing to detect any strain changes in radiation sensitivity.

¹ Bio-rational pesticides are pesticides that are efficacious against the target pest but are less detrimental to natural enemies.

The radiation dose selected for LBAM was based on information about effective doses used in other moth SIT programs, and on the results of testing the sterility of the mass-reared Californian LBAM strain after exposure to different doses. The radiation biology of all pest Lepidoptera are roughly similar, with adjustments in treatment dose made to account for small variations in response to radiation based on moth size or radiation resistance. Testing to determine the correct operational dose starts with determining the irradiation level that achieves sterility without greatly impacting the quality of the moth. At present, several radiation biology experiments have determined an appropriate dose for use in the project. Continued laboratory research on rearing, handling, the effects of irradiation on moth quality, and release methods may permit the dose to be lowered to allow for improvements in the quality of the sterile moths without risking the efficacy of the treatment.

The proposed releases of sterilized LBAM into an agricultural area, which is the subject of this environmental assessment (EA), will provide information regarding field competitiveness and mating compatibility of sterile LBAM with non-sterile LBAM. This information cannot be obtained with laboratory tests alone (Calkin and Parker, 2005).

An important requirement for assessment of SIT is the accurate identification of the released insects found in the traps which are used to monitor the progress of the program (Stephens et al., 2008). Marking sterile insects allows for identification of the released insect from the wild pest, which provides information that allows for effective management of the control program. Marking sterile moths released in SIT programs is accomplished by the use of an oil-soluble red azo dye, known as Calco Red, which is supplied in an artificial diet to internally mark the insect. Several other methods for marking insects are available; however, the use of Calco Red as an internal marker is the most commonly used method, and it provides a safe and cost-effective marker (Hagler and Jackson, 2001; Qureshi et al., 2004). The marker accumulates in the integument, fat body, and ovaries of adult moths which results in marked moths that can be distinguished from wild moths in the field. This dye has been used extensively in SIT programs for marking moths of several pest species, including pink bollworm, codling moth, false codling moth, painted apple moth and date moth (Graham and Manghum, 1971; IAEA, 2003; Hagler and Jackson, 2001; Stephens et al., 2008).

For the last 2 years, method development research of LBAM SIT conducted in the laboratory and in small-scale field studies for LBAM in New Zealand and Australia has shown promising results. The project was initiated because of concern for LBAM's status as an invasive species in New Zealand and the need to control the pest within Australia. As a tortricid leafroller, it has similar biology to two other tortricid pest species

for which effective sterile insect release tactics have been developed (i.e., codling moth and false codling moth), and similar methods for mass-rearing, handling, sterilization, and release can be easily adapted from methods already developed for these species.

C. Purpose and Need

APHIS is responsible for taking actions to exclude, eradicate, and/or control plant pests under the Plant Protection Act (7 United States Code (U.S.C.) 7701 et seq.). As such, it is important that APHIS take the steps necessary to eradicate LBAM from areas in California to prevent its spread to susceptible host plants throughout the United States. The wide range of potential host plants will put agricultural resources at risk throughout a large part of California and elsewhere in the United States if eradication is not achieved.

Because LBAM is a new pest to the North American continent, there is little information regarding how the moths will respond to treatment in the North American environment. Thus far, eradication efforts have primarily relied on mating disruption with different types of pheromone treatments. However, recent laboratory and field tests of SIT for LBAM in New Zealand and Australia have shown promise and demonstrate the potential to be used in the LBAM Eradication Program. APHIS, in cooperation with CDFA, is proposing to implement an SIT evaluation project on a 3-square mile vineyard that stretches across the border of Sonoma and Napa Counties (see figure 1).

The objective of the study is to evaluate the interactions of sterile moths with other sterile moths and with wild LBAM, and to determine the release techniques that will maximize the success of SIT in LBAM eradication projects. The results of these studies will provide useful information for the LBAM Eradication Program in California by providing a better understanding of the potential for using SIT as an eradication tool.

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

D. Affected Environment

The proposed treatment site is approximately 3-square miles of grape vineyards within the State quarantine area which stretches across the Napa

and Sonoma County border (see figure 1). The field evaluation project will occur in vineyards that are not accessible to the general public. Only

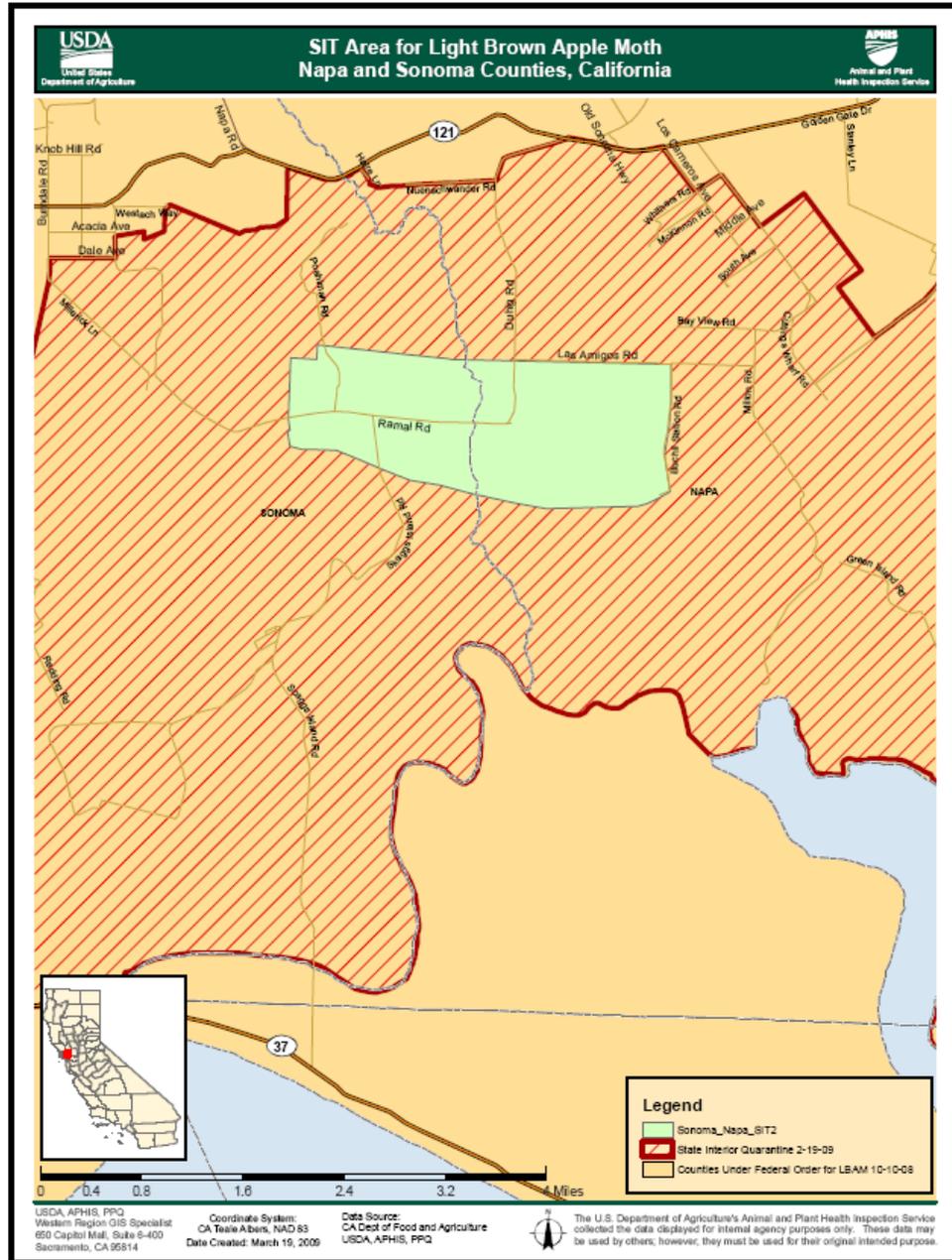


Figure 1. Map of SIT treatment area.

workers in these fields and project personnel will be within the field evaluation project site.

There are very few residences surrounding the treatment site—the majority of land in the area is used for agriculture. The nearest town, Cuttings Wharf, is about a mile to the east of the treatment site, adjacent to the Napa River. The city of Sonoma is about 6 miles northwest of the treatment site, and the city of Napa is about 5 miles northeast of the treatment site.

Huichica Creek runs north-south right in the middle of the treatment site. Numerous small ponds, which are impoundments used to mitigate frost damage, are found throughout the site. The ponds may be periodically refilled from wells, and are occasionally used for irrigation purposes. Seasonal wetlands occur about 1 mile to the south of the treatment site, and extend to the San Pablo Bay, which is approximately 5 miles to the south.

According to trapping data, there is a very small wild population of LBAM in and around the proposed treatment area.

II. Alternatives

This EA will analyze the environmental effects anticipated from two alternatives in response to the need—(1) no action, and (2) the proposed action. Each alternative is briefly described in this section, and the potential environmental effects of each are considered in section 3, “Environmental Effects.”

Under both the no action and the preferred alternative, the LBAM moths are reared in a laboratory rearing operation in Moss Landing, California. When the moths are ready to be irradiated they will be transported for sterilization treatment to an existing biological irradiator at the Lawrence Livermore National Laboratory in Livermore, California. All rearing and transport procedures of fertile LBAM stages are authorized under a California Department of Food and Agriculture (CDFA) plant pest permit. The CDFA Plant Health and Pest Prevention Services has reviewed APHIS’ procedures, including the handling of each life stage and the movement within the laboratory, to ensure that release of any fertile LBAM is prevented. In addition, CDFA has also reviewed the procedures for transport from the rearing laboratory to the irradiation facility to ensure that fertile moths are unlikely to escape containment. Upon review, CDFA has issued a permit for LBAM rearing at the Moss Landing, California USDA Laboratory and for the transportation of the moths from this location to the irradiation facility.

A. No Action

Under the no action alternative, APHIS would not conduct the LBAM SIT evaluation project on the 3-square mile plot of land which stretches across Napa and Sonoma Counties. APHIS could propose another site for a field evaluation study, delay an evaluation field study, or decide not to go forward with the use of SIT in the LBAM Eradication Program in California.

The LBAM Eradication Program in California would continue to use pheromones as the main treatment of choice due to the low toxicity of pheromones, as compared to other chemicals used in similar eradication programs. Currently, the only pheromone product available for use in the LBAM Eradication Program is twist ties, however, other pheromone products are being evaluated for use. Twist tie treatments may be used in conjunction with applications of the bio-pesticide *Bacillus thuringiensis kurstaki* (Btk) when there are isolated populations of LBAM that occur at least 10 miles away from an interior quarantine. Other treatments may be added to the program; however, additional environmental documentation would be needed before the tools could be used in the program.

B. Proposed Alternative

APHIS will conduct field evaluations for using LBAM SIT in the LBAM Eradication Program in California. The experiments planned for this project are relatively small in scope, and will be conducted in a small test area to evaluate methods for moth handling, release, and monitoring. Several basic aspects of sterile moth quality and performance will be tested, such as dispersal, longevity, and recapture rates on monitoring traps, release frequency, handling, and release methodology. The design of these experiments is based on the input and review from many international experts of SIT. The experiments will be replicated and will include appropriate controls. Results from these small scale experiments will provide the necessary data to determine if a larger scale SIT program is feasible.

The first ground releases of sterile LBAM are planned to begin in October 2009 to test sterile moth performance, field longevity, dispersal characteristics, trapping designs, and trap sensitivity. The first releases will be made by hand and from a release machine mounted on a pickup truck. Release by hand will be made by walking down selected rows in a vineyard spreading moths out from canisters over the rows. Truck releases will be made while driving along field roads next to the vines. A release machine will be used to discharge sterile LBAM onto the vines in the selected release sites.

The second phase of the project will include aerial release of sterile LBAM from fixed-wing aircraft that is equipped with a release machine. This will test effective handling and release methods, refinement of release rates, and determine optimal release frequencies. These releases will occur at 500 ft above the vineyard canopy. Releases will be made either in the early evening (near dusk) or early in the morning as the sun is rising.

Sterile moths will also be released in field cages to assess moth competitiveness. These cages are made from insect proof net cage supported by a metal pipe frame which is placed over a section of a row of grapes in the vineyard.

Mating stations may also be used. These consist of a 1-gallon paper food container bucket mounted on a stake along a row in the vineyard at about 1 meter in height. An immobilized sterile female will be placed in the bucket and the bucket will be inspected during the night to determine if wild LBAM males are mating with the female.

Moths will be released four to six times each week beginning in October, continue through November 2009, and re-start in spring 2010 (a total of approximately 27 weeks). The number of moths released per week will vary per week, depending on the type of release and the evaluation being conducted, but will not exceed 1,400 moths per acre per week.

III. Environmental Effects

The environmental effects from the development, production, and transport of sterile insects are minimal, and focus on the inadvertent release of non-sterile life stages. The laboratory was developed by modifying an existing warehouse. The laboratory follows all State and local laws for the disposal and handling of wastes at the laboratory. APHIS has implemented procedures within the laboratory to ensure that there is no escape of any life stage from a rearing area during the transport of LBAM life stages from one rearing area to another, or during the transport from the rearing laboratory to the irradiation facility. These procedures include the use of escape-proof containers, such as plastic vials, plastic trays, and paper/plastic containers with tight-fitting lids. The containers will be put inside a secondary container (e.g., plastic or styrofoam ice chests) secured with tape, or inside heavyweight plastic trash bags sealed with tape or wire ties. Shipments by mail will be in secure biomailers with crush-proof cardboard boxes. These procedures were evaluated by CDFA prior to issuance of a permit for these activities. The conversion of an existing warehouse into an insect-rearing laboratory (including implementation of safeguards to prevent the escape of any life stage from the rearing area or during movement between rearing areas)

and the production of sterile insects in the laboratory are activities that have been categorically excluded under the APHIS–NEPA procedures (7 CFR 372.5(c)(2)) and will not be examined further in this document.

A. No Action

Under the no action alternative, APHIS would not conduct the LBAM SIT evaluation project on the 3-square mile plot of land which stretches across Napa and Sonoma Counties. Under this alternative, APHIS could propose another site for a field evaluation study, delay a field evaluation study, or decide not to go forward with use of SIT for use in the eradication program of LBAM in California.

The current LBAM Eradication Program can continue to use pheromones as the main treatment of choice because of the low toxicity of pheromones, as compared to other chemicals used in similar eradication programs. Currently, the only pheromone product used by the program is twist ties; however, other pheromone products are being evaluated for use in the program. Prior to their use in the program, an environmental document will need to be prepared to discuss the environmental effects from use of these products. Btk may also be considered for use when larval populations are found in areas with isolated LBAM populations; however, Btk has only been applied in two isolated populations at the beginning of the LBAM Eradication Program in July, 2007. The environmental effects of Btk were examined under the isolated population EA (USDA–APHIS, 2007b).

The host list for LBAM is extensive and includes a wide range of crops, landscaping plants, and native plants. Cypress, oaks, and many other varieties of trees and plants commonly found in California’s urban and suburban landscaping, public parks, and the natural environment are at risk from LBAM. The list of agricultural crops includes grapes, citrus, peaches, plums, nectarines, cherries, apricots, and many others. A preliminary economic analysis found that LBAM could cause an estimated \$160 to \$640 million annually in crop damage and control costs if it spreads to agricultural production areas in the affected counties in California (USDA–APHIS, 2007a). If LBAM were to spread throughout the entire State of California, damage and costs could reach up to \$2.7 billion annually (USDA–APHIS, 2007a).

In addition to crops, many varieties of nursery stock and cut flowers are also host plants for LBAM. It is speculated that the movement of nursery stock has led to the spread of LBAM throughout the counties under the quarantine. A Federal Order and State quarantines have been implemented to prevent any further spread of LBAM outside these areas. Although the quarantines would still be in place under the no action alternative, without eradication efforts the number of LBAM would

continue to increase and disperse naturally, making it more likely that LBAM would expand its range in California and, perhaps, beyond California.

If the LBAM population continues to flourish, it is likely that private individuals could use pesticides to manage LBAM in an effort to prevent crop damage. Chemicals used will either be chemicals available over the counter or through the use of an exterminator or other pest control companies. As pesticide treatments increase, there is the possibility that insecticide resistance could develop in some situations (Sutherst, 2000). As leafrollers, LBAM larvae roll the leaves of host plants and tend to feed from within the protective leaf rolls and, thus, are not as susceptible to pesticide exposure on leaf surfaces as other non-leaf-rolling insects would be.

It is possible that other pesticides that are labeled for pest species of moths (Lepidoptera) would be increasingly used, particularly by homeowners and other non-professionals, as populations are treated and become reestablished in sites because of a lack of coordinated efforts. This would result in generally higher use of pesticides. Treatments applied year after year would increase pesticide loading and potentially have negative environmental effects.

B. Preferred Alternative

The preferred alternative is to conduct field evaluation releases of sterile LBAM to determine how LBAM SIT can be used in LBAM eradication. This involves the release of sterile LBAM in identified vineyards located in Napa and Sonoma Counties.

1. Sterile Insects

SIT works by limiting a pest's ability to reproduce (Klassen and Curtis, 2005). SIT can be used over a large area, and does not involve the environmental or health risks of other insect control strategies (Nagel and Peveling, 2005). There are many successful examples of SIT against Lepidoptera. These include operational containment, suppression and eradication programs against the codling moth (Canada), pink bollworm (United States), cactus moth (United States), painted apple moth (New Zealand), and false codling moth (South Africa) (Bloem et al., 2005; Carpenter et al., 2005; Suckling et al., 2007).

As a component in an IPM program, the use of SIT will help to reduce the potential for any ecological effects which could occur through LBAM's long-term establishment in California. In addition, a successful SIT program will reduce reliance on insecticides.

An LBAM colony is being raised in a secure facility in California. Adult moths will be collected from this colony and transported in accordance

with the permit issued by CDFA. The moths will be treated using gamma ray sterilization. This is the method of choice for most insect sterilization programs (Bakri et al., 2005; Klassen and Curtis, 2005). Sterilization of insects does not result in radioactivity in the treated insects (Bakri et al., 2005; Whitten and Mahon, 2005); therefore, release of sterile insects will not result in release of radioactive material.

A system has been designed to guarantee that moths released in this program are sterile. A dosimeter is used as a check to verify that the chosen dose is achieved in each treatment. This dose has been selected by using data from other programs in which adult moths were sterilized. It will be tested by crossing treated and untreated moths to ensure 100 percent sterility. Additionally, an indicator tag is attached to each canister containing live moths. These tags turn blue when exposed to radiation of the proper dose, indicating that the insects were treated with a sterilizing dose of radiation. These tags will be checked to ensure that released moths have been treated and the correct dosage has been applied.

The moths will be transported from the irradiation facility to the treatment site using either trucks or planes. The moths will be kept in boxes during transport from the irradiation facility to the release site or the airport hanger where they will be transferred into a release machine.

The moths will be released four to six times a week. The weekly rates will vary but will not exceed 1,400 moths per acre in a week. The release of the sterile moths themselves are not likely to cause any adverse environmental impacts as adult LBAM do not feed and, thus, the release of sterile LBAM adults will not result in any direct damage to crops or the natural environment. Because the LBAM will be sterile, they will not produce offspring which could feed on crops and, thus, cause damage. Although there have been known incidences of allergic reactions to hairs and scales from high numbers of populations of moths, particularly from the family Lymantriidae, this is not known to be associated with the Tortricidae family of which LBAM is a member (Goddard, 2007). These reactions are specifically associated with caterpillars (Goddard, 2007). This field evaluation program will be releasing only sterile adult LBAM which will not produce any offspring. Therefore, no adverse effects to humans, including those that are working in the fields or the program personnel involved in this study, are expected.

Environmental effects from the implementation of the proposed LBAM SIT field evaluation project are not anticipated. Previously published work has discussed the potential ecological effects to other terrestrial invertebrates in suppressing or eradicating native insects using SIT. Pollinator impacts, as well as parasite/predator effects, have been discussed regarding the eradication of native species which threaten agriculture or human health (Nagal and Peveling, 2005). Because LBAM

is an introduced pest into the United States, the use of SIT to suppress and eradicate this pest is not expected to significantly disrupt native insect populations, including pollinators, parasites, and predators. Native insect populations have not adapted to LBAM in the evaluation project area as the LBAM population is very small and was only first detected in this area in 2008. Therefore, suppression of this population should not result in any significant effects to existing native invertebrate populations.

Adult moths released into the environment will contain low levels of a marking agent (dye) known as Calco Red which lines the internal digestive system of the moths. This marker helps to distinguish them from wild LBAM. Given the low levels of dye per moth and the number of LBAM released into the environment, there are no anticipated effects to terrestrial or aquatic organisms which may consume sterile LBAM (see appendix B for a more in-depth analysis).

2. Field Activities

The field activities will occur in an agricultural setting. The field evaluation project will utilize hand releases, truck releases, and aerial releases of sterile LBAM. In addition, field cages and traps will be used to monitor the behaviors of LBAM. Personnel working on the project would use existing roads. Because this is in an agricultural area, the planned activities (e.g., foot traffic, vehicular traffic, and aerial overflights) are similar to those that currently occur in an agricultural setting. Therefore, there will be minimal effects to non-target species from the preferred alternative.

C. Cumulative Effects

The proposed field evaluation project is short-term (June 2009 to November 2009), and would take place in a very limited area (approximately 3-square miles). APHIS has been in contact with the landowners, and was informed that no other projects were currently ongoing or planned to occur in the future in and surrounding the project area. None of the comments received highlighted any State, Federal, or private actions that are ongoing or will occur in the project area during the time of APHIS' study that would add cumulatively to this action. There are no significant environmental effects anticipated from the SIT project. We do not anticipate any cumulative effects from this field evaluation project.

IV. Other Environmental Considerations

A. Executive Orders

Consistent with Executive Order (EO) 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations,” APHIS considered the potential for the proposed action to have any disproportionately high adverse human health or environmental effects on any minority populations and low-income populations. Due to the limited area and minimal environmental and human health effects anticipated from the field evaluation program, APHIS has determined that the field evaluation project is not expected to have disproportionate adverse effects to any minority or low-income populations.

Consistent with EO 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” APHIS considered the potential for disproportionately adverse environmental health and safety risks to children resulting from the proposed action. Due to the limited area and minimal environmental and human health effects anticipated from the field evaluation program, and the fact that only field workers and program personnel would be expected in the field, APHIS has determined that there would be no disproportionate effects to children from the implementation of the field evaluation program.

B. Threatened and Endangered Species

Section 7 of the Endangered Species Act and its implementing regulations require Federal agencies to ensure 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.

APHIS has evaluated the potential impacts of the LBAM SIT evaluation project on listed species and designated critical habitat. The proposed field evaluation site lies in a 3-square mile area straddling the Napa-Sonoma county line and is dominated by agricultural use, primarily vineyards. Listed species and critical habitat surrounding the area were evaluated and APHIS made the determination the proposed action would not affect those species or critical habitats. Further, APHIS has discussed this project in detail with both the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, who both concurred that the proposed SIT evaluation project will not affect any listed species or critical habitats.

V. Listing of Agencies Consulted

U.S. Fish and Wildlife Service
Sacramento Field Office
2800 Cottage Way
Sacramento, CA 95825

National Marine Fisheries Service
777 Sonora Blvd.
Santa Rosa, CA 95404

U.S. Department of Agriculture
Animal Plant Health Inspection Service
Plant Protection and Quarantine
7697 Hwy. 1, Bldg. 20
Moss Landing, CA 95039

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

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
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Appendix A. Potential Host List for Light Brown Apple Moth

(If no Genus Match Host Prevalence is listed, it is because the people who reported the presence of LBAM on the plant did not specify the degree to which LBAM was present.)

Genus Species	Common Name	Genus Match Host Prevalence
Abelia spp.	abelia	Occasional
Abies	fir	Common
Abies xshastensis	Shasta red fir	Common
Abies amabilis	Pacific silver fir	Common
Abies bracteata	bristlecone fir	Common
Abies concolor	white fir	Common
Abies grandis	grand fir	Common
Abies lasiocarpa	subalpine fir	Common
Abies lowiana		Common
Abies magnifica	California red fir	Common
Abies procera	noble fir	Common
Abies spp.	fir	Common
Acacia	acacia	Common
Acacia baileyana	cootamundra wattle	Common
Acacia cyclops	cyclops acacia	Common
Acacia dealbata	silver wattle	Common
Acacia decurrens	green wattle	Common
Acacia elata	cedar wattle	Common
Acacia farnesiana	sweet acacia	Common
Acacia greggii	catclaw acacia	Common
Acacia longifolia		Common
Acacia mearnsii	black wattle	Common
Acacia melanoxylon	blackwood	Common
Acacia paradoxa	paradox acacia	Common
Acacia podalyriifolia	pearl wattle	Common
Acacia pycnantha	golden wattle	Common
Acacia redolens	bank catclaw	Common
Acacia retinodes	water wattle	Common
Acacia saligna	orange wattle	Common
Acacia spp.	acacias	Common
Acacia verticillata	prickly Moses	Common
Acer	maple	
Acer campestre	hedge maple	
Acer circinatum	vine maple	
Acer glabrum	Douglas maple	
Acer glabrum	Greene's maple	
Acer glabrum	Rocky Mountain maple	
Acer glabrum	Torrey maple	
Acer macrophyllum	bigleaf maple	
Acer negundo	boxelder	
Acer negundo	California boxelder	
Acer saccharinum	silver maple	
Acer spp.	maple	
Achillea	yarrow	Common
Achillea filipendulina	fernleaf yarrow	Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Achillea millefolium</i>	California yarrow	Common
<i>Achillea millefolium</i>	common yarrow	Common
<i>Achillea millefolium</i>	giant yarrow	Common
<i>Achillea millefolium</i>	Pacific yarrow	Common
<i>Achillea millefolium</i>	western yarrow	Common
<i>Achillea</i> spp.	yarrow	Common
<i>Acmena</i> spp.	lilly-pilly tree	Occasional
<i>Actinidia</i> spp.	Chinese gooseberry, kiwi, kiwifruit	Primary
<i>Adiantum</i>	maidenhair fern	Occasional
<i>Adiantum xtracyi</i>		Occasional
<i>Adiantum aleuticum</i>	Aleutian maidenhair	Occasional
<i>Adiantum capillus-veneris</i>	common maidenhair	Occasional
<i>Adiantum jordanii</i>	California maidenhair	Occasional
<i>Adiantum</i> spp.	maidenhair ferns	Occasional
<i>Aesculus</i>	buckeye	Occasional
<i>Aesculus californica</i>	California buckeye	Occasional
<i>Aesculus</i> spp.	horse chestnut, buckeye	Occasional
<i>Alnus</i>	alder	
<i>Alnus cordata</i>	Italian alder	
<i>Alnus incana</i>	gray alder	
<i>Alnus incana</i>	thinleaf alder	
<i>Alnus rhombifolia</i>	White Alder	
<i>Alnus rubra</i>	red alder	
<i>Alnus</i> spp.	Alder	
<i>Alnus viridis</i>	green alder	
<i>Alnus viridis</i>	Siberian alder	
<i>Alnus viridis</i>	Sitka alder	
<i>Amaranthus</i>	pigweed	Occasional
<i>Amaranthus albus</i>	prostrate pigweed	Occasional
<i>Amaranthus arenicola</i>	sandhill amaranth	Occasional
<i>Amaranthus blitoides</i>	mat amaranth	Occasional
<i>Amaranthus blitum</i>		Occasional
<i>Amaranthus blitum</i>	purple amaranth	Occasional
<i>Amaranthus californicus</i>	California amaranth	Occasional
<i>Amaranthus caudatus</i>	love-lies-bleeding	Occasional
<i>Amaranthus cruentus</i>	red amaranth	Occasional
<i>Amaranthus deflexus</i>	largefruit amaranth	Occasional
<i>Amaranthus fimbriatus</i>	fringed amaranth	Occasional
<i>Amaranthus hybridus</i>	slim amaranth	Occasional
<i>Amaranthus hypochondriacus</i>	Prince-of-Wales feather	Occasional
<i>Amaranthus palmeri</i>	carelessweed	Occasional
<i>Amaranthus powellii</i>		Occasional
<i>Amaranthus powellii</i>	Powell's amaranth	Occasional
<i>Amaranthus retroflexus</i>	redroot amaranth	Occasional
<i>Amaranthus spinosus</i>	spiny amaranth	Occasional
<i>Amaranthus</i> spp.		Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Amaranthus torreyi</i>	Torrey's amaranthus	Occasional
<i>Amaranthus tuberculatus</i>	roughfruit amaranth	Occasional
<i>Amaranthus watsonii</i>	Watson's amaranth	Occasional
<i>Antirrhinum</i>	snapdragon	Occasional
<i>Antirrhinum majus</i>	garden snapdragon	Occasional
<i>Antirrhinum</i> spp.	snapdragons	Occasional
<i>Apium</i>	celery	Occasional
<i>Apium graveolens</i>	wild celery	Occasional
<i>Apium nodiflorum</i>	European marshwort	Occasional
<i>Apium</i> spp.	Celery	Occasional
<i>Aquilegia</i>	columbine	Common
<i>Aquilegia eximia</i>	Van Houtte's columbine	Common
<i>Aquilegia formosa</i>	western columbine	Common
<i>Aquilegia pubescens</i>	Sierra columbine	Common
<i>Aquilegia shockleyi</i>		Common
<i>Aquilegia</i> spp.	Columbines	Common
<i>Arbutus</i>	madrone	Common
<i>Arbutus menziesii</i>	Pacific madrone	Common
<i>Arbutus</i> spp.	Strawberry Tree	Common
<i>Arctostaphylos</i>	manzanita	
<i>Arctostaphylos xbenitoensis</i>		
<i>Arctostaphylos xcampbelliae</i>		
<i>Arctostaphylos xcinerea</i>	Waldo manzanita	
<i>Arctostaphylos xhelleri</i>		
<i>Arctostaphylos xjepsonii</i>		
<i>Arctostaphylos xlaxiflora</i>		
<i>Arctostaphylos xmedia</i>		
<i>Arctostaphylos xparvifolia</i>		
<i>Arctostaphylos xrepens</i>	PMC manzanita	
<i>Arctostaphylos andersonii</i>	Santa Cruz manzanita	
<i>Arctostaphylos auriculata</i>	Mount Diablo manzanita	
<i>Arctostaphylos bakeri</i>	Baker's manzanita	
<i>Arctostaphylos bakeri</i>	The Cedars manzanita	
<i>Arctostaphylos canescens</i>	hoary manzanita	
<i>Arctostaphylos canescens</i>	Sonoma manzanita	
<i>Arctostaphylos catalinae</i>	Santa Catalina Island manzanita	
<i>Arctostaphylos columbiana</i>	hairy manzanita	
<i>Arctostaphylos confertiflora</i>	Santa Rosa Island manzanita	
<i>Arctostaphylos cruzensis</i>	La Cruz manzanita	
<i>Arctostaphylos densiflora</i>	Vine Hill manzanita	
<i>Arctostaphylos edmundsii</i>	Little Sur manzanita	
<i>Arctostaphylos gabrielensis</i>	San Gabriel manzanita	
<i>Arctostaphylos glandulosa</i>	Adams' manzanita	
<i>Arctostaphylos glandulosa</i>	Del Mar manzanita	
<i>Arctostaphylos glandulosa</i>	Eastwood's manzanita	
<i>Arctostaphylos glandulosa</i>	Zaca's manzanita	

Genus Species	Common Name	Genus Match Host Prevalence
Arctostaphylos glauca	bigberry manzanita	
Arctostaphylos glutinosa	Schreiber's manzanita	
Arctostaphylos hispidula	Gasquet manzanita	
Arctostaphylos hookeri	Franciscan manzanita	
Arctostaphylos hookeri	Hearst's manzanita	
Arctostaphylos hookeri	Hooker's manzanita	
Arctostaphylos hookeri	Mt. Tamalpais manzanita	
Arctostaphylos hookeri	Presidio manzanita	
Arctostaphylos hooveri	Hoover's manzanita	
Arctostaphylos imbricata	San Bruno Mountain manzanita	
Arctostaphylos insularis	island manzanita	
Arctostaphylos klamathensis	Klamath manzanita	
Arctostaphylos luciana	Santa Lucia manzanita	
Arctostaphylos malloryi	Mallory's manzanita	
Arctostaphylos manzanita	Contra Costa manzanita	
Arctostaphylos manzanita	Konocti manzanita	
Arctostaphylos manzanita	Roof's manzanita	
Arctostaphylos manzanita	whiteleaf manzanita	
Arctostaphylos manzanita	Wieslander's manzanita	
Arctostaphylos mendocinoensis	pygmy manzanita	
Arctostaphylos mewukka	Indian manzanita	
Arctostaphylos mewukka	True's manzanita	
Arctostaphylos montaraensis	Montara manzanita	
Arctostaphylos montereyensis	Monterey manzanita	
Arctostaphylos morroensis	Morro manzanita	
Arctostaphylos myrtifolia	lone manzanita	
Arctostaphylos nevadensis	pinemat manzanita	
Arctostaphylos nissenana	Nissenan manzanita	
Arctostaphylos nortensis	Del Norte manzanita	
Arctostaphylos nummularia	glossyleaf manzanita	
Arctostaphylos obispoensis	serpentine manzanita	
Arctostaphylos osoensis	Oso manzanita	
Arctostaphylos otayensis	Otay manzanita	
Arctostaphylos pacifica	Pacific manzanita	
Arctostaphylos pajaroensis	Pajaro manzanita	
Arctostaphylos pallida	Alameda manzanita	
Arctostaphylos parryana	Parry manzanita	
Arctostaphylos patula	greenleaf manzanita	
Arctostaphylos pechoensis	Pecho manzanita	
Arctostaphylos peninsularis	Peninsular manzanita	
Arctostaphylos pilosula	La Panza manzanita	
Arctostaphylos pringlei	pinkbracted manzanita	
Arctostaphylos pringlei	Pringle manzanita	
Arctostaphylos pumila	sandmat manzanita	
Arctostaphylos pungens	pointleaf manzanita	
Arctostaphylos purissima	La Purissima manzanita	

Genus Species	Common Name	Genus Match Host Prevalence
Arctostaphylos rainbowensis	Rainbow manzanita	
Arctostaphylos refugioensis	Refugio manzanita	
Arctostaphylos regismontana	Kings Mountain manzanita	
Arctostaphylos rudis	shagbark manzanita	
Arctostaphylos silvicola	Bonny Doon manzanita	
Arctostaphylos spp.	Manzanita	
Arctostaphylos stanfordiana	Raiche's manzanita	
Arctostaphylos stanfordiana	Rincon manzanita	
Arctostaphylos stanfordiana	Stanford's manzanita	
Arctostaphylos tomentosa	brittleleaf manzanita	
Arctostaphylos tomentosa	dacite manzanita	
Arctostaphylos tomentosa	rosy manzanita	
Arctostaphylos tomentosa	Santa Cruz Island manzanita	
Arctostaphylos tomentosa	woollyleaf manzanita	
Arctostaphylos uva-ursi	kinnikinnick	
Arctostaphylos virgata	Bolinas manzanita	
Arctostaphylos viridissima	whitehair manzanita	
Arctostaphylos viscida	Mariposa manzanita	
Arctostaphylos viscida	sticky whiteleaf manzanita	
Arctostaphylos wellsii	Wells' manzanita	
Arctotheca	Capeweed	Common
Arctotheca calendula	Capeweed	Common
Arctotheca spp.	capeweeds, cape dandelion	Common
Arctotis	arctotis	Common
Arctotis spp.	African daisy	Common
Arctotis stoechadifolia	African daisy	Common
Aronia melanocarpa	Chokeberry	
Artemisia	sagebrush	Common
Artemisia annua	sweet sagewort	Common
Artemisia arbuscula	little sagebrush	Common
Artemisia arctica	boreal sagebrush	Common
Artemisia biennis	biennial wormwood	Common
Artemisia bigelovii	Bigelow sage	Common
Artemisia californica	coastal sagebrush	Common
Artemisia campestris	field sagewort	Common
Artemisia cana	silver sagebrush	Common
Artemisia douglasiana	Douglas' sagewort	Common
Artemisia dracunculus	tarragon	Common
Artemisia lindleyana	Columbia River wormwood	Common
Artemisia ludoviciana	white sagebrush	Common
Artemisia michauxiana	Michaux's wormwood	Common
Artemisia nesiotica	island sagebrush	Common
Artemisia norvegica		Common
Artemisia nova	black sagebrush	Common
Artemisia palmeri	San Diego sagewort	Common
Artemisia pycnocephala	beach wormwood	Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Artemisia rothrockii</i>	timberline sagebrush	Common
<i>Artemisia spinescens</i>		Common
<i>Artemisia</i> spp.		Common
<i>Artemisia suksdorfii</i>	coastal wormwood	Common
<i>Artemisia tridentata</i>	basin big sagebrush	Common
<i>Artemisia tridentata</i>	big sagebrush	Common
<i>Artemisia tridentata</i>	mountain big sagebrush	Common
<i>Artemisia tridentata</i>	Wyoming big sagebrush	Common
<i>Artemisia vulgaris</i>	common wormwood	Common
<i>Asparagus</i>	asparagus	Occasional
<i>Asparagus asparagoides</i>	African asparagus fern	Occasional
<i>Asparagus densiflorus</i>	Sprenger's asparagus fern	Occasional
<i>Asparagus officinalis</i>	garden asparagus	Occasional
<i>Asparagus setaceus</i>	common asparagus fern	Occasional
<i>Asparagus</i> spp.	asparagus, asparagus fern, smilax asparagus	Occasional
<i>Astartea</i> spp.		
<i>Aster intricatus</i>		Common
<i>Aster</i> spp.	asters	Common
<i>Athyrium</i>	ladyfern	
<i>Athyrium americanum</i>	alpine ladyfern	
<i>Athyrium distentifolium</i>		
<i>Athyrium filix-femina</i>	Lady Fern	
<i>Athyrium filix-femina</i>	common ladyfern	
<i>Athyrium filix-femina</i>	subarctic ladyfern	
<i>Aucuba</i> spp.	aucuba, Himalaya laurel, Japanese laurel	Occasional
<i>Azara microphylla</i>	Boxleaf Azara	
<i>Baccharis</i>	baccharis	Common
<i>Baccharis brachyphylla</i>	shortleaf baccharis	Common
<i>Baccharis douglasii</i>	saltmarsh baccharis	Common
<i>Baccharis emoryi</i>	Emory's baccharis	Common
<i>Baccharis glutinosa</i>		Common
<i>Baccharis malibuensis</i>	Malibu baccharis	Common
<i>Baccharis pilularis</i>	coyotebrush	Common
<i>Baccharis plummerae</i>	Plummer's baccharis	Common
<i>Baccharis plummerae</i>	smooth baccharis	Common
<i>Baccharis salicifolia</i>	mule's fat	Common
<i>Baccharis sarothroides</i>	desertbroom	Common
<i>Baccharis sergiloides</i>	desert baccharis	Common
<i>Baccharis</i> spp.	coyote brush, desert broom	Common
<i>Baccharis vanessae</i>	Encinitis false willow	Common
<i>Banksia</i> spp.	candle flowers	Common
<i>Begonia</i> spp.	begonia	Occasional
<i>Berberis</i>	barberry	Occasional
<i>Berberis aquifolium</i>		Occasional
<i>Berberis darwinii</i>	Darwin's berberis	Occasional
<i>Berberis fremontii</i>		Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Berberis haematocarpa</i>		Occasional
<i>Berberis nervosa</i>		Occasional
<i>Berberis nevinii</i>		Occasional
<i>Berberis pinnata</i>		Occasional
<i>Berberis pumila</i>		Occasional
<i>Berberis repens</i>		Occasional
<i>Berberis</i> spp.	barberry	Occasional
<i>Beta</i>	beet	Occasional
<i>Beta</i> spp.	beet	Occasional
<i>Beta vulgaris</i>	common beet	Occasional
<i>Betula</i>	birch	Occasional
<i>Betula glandulosa</i>	resin birch	Occasional
<i>Betula jacquemontii</i>	birch	Occasional
<i>Betula nana</i>	dwarf birch	Occasional
<i>Betula occidentalis</i>	water birch	Occasional
<i>Betula pumila</i>	bog birch	Occasional
<i>Betula</i> spp.	birch	Occasional
<i>Blandfordia</i> spp.	Christmas bells	
<i>Boronia</i> spp.	boronias	Common
<i>Brassica</i>	mustard	Occasional
<i>Brassica fruticulosa</i>	Mediterranean cabbage	Occasional
<i>Brassica juncea</i>	India mustard	Occasional
<i>Brassica napus</i>	rape	Occasional
<i>Brassica nigra</i>	black mustard	Occasional
<i>Brassica oleracea</i>	cabbage	Occasional
<i>Brassica rapa</i>	field mustard	Occasional
<i>Brassica</i> spp.	broccoli, cauliflower, cabbage, cress, kale, mustard, etc.	Occasional
<i>Brassica tournefortii</i>	Asian mustard	Occasional
<i>Breynia</i> spp.	snow bush	Occasional
<i>Bromus</i>	brome	Occasional
<i>Bromus alopecuroides</i>	weedy brome	Occasional
<i>Bromus anomalus</i>		Occasional
<i>Bromus arenarius</i>	Australian brome	Occasional
<i>Bromus arizonicus</i>	Arizona brome	Occasional
<i>Bromus arvensis</i>	field brome	Occasional
<i>Bromus berteroi</i>	Chilean chess	Occasional
<i>Bromus briziformis</i>	rattlesnake brome	Occasional
<i>Bromus carinatus</i>	California brome	Occasional
<i>Bromus catharticus</i>	rescuegrass	Occasional
<i>Bromus ciliatus</i>	fringed brome	Occasional
<i>Bromus ciliatus</i>	fringed brome	Occasional
<i>Bromus diandrus</i>	ripgut brome	Occasional
<i>Bromus erectus</i>	erect brome	Occasional
<i>Bromus grandis</i>	tall brome	Occasional
<i>Bromus hordeaceus</i>	soft brome	Occasional
<i>Bromus inermis</i>	smooth brome	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Bromus laevipes	Chinook brome	Occasional
Bromus marginatus	mountain brome	Occasional
Bromus maritimus	seaside brome	Occasional
Bromus matritensis	compact brome	Occasional
Bromus orcuttianus	Orcutt's brome	Occasional
Bromus pacificus		Occasional
Bromus polyanthus	Great Basin brome	Occasional
Bromus porteri	Porter brome	Occasional
Bromus pseudolaevipes	coast range brome	Occasional
Bromus racemosus	bald brome	Occasional
Bromus richardsonii		Occasional
Bromus rubens	red brome	Occasional
Bromus scoparius	broom brome	Occasional
Bromus secalinus		Occasional
Bromus secalinus	rye brome	Occasional
Bromus sitchensis	Alaska brome	Occasional
Bromus spp.	brome, bromegrass, chess, foxtail, rescuegrass	Occasional
Bromus stamineus	roadside brome	Occasional
Bromus sterilis	poverty brome	Occasional
Bromus subvelutinus	hoary brome	Occasional
Bromus suksdorfii	Suksdorf's brome	Occasional
Bromus tectorum	cheatgrass	Occasional
Bromus vulgaris	Columbia brome	Occasional
Buddleia spp.	butterfly bush	
Buddleja	butterflybush	Common
Buddleja davidii	orange eye butterflybush	Common
Buddleja saligna	squarestem butterflybush	Common
Buddleja utahensis	Utah butterflybush	Common
Bursaria spp.	black thorns, prickly box	
Calendula	Marigold	Common
Calendula arvensis	field marigold	Common
Calendula officinalis	pot marigold	Common
Calendula spp.	calendula, marigold	Common
Callistemon spp.		Occasional
Camellia spp.	Camellia	Occasional
Campsis	Campsis	Occasional
Campsis radicans	trumpet creeper	Occasional
Campsis spp.	trumpet creeper, trumpet vine	Occasional
Capsella	Capsella	Occasional
Capsella bursa-pastoris	shepherd's purse	Occasional
Capsella spp.	shepard's purse	Occasional
Capsicum	pepper	Occasional
Capsicum annuum	cayenne pepper	Occasional
Capsicum spp.	pepper	Occasional
Carduus	plumeless thistle	Common
Carduus acanthoides	spiny plumeless thistle	Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Carduus nutans</i>	nodding plumeless thistle	Common
<i>Carduus pycnocephalus</i>	Italian plumeless thistle	Common
<i>Carduus</i> spp.		Common
<i>Carduus tenuiflorus</i>	winged plumeless thistle	Common
<i>Carmichaelia</i> spp.		Very Common
<i>Carpobrotus</i>	carpobrotus	
<i>Carpobrotus chilensis</i>	sea fig	
<i>Carpobrotus edulis</i>	hottentot fig	
<i>Carpobrotus</i> spp.		
<i>Cassia</i> spp.	golden shower, pink shower, rainbow shower, gold medallion tree	Very Common
<i>Ceanothus</i>	<i>Ceanothus</i>	Occasional
<i>Ceanothus xarcuatus</i>		Occasional
<i>Ceanothus xbakeri</i>		Occasional
<i>Ceanothus xflexilis</i>	flexible ceanothus	Occasional
<i>Ceanothus xlobbianus</i>		Occasional
<i>Ceanothus xlorenzenii</i>		Occasional
<i>Ceanothus xmendocinensis</i>	Mendocino ceanothus	Occasional
<i>Ceanothus xotayensis</i>		Occasional
<i>Ceanothus xrugosus</i>		Occasional
<i>Ceanothus xserrulatus</i>	Cascade Lake ceanothus	Occasional
<i>Ceanothus xvanrensselaeri</i>		Occasional
<i>Ceanothus xveitchianus</i>		Occasional
<i>Ceanothus arboreus</i>	feltleaf ceanothus	Occasional
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	Occasional
<i>Ceanothus connivens</i>	trailing buckbrush	Occasional
<i>Ceanothus cordulatus</i>	whitethorn ceanothus	Occasional
<i>Ceanothus crassifolius</i>	hoaryleaf ceanothus	Occasional
<i>Ceanothus cuneatus</i>	Buckbrush	Occasional
<i>Ceanothus cuneatus</i>	Monterey ceanothus	Occasional
<i>Ceanothus cuneatus</i>	sedgeleaf buckbrush	Occasional
<i>Ceanothus cyaneus</i>	San Diego buckbrush	Occasional
<i>Ceanothus dentatus</i>	sandscrub ceanothus	Occasional
<i>Ceanothus divergens</i>	Calistoga ceanothus	Occasional
<i>Ceanothus diversifolius</i>	pinemat	Occasional
<i>Ceanothus ferrisiae</i>	Coyote ceanothus	Occasional
<i>Ceanothus foliosus</i>	Vine Hill ceanothus	Occasional
<i>Ceanothus foliosus</i>	wavyleaf buckbrush	Occasional
<i>Ceanothus foliosus</i>	wavyleaf ceanothus	Occasional
<i>Ceanothus fresnensis</i>	Fresno mat	Occasional
<i>Ceanothus gloriosus</i>	Mt. Vision ceanothus	Occasional
<i>Ceanothus gloriosus</i>	Point Reyes ceanothus	Occasional
<i>Ceanothus greggii</i>	desert ceanothus	Occasional
<i>Ceanothus greggii</i>	Mojave ceanothus	Occasional
<i>Ceanothus griseus</i>	Carmel ceanothus	Occasional
<i>Ceanothus hearstiorum</i>	Hearst Ranch buckbrush	Occasional
<i>Ceanothus impressus</i>	Santa Barbara ceanothus	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Ceanothus incanus	coast whitethorn	Occasional
Ceanothus integerrimus	deerbrush	Occasional
Ceanothus jepsonii	Jepson ceanothus	Occasional
Ceanothus lemmonii	Lemmon's ceanothus	Occasional
Ceanothus leucodermis	chaparral whitethorn	Occasional
Ceanothus maritimus	maritime ceanothus	Occasional
Ceanothus masonii	Mason's ceanothus	Occasional
Ceanothus megacarpus	bigpod ceanothus	Occasional
Ceanothus megacarpus	island ceanothus	Occasional
Ceanothus oliganthus	hairy ceanothus	Occasional
Ceanothus ophiochilus	Vail Lake ceanothus	Occasional
Ceanothus palmeri	Palmer ceanothus	Occasional
Ceanothus papillosus	wartleaf ceanothus	Occasional
Ceanothus parryi	Parry ceanothus	Occasional
Ceanothus parvifolius	littleleaf ceanothus	Occasional
Ceanothus pinetorum	Coville ceanothus	Occasional
Ceanothus prostratus	prostrate ceanothus	Occasional
Ceanothus pumilus	dwarf ceanothus	Occasional
Ceanothus purpureus	hollyleaf ceanothus	Occasional
Ceanothus roderickii	Pine Hill buckbrush	Occasional
Ceanothus sanguineus	redstem ceanothus	Occasional
Ceanothus sonomensis	Sonoma ceanothus	Occasional
Ceanothus soledadensis	jimbrush	Occasional
Ceanothus spinosus	redheart	Occasional
Ceanothus spp.	buck brush, wild lilac	Occasional
Ceanothus thyrsoiflorus	Blueblossom	Occasional
Ceanothus tomentosus	woollyleaf ceanothus	Occasional
Ceanothus velutinus	Hooker's ceanothus	Occasional
Ceanothus velutinus	snowbrush ceanothus	Occasional
Ceanothus verrucosus	barranca brush	Occasional
Cedrus spp.	cedar	
Centranthus	centranthus	Occasional
Centranthus ruber	red valerian	Occasional
Ceratostigma spp.	Chinese plumbago	Occasional
Cestrum	jessamine	
Cestrum elegans	Cestrum	
Cestrum fasciculatum	early Jessamine	
Cestrum nocturnum	night Jessamine	
Cestrum parqui	Chilean jessamine	
Chaenomeles spp.	Flowering Quince	Very Common
Chamaecyparis	cedar	Occasional
Chamaecyparis lawsoniana	Port Orford cedar	Occasional
Chamaecyparis spp.	false cypress, Port Orford cedar	Occasional
Chenopodium	Goosefoot	Occasional
Chenopodium album	Lambsquarters	Occasional
Chenopodium album	lateflowering goosefoot	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Chenopodium album	Missouri lambsquarters	Occasional
Chenopodium album	Stevens' lambsquarters	Occasional
Chenopodium ambrosioides	Mexican tea	Occasional
Chenopodium atrovirens	pinyon goosefoot	Occasional
Chenopodium berlandieri	pitseed goosefoot	Occasional
Chenopodium berlandieri	Zschack's goosefoot	Occasional
Chenopodium botrys	Jerusalem oak goosefoot	Occasional
Chenopodium californicum	California goosefoot	Occasional
Chenopodium capitatum	blite goosefoot	Occasional
Chenopodium carnosulum	ridged goosefoot	Occasional
Chenopodium chenopodioides	low goosefoot	Occasional
Chenopodium desiccatum	aridland goosefoot	Occasional
Chenopodium foliosum	leafy goosefoot	Occasional
Chenopodium fremontii	Fremont's goosefoot	Occasional
Chenopodium hians	hians goosefoot	Occasional
Chenopodium humile	marshland goosefoot	Occasional
Chenopodium incanum	mealy goosefoot	Occasional
Chenopodium leptophyllum	narrowleaf goosefoot	Occasional
Chenopodium macrospermum	largeseed goosefoot	Occasional
Chenopodium macrospermum	saltloving goosefoot	Occasional
Chenopodium multifidum	cutleaf goosefoot	Occasional
Chenopodium murale	nettleleaf goosefoot	Occasional
Chenopodium nevadense	Nevada goosefoot	Occasional
Chenopodium opulifolium	seaport goosefoot	Occasional
Chenopodium overi	Over's goosefoot	Occasional
Chenopodium polyspermum	manyseed goosefoot	Occasional
Chenopodium pratericola	desert goosefoot	Occasional
Chenopodium pumilio	clammy goosefoot	Occasional
Chenopodium rubrum	red goosefoot	Occasional
Chenopodium salinum	Rocky Mountain goosefoot	Occasional
Chenopodium simplex	mapleleaf goosefoot	Occasional
Chenopodium spp.	fat-hen. lamb's quarters	Occasional
Chenopodium vulvaria	stinking goosefoot	Occasional
Chenopodium watsonii	Watson's goosefoot	Occasional
Chimonanthus spp.	Japanese allspice, wintersweet	Occasional
Choisya spp.	Mexican orange	Common
Choisya ternata	Mexican orange	Common
Chrysanthemum	Daisy	Common
Chrysanthemum xmorifolium	florist's daisy	Common
Chrysanthemum maxium	Shasta Daisy	Common
Chrysanthemum spp.	chrysanthemums	Common
Chrysanthemum x	morifolium (florist mums)	Common
Cirsium	thistle	Common
Cirsium andersonii	rose thistle	Common
Cirsium andrewsii	Franciscan thistle	Common
Cirsium arizonicum	Arizona thistle	Common
Cirsium arvense	Canada thistle	Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Cirsium brevistylum</i>	clustered thistle	Common
<i>Cirsium canescens</i>		Common
<i>Cirsium canovirens</i>	graygreen thistle	Common
<i>Cirsium ciliolatum</i>	Ashland thistle	Common
<i>Cirsium crassicaule</i>	slough thistle	Common
<i>Cirsium cymosum</i>	peregrine thistle	Common
<i>Cirsium douglasii</i>	Douglas' thistle	Common
<i>Cirsium fontinale</i>	Chorro Creek Bog thistle	Common
<i>Cirsium fontinale</i>	fountain thistle	Common
<i>Cirsium fontinale</i>	Mt. Hamilton thistle	Common
<i>Cirsium hydrophilum</i>	Suisun thistle	Common
<i>Cirsium hydrophilum</i>	Vasey's thistle	Common
<i>Cirsium inamoenum</i>		Common
<i>Cirsium loncholepis</i>	la graciosa thistle	Common
<i>Cirsium mohavense</i>	Mojave thistle	Common
<i>Cirsium neomexicanum</i>	New Mexico thistle	Common
<i>Cirsium occidentale</i>	cobwebby thistle	Common
<i>Cirsium occidentale</i>	compact cobwebby thistle	Common
<i>Cirsium occidentale</i>	snowy thistle	Common
<i>Cirsium ochrocentrum</i>	yellowspine thistle	Common
<i>Cirsium praeteriens</i>	Palo Alto thistle	Common
<i>Cirsium quercetorum</i>	Alameda County thistle	Common
<i>Cirsium remotifolium</i>	fewleaf thistle	Common
<i>Cirsium rhotophilum</i>	surf thistle	Common
<i>Cirsium scabrum</i>	rough thistle	Common
<i>Cirsium scariosum</i>	meadow thistle	Common
<i>Cirsium</i> spp.	Arizona thistle, bull thistle, Canada thistle	Common
<i>Cirsium subniveum</i>	Jackson Hole thistle	Common
<i>Cirsium undulatum</i>	wavyleaf thistle	Common
<i>Cirsium vulgare</i>	bull thistle	Common
<i>Citrus Limon</i>	Lemon	Common
<i>Citrus paradisiaca</i>	Grapefruit	Common
<i>Citrus sinensis</i>	Washington Navel	Common
<i>Citrus</i> spp.	Citrus	Common
<i>Clematis</i>	leather flower	Common
<i>Clematis drummondii</i>		Common
<i>Clematis lasiantha</i>	pipestem clematis	Common
<i>Clematis ligusticifolia</i>	California clematis	Common
<i>Clematis ligusticifolia</i>	western white clematis	Common
<i>Clematis pauciflora</i>	ropevine clematis	Common
<i>Clematis</i> spp.	clematis, virgin's bower, lather flower, vase vine	Common
<i>Clematis terniflora</i>	sweet autumn virginsbower	Common
<i>Clematis vitalba</i>	evergreen clematis	Common
<i>Clerodendron</i> spp.		
<i>Clethra</i> spp.	white alder, summer-sweet	Occasional
<i>Clianthus</i> spp.	desert pea, glory pea, parrot's-beak	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
Convolvulus	Bindweed	Occasional
Convolvulus althaeoides	mallow bindweed	Occasional
Convolvulus arvensis	field bindweed	Occasional
Convolvulus equitans	Texas bindweed	Occasional
Convolvulus spp.	field bindweed, dwarf morning-glory	Occasional
Convolvulus tricolor	dwarf morning-glory	Occasional
Conyza	horseweed	Common
Conyza bonariensis	asthmaweed	Common
Conyza canadensis	Canadian horseweed	Common
Conyza floribunda	asthmaweed	Common
Conyza spp.	fleabane, horsethistle	Common
Coprosma	mirrorplant	
Coprosma repens	creeping mirrorplant	
Coprosma spp.		
Cordylina	Cordylina	Occasional
Cordylina australis	cabbage tree	Occasional
Cordylina spp.	cabbage tree, dracaena, good-luck plant	Occasional
Coriaria spp.	tanner's tree	Occasional
Cornus	dogwood	
Cornus canadensis		
Cornus glabrata	brown dogwood	
Cornus nuttallii	Pacific dogwood	
Cornus sericea	redosier dogwood	
Cornus sericea	western dogwood	
Cornus sessilis	blackfruit dogwood	
Cornus unalaschkensis	western cordilleran bunchberry	
Correa spp.	Carmines Bells	Common
Cotoneaster	cotoneaster	Very Common
Cotoneaster franchetii	orange cotoneaster	Very Common
Cotoneaster lacteus	milkflower cotoneaster	Very Common
Cotoneaster pannosus	silverleaf cotoneaster	Very Common
Cotoneaster spp.	Cotoneaster	Very Common
Crataegus	hawthorn	Very Common
Crataegus douglasii	black hawthorn	Very Common
Crataegus monogyna	oneseed hawthorn	Very Common
Crataegus spp.	Hawthorn	Very Common
Crataegus suksdorfii	Suksdorf's hawthorn	Very Common
Crocasmia	crocasmia	Common
Crocasmia xrocosmiiflora	montbretia	Common
Crocasmia spp.	Montbretia	Common
Cryptomeria spp.	Japanese cedar	
Cryptostemma spp.	capeweed	Common
Cucumis	melon	
Cucumis anguria	West Indian gherkin	
Cucumis melo	cantaloupe	
Cucumis myriocarpus	gooseberry gourd	

Genus Species	Common Name	Genus Match Host Prevalence
Cucumis spp.	cantaloupe, cucumber, melon, muskmelon	
Cucurbita	Gourd	Occasional
Cucurbita digitata	fingerleaf gourd	Occasional
Cucurbita ficifolia	figleaf gourd	Occasional
Cucurbita foetidissima	Missouri gourd	Occasional
Cucurbita palmata	coyote gourd	Occasional
Cucurbita pepo	field pumpkin	Occasional
Cucurbita pepo		Occasional
Cucurbita spp.	gourds, pumpkins, squashes	Occasional
Cupressus	cypress	Occasional
Cupressus abramsiana	Santa Cruz Island cypress	Occasional
Cupressus arizonica	Arizona cypress	Occasional
Cupressus arizonica	Cuyamaca cypress	Occasional
Cupressus arizonica	Paiute cypress	Occasional
Cupressus bakeri	Modoc cypress	Occasional
Cupressus forbesii	tecate cypress	Occasional
Cupressus goveniana	Gowen cypress	Occasional
Cupressus goveniana	pygmy cypress	Occasional
Cupressus guadalupensis		Occasional
Cupressus macnabiana	MacNab's cypress	Occasional
Cupressus macrocarpa	Monterey cypress	Occasional
Cupressus nootkatensis	Alaska cedar	Occasional
Cupressus sargentii	Sargent's cypress	Occasional
Cupressus spp.	cypress	Occasional
Cydonia	cydonia	Very Common
Cydonia oblonga	quince	Very Common
Cydonia spp.	quince	Very Common
Cyphomandra spp.	tamarillo, tree tomato, tomato tree	
Cytisus	broom	Very Common
Cytisus xdallimorei		Very Common
Cytisus multiflorus	white spanishbroom	Very Common
Cytisus scoparius	Scotch broom	Very Common
Cytisus spp.	genista, Scotch broom, Spanish broom, white Spanish	Very Common
Cytisus striatus	striated broom	Very Common
Dahlia spp.	dahlia	Common
Datura	jimsonweed	Occasional
Datura discolor	desert thorn-apple	Occasional
Datura innoxia	pricklyburr	Occasional
Datura quercifolia	Chinese thorn-apple	Occasional
Datura spp.	angel's trumpet, Jimson weed, thorn apple	Occasional
Datura stramonium	jimsonweed	Occasional
Datura wrightii	sacred thorn-apple	Occasional
Daucus	wild carrot	Occasional
Daucus carota	Queen Anne's lace	Occasional
Daucus pusillus	American wild carrot	Occasional
Daucus spp.	carrot, Queen Anne's lace	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Dendromecon	tree poppy	
Dendromecon californica	Bush Poppy	
Dendromecon harfordii	Harford's tree poppy	
Dendromecon rigida	tree poppy	
Deutzia spp.	Deutzia	Occasional
Diospyros	Diospyros	Occasional
Diospyros spp.	ebony, persimmon	Occasional
Diospyros virginiana	common persimmon	Occasional
Dodonaea	dodonaea	Occasional
Dodonaea spp.	hop bush, hopseed bush	Occasional
Dodonaea viscosa	Florida hopbush	Occasional
Duchesnea	duchesnea	Very Common
Duchesnea indica	Indian strawberry	Very Common
Elaeagnus	elaeagnus	
Elaeagnus angustifolia	Russian olive	
Elaeagnus pungens	Silberberry	
Epilobium	willowherb	
Epilobium anagallidifolium	pimpernel willowherb	
Epilobium brachycarpum	tall annual willowherb	
Epilobium canum	hummingbird trumpet	
Epilobium ciliatum	fringed willowherb	
Epilobium clavatum	talus willowherb	
Epilobium cleistogamum	selfing willowherb	
Epilobium densiflorum	denseflower willowherb	
Epilobium foliosum	California willowherb	
Epilobium glaberrimum	glaucus willowherb	
Epilobium halleanum	glandular willowherb	
Epilobium hornemannii	Hornemann's willowherb	
Epilobium howellii	Yuba Pass willowherb	
Epilobium lactiflorum	milkflower willowherb	
Epilobium leptophyllum	bog willowherb	
Epilobium luteum	yellow willowherb	
Epilobium minutum	chaparral willowherb	
Epilobium nivium	Snow Mountain willowherb	
Epilobium obcordatum	rockfringe	
Epilobium oreganum	Grants Pass willowherb	
Epilobium oregonense	Oregon willowherb	
Epilobium pallidum	largeflower spike-primrose	
Epilobium palustre	marsh willowherb	
Epilobium pygmaeum	smooth spike-primrose	
Epilobium rigidum	stiff willowherb	
Epilobium saximontanum	Rocky Mountain willowherb	
Epilobium septentrionale	northern willowherb	
Epilobium siskiyouense	Siskiyou willowherb	
Epilobium spp.	fireweed	
Epilobium torreyi	Torrey's willowherb	

Genus Species	Common Name	Genus Match Host Prevalence
Erica	heath	Common
Erica lusitanica	Spanish heath	Common
Erica spp.	heath, heather	Common
Eriobotrya	loquat	Very Common
Eriobotrya japonica	loquat	Very Common
Eriobotrya spp.	loquat	Very Common
Eriostemon spp.	pink star, wax flower	Common
Erodium	stork's bill	Occasional
Erodium botrys	longbeak stork's bill	Occasional
Erodium brachycarpum	shortfruit stork's bill	Occasional
Erodium cicutarium	redstem stork's bill	Occasional
Erodium cygnorum	Australian stork's bill	Occasional
Erodium macrophyllum	California stork's bill	Occasional
Erodium macrophyllum	roundleaf stork's bill	Occasional
Erodium malacoides	Mediterranean stork's bill	Occasional
Erodium moschatum	musky stork's bill	Occasional
Erodium spp.	cranesbill, filaree	Occasional
Erodium texanum	Texas stork's bill	Occasional
Escallonia	redclaws	Occasional
Escallonia compacta	Escallonia	Occasional
Escallonia rubra	redclaws	Occasional
Escallonia spp.		Occasional
Eucalyptus	gum	Primary
Eucalyptus xmortoniana		Primary
Eucalyptus camaldulensis	river redgum	Primary
Eucalyptus cladocalyx	sugargum	Primary
Eucalyptus globulus	Tasmanian bluegum	Primary
Eucalyptus polyanthemus	redbox	Primary
Eucalyptus pulverulenta	silverleaf mountain gum	Primary
Eucalyptus sideroxylon	red ironbark	Primary
Eucalyptus spp.	eucalyptus, gum trees	Primary
Eucalyptus tereticornis	forest redgum	Primary
Eucalyptus torquata	coral gum	Primary
Eucalyptus viminalis	mannan gum	Primary
Eugenia	stopper	Occasional
Eugenia apiculata	shortleaf stopper	Occasional
Eugenia spp.	cherry of the Rio Grande, Lilly Pilly, Surinam cherry	Occasional
Euonymus	Spindletree	Occasional
Euonymus occidentale	western burning bush	Occasional
Euonymus occidentalis		Occasional
Euonymus spp.	euonymus, spindle tree	Occasional
Euphorbia	spurge	
Euphorbia characias	Albanian spurge	
Euphorbia crenulata	Chinese caps	
Euphorbia cyathophora	fire on the mountain	
Euphorbia cyparissias	cypress spurge	

Genus Species	Common Name	Genus Match Host Prevalence
Euphorbia davidii	David's spurge	
Euphorbia dendroides	tree spurge	
Euphorbia dentata	toothed spurge	
Euphorbia eriantha	beetle spurge	
Euphorbia esula	leafy spurge	
Euphorbia exigua	dwarf spurge	
Euphorbia exstipulata	squareseed spurge	
Euphorbia helioscopia	madwoman's milk	
Euphorbia heterophylla	Mexican fireplant	
Euphorbia lathyris	moleplant	
Euphorbia marginata	snow on the mountain	
Euphorbia misera	cliff spurge	
Euphorbia myrsinites	myrtle spurge	
Euphorbia oblongata	eggleaf spurge	
Euphorbia palmeri	woodland spurge	
Euphorbia peplus	petty spurge	
Euphorbia rigida	upright myrtle spurge	
Euphorbia schizoloba	Mojave spurge	
Euphorbia serrata	serrate spurge	
Euphorbia spathulata	warty spurge	
Euphorbia spp.	euphorbia, spurges	
Euphorbia terracina	Geraldton carnation weed	
Euphorbia tirucalli	Indiantree spurge	
Fagus spp.	beech	Occasional
Feijoa sellowiana	Pineapple Guava	Primary
Feijoa spp.	feijoa, pineapple guava	Primary
Ficus	fig	Occasional
Ficus carica	edible fig	Occasional
Ficus palmata	Punjab fig	Occasional
Ficus rubiginosa	Port Jackson fig	Occasional
Ficus spp.	Climbing Fig	Occasional
Forsythia spp.	forsythias	Occasional
Fortunella	kumquat	Common
Fortunella japonica	round kumquat	Common
Fortunella spp.	kumquats	Common
Fragaria	strawberry	Very Common
Fragaria xananassa		Very Common
Fragaria xbringhurstii		Very Common
Fragaria chiloensis	beach strawberry	Very Common
Fragaria chiloensis	Pacific beach strawberry	Very Common
Fragaria spp.	Strawberry	Very Common
Fragaria vesca	California strawberry	Very Common
Fragaria vesca	woodland strawberry	Very Common
Fragaria virginiana	Virginia strawberry	Very Common
Fraxinus	ash	
Fraxinus anomala	singleleaf ash	

Genus Species	Common Name	Genus Match Host Prevalence
<i>Fraxinus dipetala</i>	California ash	
<i>Fraxinus latifolia</i>	Oregon ash	
<i>Fraxinus</i> spp.	ash	
<i>Fraxinus uhdei</i>	shamel ash	
<i>Fraxinus velutina</i>	velvet ash	
<i>Fuchsia</i>	fuchsia	Occasional
<i>Fuchsia boliviana</i>	Bolivian fuchsia	Occasional
<i>Fuchsia hybrida</i>	hybrid fuchsia	Occasional
<i>Fuchsia magellanica</i>	hardy fuchsia	Occasional
<i>Fuchsia paniculata</i>	shrubby fuchsia	Occasional
<i>Fuchsia</i> spp.	Fuchsia	Occasional
<i>Fumaria</i>	fumitory	
<i>Fumaria capreolata</i>	white ramping fumitory	
<i>Fumaria officinalis</i>	drug fumitory	
<i>Fumaria parviflora</i>	fineleaf fumitory	
<i>Fumaria</i> spp.	fumitory	
<i>Garrya</i>	silktassel	Occasional
<i>Garrya buxifolia</i>	dwarf silktassel	Occasional
<i>Garrya congdonii</i>	chaparral silktassel	Occasional
<i>Garrya elliptica</i>	wavyleaf silktassel	Occasional
<i>Garrya flavescens</i>	ashy silktassel	Occasional
<i>Garrya fremontii</i>	bearbrush	Occasional
<i>Garrya</i> spp.	silk-tassel	Occasional
<i>Garrya veatchii</i>	canyon silktassel	Occasional
<i>Gelsemium</i> spp.	Carolina jessamine	Occasional
<i>Genista</i>	broom	Very Common
<i>Genista aetnensis</i>	Mt. Etna broom	Very Common
<i>Genista canariensis</i>	Canary broom	Very Common
<i>Genista linifolia</i>	Mediterranean broom	Very Common
<i>Genista maderensis</i>	Madeira Dyer's greenweed	Very Common
<i>Genista monspessulana</i>	French broom	Very Common
<i>Genista</i> spp.	brooms	Very Common
<i>Genista stenopetala</i>	leafy broom	Very Common
<i>Geranium</i>	geranium	Occasional
<i>Geranium bicknellii</i>	Bicknell's cranesbill	Occasional
<i>Geranium californicum</i>	California cranesbill	Occasional
<i>Geranium carolinianum</i>	Carolina geranium	Occasional
<i>Geranium columbinum</i>	longstalk cranesbill	Occasional
<i>Geranium dissectum</i>	cutleaf geranium	Occasional
<i>Geranium homeanum</i>	Australasian geranium	Occasional
<i>Geranium lucidum</i>	shining geranium	Occasional
<i>Geranium molle</i>	dovefoot geranium	Occasional
<i>Geranium nervosum</i>		Occasional
<i>Geranium oreganum</i>	Oregon geranium	Occasional
<i>Geranium palmatum</i>	Canary Island geranium	Occasional
<i>Geranium potentilloides</i>	cinquefoil geranium	Occasional
<i>Geranium pusillum</i>	small geranium	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Geranium pyrenaicum	hedgerow geranium	Occasional
Geranium retrorsum	New Zealand geranium	Occasional
Geranium richardsonii	Richardson's geranium	Occasional
Geranium robertianum		Occasional
Geranium robertianum	Robert geranium	Occasional
Geranium rotundifolium	roundleaf geranium	Occasional
Geranium sibiricum	Siberian geranium	Occasional
Geranium solanderi	Solander's geranium	Occasional
Geranium spp.	Cranesbill	Occasional
Geranium texanum	Texas geranium	Occasional
Geranium viscosissimum	sticky purple geranium	Occasional
Gerbera spp.	Transvaal daisy	Common
Gomphocarpus spp.	cotton bush, hairy balls, wild cotton	Occasional
Grevillea spp.	hummingbird bush, grevilleas, silky-oak	Occasional
Gypsophila	baby's-breath	
Gypsophila elegans	showy baby's-breath	
Gypsophila paniculata	baby's breath	
Gypsophila scorzonerifolia	garden baby's-breath	
Gypsophila spp.	baby's-breath	
Hakea spp.	pincushion tree	Occasional
Haloragis	seaberry	Occasional
Haloragis erecta	erect seaberry	Occasional
Haloragis spp.	erect seaberry, seaberry	Occasional
Hardenbergia spp.	coral pea, lilac vine Hebe spp. (hebe)	Very Common
Hebe	hebe	Occasional
Hebe xfranciscana		Occasional
Hebe speciosa	New Zealand hebe	Occasional
Hedera	ivy	Occasional
Hedera canariensis	Canary ivy	Occasional
Hedera helix	English ivy	Occasional
Hedera spp.	ivy	Occasional
Helianthus	sunflower	Common
Helianthus annuus	common sunflower	Common
Helianthus bolanderi	serpentine sunflower	Common
Helianthus californicus	California sunflower	Common
Helianthus ciliaris	Texas blueweed	Common
Helianthus cusickii	Cusick's sunflower	Common
Helianthus gracilentus	slender sunflower	Common
Helianthus maximiliani	Maximilian sunflower	Common
Helianthus niveus	Algodones sunflower	Common
Helianthus niveus	showy sunflower	Common
Helianthus nuttallii	Nuttall's sunflower	Common
Helianthus nuttallii	Parish's sunflower	Common
Helianthus petiolaris	prairie sunflower	Common
Helianthus spp.	Jerusalem artichoke, sunflower	Common
Helianthus tuberosus	Jerusalem artichoke	Common

Genus Species	Common Name	Genus Match Host Prevalence
Helichrysum	strawflower	Common
Helichrysum petiolare	licorice-plant	Common
Helichrysum spp.	curry plant, licorice plant, straw flower	Common
Heteromeles	toyon	
Heteromeles arbutifolia		
Heteromeles salicifolia		
Hibiscus	rosemallow	
Hibiscus denudatus	paleface	
Hibiscus lasiocarpus	rosemallow	
Hibiscus spp.	Hibiscus	
Hibiscus syriacus	Hibiscus	
Hibiscus trionum	flower of an hour	
Hoheria		Occasional
Hoheria populnea	lacebark	Occasional
Hoheria spp.	Lacebark	Occasional
Holcus	velvetgrass	Occasional
Holcus lanatus	common velvetgrass	Occasional
Holcus mollis	creeping velvetgrass	Occasional
Holcus spp.	velvet grass	Occasional
Humulus	hop	Primary
Humulus lupulus	common hop	Primary
Humulus spp.	hops	Primary
Hydrangea quercifolia	Oak Leaf Hydrangea	
Hypericum	St. Johnswort	Common
Hypericum anagaloides	tinker's penny	Common
Hypericum androsaemum	sweet-amber	Common
Hypericum calycinum	Aaron's beard	Common
Hypericum canariense	Canary Island St. Johnswort	Common
Hypericum concinnum	goldwire	Common
Hypericum hookerianum	Hooker's St. Johnswort	Common
Hypericum mutilum	dwarf St. Johnswort	Common
Hypericum perforatum	common St. Johnswort	Common
Hypericum scouleri	Scouler's St. Johnswort	Common
Hypericum spp.	Aaron's beard, sweet-amber, St. John's wort	Common
Ilex	holly	Occasional
Ilex xattenuata	topal holly	Occasional
Ilex aquifolium	English holly	Occasional
Ilex spp.	holly	Occasional
Iris	Iris	Occasional
Iris bracteata	Siskiyou iris	Occasional
Iris chrysophylla	yellowleaf iris	Occasional
Iris douglasiana	Douglas iris	Occasional
Iris fernaldii	Fernald's iris	Occasional
Iris foetidissima	stinking iris	Occasional
Iris germanica	German iris	Occasional
Iris hartwegii	rainbow iris	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Iris innominata</i>	Del Norte County iris	Occasional
<i>Iris longipetala</i>		Occasional
<i>Iris macrosiphon</i>	bowltube iris	Occasional
<i>Iris missouriensis</i>	Rocky Mountain iris	Occasional
<i>Iris munzii</i>	Munz's iris	Occasional
<i>Iris orientalis</i>	yellowband iris	Occasional
<i>Iris pseudacorus</i>	paleyellow iris	Occasional
<i>Iris purdyi</i>	Purdy's iris	Occasional
<i>Iris sibirica</i>	Siberian iris	Occasional
<i>Iris</i> spp.	iris	Occasional
<i>Iris spuria</i>	seashore iris	Occasional
<i>Iris tenax</i>	Klamath iris	Occasional
<i>Iris tenax</i>	toughleaf iris	Occasional
<i>Iris tenuissima</i>	longtube iris	Occasional
<i>Iris thompsonii</i>	Thompson's iris	Occasional
<i>Jasminum</i> spp.	jasmine	Occasional
<i>Juglans</i>	walnut	Occasional
<i>Juglans californica</i>	Southern California walnut	Occasional
<i>Juglans hindsii</i>	Northern California walnut	Occasional
<i>Juglans regia</i>	English walnut	Occasional
<i>Juglans</i> spp.	California black walnut, butternut, English walnut	Occasional
<i>Juncus</i>	rush	
<i>Juncus acuminatus</i>	tapertip rush	
<i>Juncus acutus</i>	Leopold's rush	
<i>Juncus acutus</i>	spiny rush	
<i>Juncus ambiguus</i>	seasice rush	
<i>Juncus arcticus</i>	Baltic rush	
<i>Juncus articulatus</i>	jointleaf rush	
<i>Juncus balticus</i>		
<i>Juncus bolanderi</i>	Bolander's rush	
<i>Juncus brachyphyllus</i>	tuftedstem rush	
<i>Juncus breweri</i>	Brewer's rush	
<i>Juncus bryoides</i>	moss rush	
<i>Juncus bufonius</i>	toad rush	
<i>Juncus capillaris</i>	hairystem dwarf rush	
<i>Juncus capitatus</i>	leafybract dwarf rush	
<i>Juncus chlorocephalus</i>	greenhead rush	
<i>Juncus confusus</i>	Colorado rush	
<i>Juncus cooperi</i>	Cooper's rush	
<i>Juncus covillei</i>	Coville's rush	
<i>Juncus cyperoides</i>	Forbestown rush	
<i>Juncus diffusissimus</i>	slimpod rush	
<i>Juncus drummondii</i>	Drummond's rush	
<i>Juncus drummondii</i>	threeflower rush	
<i>Juncus dubius</i>	dubius rush	
<i>Juncus dudleyi</i>	Dudley's rush	

Genus Species	Common Name	Genus Match Host Prevalence
Juncus duranii	Duran's rush	
Juncus effusus	common rush	
Juncus effusus	lamp rush	
Juncus effusus	Pacific rush	
Juncus ensifolius	swordleaf rush	
Juncus falcatus	falcate rush	
Juncus hemiendytus	Herman's dwarf rush	
Juncus howellii	Howell's rush	
Juncus kelloggii	Kellogg's dwarf rush	
Juncus leiospermus	Ahart's dwarf rush	
Juncus leiospermus	Red Bluff dwarf rush	
Juncus lesueurii	salt rush	
Juncus longistylis	longstyle rush	
Juncus luciensis	Santa Lucia dwarf rush	
Juncus macrandrus	longanther rush	
Juncus macrophyllus	longleaf rush	
Juncus marginatus	grassleaf rush	
Juncus mertensianus	Mertens' rush	
Juncus mexicanus	Mexican rush	
Juncus nevadensis	Sierra rush	
Juncus nodatus	stout rush	
Juncus nodosus	knotted rush	
Juncus occidentalis	western rush	
Juncus orthophyllus	straightleaf rush	
Juncus oxymeris	pointed rush	
Juncus parryi	Parry's rush	
Juncus patens	spreading rush	
Juncus phaeocephalus	brownhead rush	
Juncus regelii	Regel's rush	
Juncus rugulosus	wrinkled rush	
Juncus saximontanus	Rocky Mountain rush	
Juncus spp.	rush	
Juncus supiniformis	hairyleaf rush	
Juncus tenuis	poverty rush	
Juncus textilis	basket rush	
Juncus tiehmii	Nevada rush	
Juncus torreyi	Torrey's rush	
Juncus triformis	Yosemite dwarf rush	
Juncus uncialis	twelfth rush	
Juncus xiphioides	irisleaf rush	
Kerria spp.	Japanese kerria	Very Common
Kunzea spp.	Burgen	
Laburnum	golden chain tree	Very Common
Laburnum anagyroides	golden chain tree	Very Common
Laburnum spp.	bean treegolden-chain	Very Common
Lagerstroemia indica	Crape Myrtle	

Genus Species	Common Name	Genus Match Host Prevalence
Lagunaria spp.	cow itch tree, Hercules' club, white field gourd	
Lantana	lantana	Occasional
Lantana camara	lantana	Occasional
Lantana montevidensis	trailing shrubverbena	Occasional
Lantana spp.	lantana	Occasional
Lantana urticoides	West Indian shrubverbena	Occasional
Lathyrus	pea	Very Common
Lathyrus angulatus	angled pea	Very Common
Lathyrus aphaca	yellow pea	Very Common
Lathyrus biflorus	twoflower pea	Very Common
Lathyrus bijugatus	drypark pea	Very Common
Lathyrus cicera	red pea	Very Common
Lathyrus delnorticus	Del Norte pea	Very Common
Lathyrus glandulosus	redwood pea	Very Common
Lathyrus hirsutus	Caley pea	Very Common
Lathyrus hitchcockianus	Bullfrog Mountain pea	Very Common
Lathyrus japonicus	beach pea	Very Common
Lathyrus jepsonii	California pea	Very Common
Lathyrus jepsonii	Delta tule pea	Very Common
Lathyrus lanszwertii	Brown's pea	Very Common
Lathyrus lanszwertii	Lanszwert's pea	Very Common
Lathyrus lanszwertii	Nevada pea	Very Common
Lathyrus lanszwertii	Tracy's pea	Very Common
Lathyrus latifolius	perennial pea	Very Common
Lathyrus littoralis	silky beach pea	Very Common
Lathyrus nevadensis	Sierra pea	Very Common
Lathyrus odoratus	sweetpea	Very Common
Lathyrus palustris	marsh pea	Very Common
Lathyrus polyphyllus	leafy pea	Very Common
Lathyrus rigidus	stiff pea	Very Common
Lathyrus sativus	white pea	Very Common
Lathyrus sphaericus	grass pea	Very Common
Lathyrus splendens	pride of California	Very Common
Lathyrus spp.	sweet pea	Very Common
Lathyrus sulphureus	snub pea	Very Common
Lathyrus tingitanus	Tangier pea	Very Common
Lathyrus torreyi	Torrey's pea	Very Common
Lathyrus vestitus	Alefeld's pea	Very Common
Lathyrus vestitus	Bolander's pea	Very Common
Lathyrus vestitus	Pacific pea	Very Common
Laurus	laurel	Occasional
Laurus nobilis	Sweet Bay	Occasional
Laurus nobilis	Sweet Bay	Occasional
Laurus spp.	Grecian laurel, sweet bay	Occasional
Lavandula	Lavender	
Lavandula spp.		

Genus Species	Common Name	Genus Match Host Prevalence
Lavandula stoechas	French lavender	
Leptospermum	teatree	Occasional
Leptospermum laevigatum	Australian teatree	Occasional
Leptospermum spp.	tea trees	Occasional
Leucadendron spp.		
Ligustrum	privet	Primary
Ligustrum lucidum		Primary
Ligustrum ovalifolium	California privet	Primary
Ligustrum spp.	privet	Primary
Lilium	lily	Occasional
Lilium bolanderi	Bolander's lily	Occasional
Lilium columbianum	Columbia lily	Occasional
Lilium humboldtii	Humboldt lily	Occasional
Lilium humboldtii	Humboldt's lily	Occasional
Lilium kelleyanum	Kelley's lily	Occasional
Lilium kelloggii	Kellogg's lily	Occasional
Lilium maritimum	coast lily	Occasional
Lilium occidentale	western lily	Occasional
Lilium pardalinum	leopard lily	Occasional
Lilium pardalinum	Pitkin Marsh lily	Occasional
Lilium pardalinum	Shasta lily	Occasional
Lilium pardalinum	Vollmer's lily	Occasional
Lilium pardalinum	Wiggins' lily	Occasional
Lilium parryi	lemon lily	Occasional
Lilium parvum	Sierra tiger lily	Occasional
Lilium rubescens	redwood lily	Occasional
Lilium spp.	lilies	Occasional
Lilium washingtonianum	Cascade lily	Occasional
Lilium washingtonianum	Washington lily	Occasional
Linum	flax	Occasional
Linum bienne	pale flax	Occasional
Linum grandiflorum	flowering flax	Occasional
Linum lewisii	Lewis flax	Occasional
Linum lewisii	prairie flax	Occasional
Linum puberulum	plains flax	Occasional
Linum spp.	flax	Occasional
Linum trigynum	French flax	Occasional
Linum usitatissimum	common flax	Occasional
Litchi spp.		Primary
Lomandra spp.	mat-rush nyalla, tanika	Common
Lonicera	honeysuckle	Occasional
Lonicera caerulea	bluefly honeysuckle	Occasional
Lonicera caerulea	sweetberry honeysuckle	Occasional
Lonicera ciliosa	orange honeysuckle	Occasional
Lonicera conjugialis	purpleflower honeysuckle	Occasional
Lonicera etrusca	Etruscan honeysuckle	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Lonicera hispidula</i>	pink honeysuckle	Occasional
<i>Lonicera interrupta</i>	chaparral honeysuckle	Occasional
<i>Lonicera involucrata</i>	black twinberry	Occasional
<i>Lonicera involucrata</i>	fly honeysuckle	Occasional
<i>Lonicera japonica</i>	honeysuckle	Occasional
<i>Lonicera</i> spp.	honeysuckles	Occasional
<i>Lonicera subspicata</i>	Johnston's honeysuckle	Occasional
<i>Lonicera subspicata</i>	Santa Barbara honeysuckle	Occasional
<i>Lonicera subspicata</i>	southern honeysuckle	Occasional
<i>Lonicera tatarica</i>	Tatarian honeysuckle	Occasional
<i>Loropetalum chinense</i>	Loropetalum	
<i>Lotus</i>	trefoil	Very Common
<i>Lotus aboriginus</i>	rosy bird's-foot trefoil	Very Common
<i>Lotus angustissimus</i>	slender bird's-foot trefoil	Very Common
<i>Lotus argophyllus</i>	Fremont's bird's-foot trefoil	Very Common
<i>Lotus argophyllus</i>	Santa Cruz Island silverhosackia	Very Common
<i>Lotus argophyllus</i>	silver bird's-foot trefoil	Very Common
<i>Lotus argyraeus</i>	canyon bird's-foot trefoil	Very Common
<i>Lotus benthamii</i>	Bentham's broom	Very Common
<i>Lotus corniculatus</i>	bird's-foot trefoil	Very Common
<i>Lotus crassifolius</i>	big deervetch	Very Common
<i>Lotus dendroideus</i>	island broom	Very Common
<i>Lotus dendroideus</i>	Trask's island broom	Very Common
<i>Lotus dendroideus</i>	Veatch's island broom	Very Common
<i>Lotus denticulatus</i>	riverbank bird's-foot trefoil	Very Common
<i>Lotus formosissimus</i>	seaside bird's-foot trefoil	Very Common
<i>Lotus glaber</i>	narrow-leaf bird's-foot trefoil	Very Common
<i>Lotus grandiflorus</i>	chaparral bird's-foot trefoil	Very Common
<i>Lotus hamatus</i>	San Diego bird's-foot trefoil	Very Common
<i>Lotus haydonii</i>	rock bird's-foot trefoil	Very Common
<i>Lotus heermannii</i>	Heermann's bird's-foot trefoil	Very Common
<i>Lotus humistratus</i>	foothill deervetch	Very Common
<i>Lotus incanus</i>	woolly bird's-foot trefoil	Very Common
<i>Lotus junceus</i>	Biolett's rush broom	Very Common
<i>Lotus junceus</i>	rush broom	Very Common
<i>Lotus micranthus</i>	desert deervetch	Very Common
<i>Lotus nevadensis</i>	Davidson's bird's-foot trefoil	Very Common
<i>Lotus nevadensis</i>	Douglas' bird's-foot trefoil	Very Common
<i>Lotus nevadensis</i>	Nevada bird's-foot trefoil	Very Common
<i>Lotus nuttallianus</i>	wire bird's-foot trefoil	Very Common
<i>Lotus oblongifolius</i>	streambank bird's-foot trefoil	Very Common
<i>Lotus pedunculatus</i>	big trefoil	Very Common
<i>Lotus pinnatus</i>	meadow bird's-foot trefoil	Very Common
<i>Lotus procumbens</i>	Jepson's deerweed	Very Common
<i>Lotus procumbens</i>	silky deerweed	Very Common
<i>Lotus rigidus</i>	shrubby deervetch	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
Lotus rubriflorus	redflower bird's-foot trefoil	Very Common
Lotus salsuginosus	coastal bird's-foot trefoil	Very Common
Lotus scoparius	common deerweed	Very Common
Lotus scoparius	western bird's-foot trefoil	Very Common
Lotus spp.	bird's-foot trefoil, parrot's-beak, winged pea	Very Common
Lotus stipularis	balsam bird's-foot trefoil	Very Common
Lotus stipularis	Ottley's bird's-foot trefoil	Very Common
Lotus strigosus	strigose bird's-foot trefoil	Very Common
Lotus unifoliolatus	American bird's-foot trefoil	Very Common
Lotus wrangelianus	Chilean bird's-foot trefoil	Very Common
Lotus yollaboliensis	Yolla Bolly bird's-foot trefoil	Very Common
Luma apiculata		
Lupinus	lupine	Very Common
Lupinus xalpestris	Great Basin lupine	Very Common
Lupinus xcyamba-egressus		Very Common
Lupinus xinyoensis		Very Common
Lupinus abramsii	Abrams' lupine	Very Common
Lupinus adsurgens	Drew's silky lupine	Very Common
Lupinus affinis	fleshy lupine	Very Common
Lupinus agardhianus	Agardh lupine	Very Common
Lupinus albicaulis	Shasta lupine	Very Common
Lupinus albicaulis	sicklekeel lupine	Very Common
Lupinus albifrons	Douglas' silver lupine	Very Common
Lupinus albifrons	silver lupine	Very Common
Lupinus andersonii	Anderson's lupine	Very Common
Lupinus angustiflorus	narrowflower lupine	Very Common
Lupinus antoninus	Anthony Peak lupine	Very Common
Lupinus apertus	summit lupine	Very Common
Lupinus arboreus	yellow bush lupine	Very Common
Lupinus arbustus	longspur lupine	Very Common
Lupinus argenteus	silvery lupine	Very Common
Lupinus aridus	desert lupine	Very Common
Lupinus arizonicus	Arizona lupine	Very Common
Lupinus benthamii	spider lupine	Very Common
Lupinus bicolor	miniature lupine	Very Common
Lupinus brevicaulis	shortstem lupine	Very Common
Lupinus brevior	short lupine	Very Common
Lupinus breweri	Brewer's lupine	Very Common
Lupinus breweri	matted lupine	Very Common
Lupinus caespitosus	stemless dwarf lupine	Very Common
Lupinus caespitosus	Utah lupine	Very Common
Lupinus caudatus	Kellogg's spurred lupine	Very Common
Lupinus caudatus	tailcup lupine	Very Common
Lupinus cervinus	Santa Lucia lupine	Very Common
Lupinus chamissonis	chamisso bush lupine	Very Common
Lupinus citrinus	orangeflower lupine	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
Lupinus concinnus	bajada lupine	Very Common
Lupinus concinnus	Orcutt's lupine	Very Common
Lupinus confertus	crowded lupine	Very Common
Lupinus congdonii	Congdon's lupine	Very Common
Lupinus constancei	lassicus lupine	Very Common
Lupinus covillei	shaggy lupine	Very Common
Lupinus croceus	Mt. Eddy lupine	Very Common
Lupinus culbertsonii	Hoskett Meadows lupine	Very Common
Lupinus dalesiae	Quincy lupine	Very Common
Lupinus densiflorus	whitewhorl lupine	Very Common
Lupinus duranii	Mono Lake lupine	Very Common
Lupinus elatus	tall silky lupine	Very Common
Lupinus elmeri	Elmer's lupine	Very Common
Lupinus excubitus	grape soda lupine	Very Common
Lupinus excubitus	Hall's bush lupine	Very Common
Lupinus excubitus	interior bush lupine	Very Common
Lupinus excubitus	mountain bush lupine	Very Common
Lupinus excubitus	Mountain Springs bush lupine	Very Common
Lupinus eximius	San Mateo tree lupine	Very Common
Lupinus flavoculatus	yelloweyes	Very Common
Lupinus formosus	summer lupine	Very Common
Lupinus fulcratus	greenstipule lupine	Very Common
Lupinus gracilentus	green slender lupine	Very Common
Lupinus grayi	Sierra lupine	Very Common
Lupinus guadalupensis	Guadalupe Island lupine	Very Common
Lupinus hirsutissimus	stinging annual lupine	Very Common
Lupinus holmgrenianus	Holmgren's lupine	Very Common
Lupinus horizontalis	sunset lupine	Very Common
Lupinus hyacinthinus	San Jacinto lupine	Very Common
Lupinus lapidicola	Heller's dwarf lupine	Very Common
Lupinus latifolius	broadleaf lupine	Very Common
Lupinus lepidus		Very Common
Lupinus leucophyllus	velvet lupine	Very Common
Lupinus littoralis	seashore lupine	Very Common
Lupinus longifolius	longleaf bush lupine	Very Common
Lupinus ludovicianus	San Luis lupine	Very Common
Lupinus luteolus	pale yellow lupine	Very Common
Lupinus lyallii	dwarf mountain lupine	Very Common
Lupinus magnificus	Panamint Mountain lupine	Very Common
Lupinus meionanthus	Lake Tahoe lupine	Very Common
Lupinus microcarpus		Very Common
Lupinus nanus	Menker's lupine	Very Common
Lupinus nanus	sky lupine	Very Common
Lupinus nevadensis	Nevada lupine	Very Common
Lupinus nipomensis	Nipomo Mesa lupine	Very Common
Lupinus obtusilobus	bluntlobe lupine	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
Lupinus odoratus	Mojave royal lupine	Very Common
Lupinus onustus	Plumas lupine	Very Common
Lupinus pachylobus	Mt. Diablo lupine	Very Common
Lupinus padre-crowleyi	Dedecker lupine	Very Common
Lupinus pallidus	pale desert lupine	Very Common
Lupinus palmeri	bluebonnet lupine	Very Common
Lupinus peirsonii	long lupine	Very Common
Lupinus polycarpus	smallflower lupine	Very Common
Lupinus polyphyllus	bigleaf lupine	Very Common
Lupinus pratensis	Inyo Meadow lupine	Very Common
Lupinus prunophilus	hairy bigleaf lupine	Very Common
Lupinus punto-reyesensis	Point reyes lupine	Very Common
Lupinus purpurascens	Yuba lupine	Very Common
Lupinus pusillus	Intermountain lupine	Very Common
Lupinus pusillus	rusty lupine	Very Common
Lupinus rivularis	riverbank lupine	Very Common
Lupinus ruber	red lupine	Very Common
Lupinus saxosus	rock lupine	Very Common
Lupinus sellulus	Donner Lake lupine	Very Common
Lupinus sericatus	Cobb Mountain lupine	Very Common
Lupinus sericeus		Very Common
Lupinus shockleyi	purple desert lupine	Very Common
Lupinus sparsiflorus	Mojave lupine	Very Common
Lupinus sparsiflorus	Pond's Mojave lupine	Very Common
Lupinus spectabilis	shaggyhair lupine	Very Common
Lupinus spp.	lupines	Very Common
Lupinus stiversii	harlequin annual lupine	Very Common
Lupinus sublanatus	Mono lupine	Very Common
Lupinus subvexus	valley lupine	Very Common
Lupinus succulentus	hollowleaf annual lupine	Very Common
Lupinus tidestromii	Tidestrom's lupine	Very Common
Lupinus tracyi	Tracy's lupine	Very Common
Lupinus truncatus	collared annual lupine	Very Common
Lupinus uncialis	inchhigh lupine	Very Common
Lupinus vallicola	open lupine	Very Common
Lupinus variicolor		Very Common
Lupinus versicolor	manycolor lupine	Very Common
Lycopersicom spp.		
Macadamia spp.	macadamia	Occasional
Magnolia spp.	Magnolia	Occasional
Malus	apple	Very Common
Malus fusca	Oregon crabapple	Very Common
Malus pumila	paradise apple	Very Common
Malus spp.	apple	Very Common
Malus spp.	Flowering CrabApple	Very Common
Malva	mallow	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Malva assurgentiflora		Occasional
Malva moschata	musk mallow	Occasional
Malva neglecta	common mallow	Occasional
Malva nicaeensis	bull mallow	Occasional
Malva parviflora	cheeseweed mallow	Occasional
Malva pusilla	low mallow	Occasional
Malva spp.	mallow	Occasional
Malva sylvestris	high mallow	Occasional
Malva verticillata	cluster mallow	Occasional
Mangifera spp.	Mango	Occasional
Medicago	alfalfa	Very Common
Medicago arabica	spotted medick	Very Common
Medicago lupulina	black medick	Very Common
Medicago minima	burr medick	Very Common
Medicago orbicularis	blackdisk medick	Very Common
Medicago polymorpha	burclover	Very Common
Medicago praecox	Mediterranean medick	Very Common
Medicago sativa	alfalfa	Very Common
Medicago sativa	yellow alfalfa	Very Common
Medicago spp.	alfalfa, bur clover, yellow trefoil	Very Common
Melaleuca quinquenervia	Paperback Melaleuca	Occasional
Melaleuca spp.	honey myrtle, bottlebrush	Occasional
Melilotus	Sweetclover	Very Common
Melilotus indicus	annual yellow sweetclover	Very Common
Melilotus officinalis	yellow sweetclover	Very Common
Melilotus spp.		Very Common
Mentha	Mint	Occasional
Mentha xpiperita	Peppermint	Occasional
Mentha xvillosa		Occasional
Mentha aquatica	water mint	Occasional
Mentha arvensis	wild mint	Occasional
Mentha canadensis		Occasional
Mentha pulegium	pennyroyal	Occasional
Mentha spicata	spearmint	Occasional
Mentha spp.	mint	Occasional
Mentha suaveolens	apple mint	Occasional
Mesembryanthemum	iceplant	Occasional
Mesembryanthemum crystallinum	common iceplant	Occasional
Mesembryanthemum nodiflorum	slenderleaf iceplant	Occasional
Mesembryanthemum spp.	ice plant	Occasional
Metrosideros spp.	bottlebrush, iron tree, New Zealand Christmas tree	Occasional
Michelia spp.	michelia	Occasional
Monotoca spp.	broomheaths	Occasional
Muehlenbeckia	maidenhair vine	
Muehlenbeckia complexa	maidenhair vine	
Muehlenbeckia hastatula	wirevine	

Genus Species	Common Name	Genus Match Host Prevalence
Muehlenbeckia spp.	maidenhair vine, wire plant	
Myoporum	myoporum	
Myoporum laetum	ngaio tree	
Myoporum spp.	myoporum, Ngaio-tree	
Myosotis	forget-me-not	Occasional
Myosotis azorica	Azores forget-me-not	Occasional
Myosotis discolor	changing forget-me-not	Occasional
Myosotis latifolia	broadleaf forget-me-not	Occasional
Myosotis laxa	bay forget-me-not	Occasional
Myosotis scorpioides	true forget-me-not	Occasional
Myosotis spp.	forget-me-not, scorpion grass	Occasional
Myosotis stricta	strict forget-me-not	Occasional
Myosotis sylvatica	woodland forget-me-not	Occasional
Myosotis verna	spring forget-me-not	Occasional
Myrica	sweetgale	
Myrica californica	California Myrtle	
Myrica hartwegii	Sierra bayberry	
Myrtus communis	Myrtle	
Nemesia spp.	Nemesia	Occasional
Olea	olive	
Olea europaea	olive	
Olea spp.	olive	
Opuntia	pricklypear	Occasional
Opuntia xcurvospina	searchlight pricklypear	Occasional
Opuntia xdemissa		Occasional
Opuntia xoccidentalis		Occasional
Opuntia xvaseyi	Vasey's coastal pricklypear	Occasional
Opuntia basilaris	beavertail pricklypear	Occasional
Opuntia basilaris	Trelease's beavertail pricklypear	Occasional
Opuntia chlorotica	dollarjoint pricklypear	Occasional
Opuntia engelmannii	cactus apple	Occasional
Opuntia ficus-indica	Barbary fig	Occasional
Opuntia fragilis	brittle pricklypear	Occasional
Opuntia littoralis	coastal pricklypear	Occasional
Opuntia oricola	chaparral pricklypear	Occasional
Opuntia phaeacantha	tulip pricklypear	Occasional
Opuntia polyacantha	grizzlybear pricklypear	Occasional
Opuntia polyacantha	hairspine pricklypear	Occasional
Opuntia polyacantha	plains pricklypear	Occasional
Opuntia spp.	beaver-tail, cholla, pencil cactus, prickly pear, rabbit-ears, tuna	Occasional
Opuntia tomentosa	woollyjoint pricklypear	Occasional
Oxalis	woodsorrel	Occasional
Oxalis albicans	California woodsorrel	Occasional
Oxalis albicans	radishroot woodsorrel	Occasional
Oxalis bowiei	red-flower woodsorrel	Occasional
Oxalis corniculata	creeping woodsorrel	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Oxalis hirta</i>	tropical woodsorrel	Occasional
<i>Oxalis incarnata</i>	crimson woodsorrel	Occasional
<i>Oxalis latifolia</i>	broadleaf woodsorrel	Occasional
<i>Oxalis oregana</i>	redwood-sorrel	Occasional
<i>Oxalis pes-caprae</i>	Bermuda buttercup	Occasional
<i>Oxalis purpurea</i>	purple woodsorrel	Occasional
<i>Oxalis radicata</i>	dwarf woodsorrel	Occasional
<i>Oxalis rubra</i>	windowbox woodsorrel	Occasional
<i>Oxalis</i> spp.	lady's sorrel, redwood sorrel, wood sorrel	Occasional
<i>Oxalis suksdorfii</i>	Suksdorf woodsorrel	Occasional
<i>Oxalis trilliifolia</i>	threeleaf woodsorrel	Occasional
<i>Paeonia</i>	peony	Occasional
<i>Paeonia brownii</i>	Brown's peony	Occasional
<i>Paeonia californica</i>	California peony	Occasional
<i>Paeonia</i> spp.		Occasional
<i>Pandorea jasminoides</i>	Jasmine	
<i>Parahebe</i> spp.		Occasional
<i>Parkinsonia</i>	paloverde	
<i>Parkinsonia aculeata</i>	Jerusalem thorn	
<i>Parkinsonia florida</i>	blue paloverde	
<i>Parkinsonia microphylla</i>	yellow paloverde	
<i>Parkinsonia</i> spp.	Jerusalem thorn, Mexican palo verde	
<i>Parthenocissus</i>	Creeper	Very Common
<i>Parthenocissus</i> spp.	woodbine, Virginia creeper	Very Common
<i>Parthenocissus vitacea</i>	woodbine	Very Common
<i>Passiflora</i>	passionflower	Common
<i>Passiflora caerulea</i>	bluecrown passionflower	Common
<i>Passiflora manicata</i>	red passionflower	Common
<i>Passiflora</i> spp.	Passion Vine	Common
<i>Passiflora tripartita</i>	banana passionflower	Common
<i>Passiflora tripartita</i>	banana poka	Common
<i>Pastinaca</i>	parsnip	Occasional
<i>Pastinaca sativa</i>	wild parsnip	Occasional
<i>Pastinaca</i> spp.	parsnip	Occasional
<i>Pelargonium</i>	geranium	Occasional
<i>Pelargonium xdomesticum</i>	regal pelargonium	Occasional
<i>Pelargonium xhortorum</i>	zonal geranium	Occasional
<i>Pelargonium capitatum</i>	rose scented geranium	Occasional
<i>Pelargonium grossularioides</i>	gooseberry geranium	Occasional
<i>Pelargonium inodorum</i>	scentless geranium	Occasional
<i>Pelargonium inquinans</i>	scarlet geranium	Occasional
<i>Pelargonium panduriforme</i>	oakleaf garden geranium	Occasional
<i>Pelargonium peltatum</i>	ivy leaf geranium	Occasional
<i>Pelargonium quercifolium</i>	oakleaf geranium	Occasional
<i>Pelargonium</i> spp.	geranium	Occasional
<i>Pelargonium vitifolium</i>	grapeleaf geranium	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Pelargonium zonale</i>	horseshoe geranium	Occasional
<i>Penstemon</i>	beardtongue	Occasional
<i>Penstemon x</i> dubius		Occasional
<i>Penstemon x</i> parishii		Occasional
<i>Penstemon x</i> peirsonii		Occasional
<i>Penstemon albomarginatus</i>	whitemargin beardtongue	Occasional
<i>Penstemon anguineus</i>	Siskiyou beardtongue	Occasional
<i>Penstemon azureus</i>	azure penstemon	Occasional
<i>Penstemon barbatus</i>	Penstemen	Occasional
<i>Penstemon barnebyi</i>	White River Valley beardtongue	Occasional
<i>Penstemon bicolor</i>	pinto beardtongue	Occasional
<i>Penstemon bryantiae</i>	Bryant's beardtongue	Occasional
<i>Penstemon caesius</i>	San Bernardino beardtongue	Occasional
<i>Penstemon calcareus</i>	limestone beardtongue	Occasional
<i>Penstemon californicus</i>	California penstemon	Occasional
<i>Penstemon centranthifolius</i>	scarlet bugler	Occasional
<i>Penstemon cinicola</i>	ash penstemon	Occasional
<i>Penstemon clevelandii</i>	Cleveland's beardtongue	Occasional
<i>Penstemon clevelandii</i>	San Jacinto beardtongue	Occasional
<i>Penstemon davidsonii</i>	Davidson's penstemon	Occasional
<i>Penstemon deustus</i>	scabland penstemon	Occasional
<i>Penstemon eatonii</i>	firecracker penstemon	Occasional
<i>Penstemon filiformis</i>	threadleaf beardtongue	Occasional
<i>Penstemon floridus</i>	Austin's beardtongue	Occasional
<i>Penstemon floridus</i>	Panamint beardtongue	Occasional
<i>Penstemon fruticiformis</i>	Death Valley beardtongue	Occasional
<i>Penstemon gracilentus</i>	slender penstemon	Occasional
<i>Penstemon grinnellii</i>	Grinnell's beardtongue	Occasional
<i>Penstemon heterodoxus</i>	Shasta beardtongue	Occasional
<i>Penstemon heterodoxus</i>	Sierra beardtongue	Occasional
<i>Penstemon heterophyllus</i>	bunchleaf penstemon	Occasional
<i>Penstemon heterophyllus</i>	foothill beardtongue	Occasional
<i>Penstemon heterophyllus</i>	Purdy's penstemon	Occasional
<i>Penstemon humilis</i>	low beardtongue	Occasional
<i>Penstemon incertus</i>	Mojave beardtongue	Occasional
<i>Penstemon janishiae</i>	Antelope Valley beardtongue	Occasional
<i>Penstemon labrosus</i>	San Gabriel beardtongue	Occasional
<i>Penstemon laetus</i>	mountain blue penstemon	Occasional
<i>Penstemon monoensis</i>	Mono penstemon	Occasional
<i>Penstemon neotericus</i>	Plumas County beardtongue	Occasional
<i>Penstemon newberryi</i>	Berry's penstemon	Occasional
<i>Penstemon newberryi</i>	mountain pride	Occasional
<i>Penstemon newberryi</i>	Sonoma penstemon	Occasional
<i>Penstemon pahutensis</i>	Paiute beardtongue	Occasional
<i>Penstemon palmeri</i>	Palmer's penstemon	Occasional
<i>Penstemon papillatus</i>	Inyo beardtongue	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Penstemon patens	Lone Pine beardtongue	Occasional
Penstemon personatus	closethroat beardtongue	Occasional
Penstemon procerus	littleflower penstemon	Occasional
Penstemon procerus	pincushion beardtongue	Occasional
Penstemon pseudospectabilis	desert beardtongue	Occasional
Penstemon pseudospectabilis	desert penstemon	Occasional
Penstemon purpusii	Snow Mountain beardtongue	Occasional
Penstemon rattanii	Rattan's beardtongue	Occasional
Penstemon rattanii	Santa Cruz Mountains beardtongue	Occasional
Penstemon roezlii	Roezl's penstemon	Occasional
Penstemon rostriflorus	Bridge penstemon	Occasional
Penstemon rupicola	cliff beardtongue	Occasional
Penstemon rydbergii	herbaceous penstemon	Occasional
Penstemon rydbergii	Rydberg's penstemon	Occasional
Penstemon scapoides	pinyon beardtongue	Occasional
Penstemon speciosus	royal penstemon	Occasional
Penstemon spectabilis	showy penstemon	Occasional
Penstemon spp.	Penstemen	Occasional
Penstemon stephensii	Stephens' penstemon	Occasional
Penstemon strictus	Rocky Mountain penstemon	Occasional
Penstemon subglaber	smooth penstemon	Occasional
Penstemon sudans	Susanville beardtongue	Occasional
Penstemon thompsoniae	Thompson's beardtongue	Occasional
Penstemon thurberi	Thurber's penstemon	Occasional
Penstemon tracyi	Trinity penstemon	Occasional
Penstemon utahensis	Utah penstemon	Occasional
Penstemon venustus	Venus penstemon	Occasional
Perovskia atriplicifolia	Russian Sage	
Persea spp.	avocado, Florida mahogany, red bay	Primary
Persoonia spp.	bonewood, lance-leaf	Occasional
Petroselinum	parsley	Occasional
Petroselinum crispum	parsley	Occasional
Petroselinum spp.	parsley	Occasional
Phaseolus	bean	Common
Phaseolus filiformis	slimjim bean	Common
Phaseolus spp.	green bean, kidney bean, lima bean, snap bean, stringbean	Common
Philadelphus	mock orange	Occasional
Philadelphus xinsignis	summer mock orange	Occasional
Philadelphus argenteus	silver mock orange	Occasional
Philadelphus californicus	California mock orange	Occasional
Philadelphus confusus	Piper's mock orange	Occasional
Philadelphus cordifolius	heartleaf mock orange	Occasional
Philadelphus lewisii	Lewis' mock orange	Occasional
Philadelphus microphyllus	littleleaf mock orange	Occasional
Philadelphus oreganus	Oregon mock orange	Occasional
Philadelphus pumilus	dwarf mock orange	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Philadelphus serpyllifolius</i>	thymeleaf mock orange	Occasional
<i>Philadelphus</i> spp.		Occasional
<i>Philadelphus trichothecus</i>	Columbian mock orange	Occasional
<i>Phlox</i>	phlox	Occasional
<i>Phlox adsurgens</i>	northern phlox	Occasional
<i>Phlox austromontana</i>	mountain phlox	Occasional
<i>Phlox austromontana</i>	prostrate mountain phlox	Occasional
<i>Phlox caespitosa</i>	tufted phlox	Occasional
<i>Phlox condensata</i>		Occasional
<i>Phlox covillei</i>	Coville's phlox	Occasional
<i>Phlox diffusa</i>	spreading phlox	Occasional
<i>Phlox dispersa</i>	High Sierra phlox	Occasional
<i>Phlox dolichantha</i>	Big Bear Valley phlox	Occasional
<i>Phlox douglasii</i>		Occasional
<i>Phlox grayi</i>		Occasional
<i>Phlox hirsuta</i>	Yreka phlox	Occasional
<i>Phlox hoodii</i>	carpet phlox	Occasional
<i>Phlox hoodii</i>	musk phlox	Occasional
<i>Phlox hoodii</i>	spiny phlox	Occasional
<i>Phlox longifolia</i>	longleaf phlox	Occasional
<i>Phlox muscoides</i>		Occasional
<i>Phlox pulvinata</i>	cushion phlox	Occasional
<i>Phlox rigida</i>	stiff phlox	Occasional
<i>Phlox speciosa</i>	showy phlox	Occasional
<i>Phlox</i> spp.	phlox, sweet William	Occasional
<i>Phlox stansburyi</i>	cold-desert phlox	Occasional
<i>Phlox superba</i>		Occasional
<i>Phlox viridis</i>	green phlox	Occasional
<i>Phormium</i> spp.		Occasional
<i>Photinia</i>	chokeberry	Very Common
<i>Photinia davidiana</i>	Chinese photinia	Very Common
<i>Photinia</i> spp.	photinia	Very Common
<i>Phyllanthus</i> spp.	emblic, foliage flower, Otaheite gooseberry	Occasional
<i>Physalis</i>	groundcherry	Occasional
<i>Physalis acutifolia</i>	sharp-leaf groundcherry	Occasional
<i>Physalis angulata</i>	cutleaf groundcherry	Occasional
<i>Physalis cinerascens</i>	Smallflower groundcherry	Occasional
<i>Physalis cordata</i>	heartleaf groundcherry	Occasional
<i>Physalis crassifolia</i>	yellow nightshade groundcherry	Occasional
<i>Physalis grisea</i>	strawberry-tomato	Occasional
<i>Physalis hederifolia</i>	Fendler's groundcherry	Occasional
<i>Physalis hederifolia</i>	ivy-leaf groundcherry	Occasional
<i>Physalis hederifolia</i>	Palmer's groundcherry	Occasional
<i>Physalis longifolia</i>	longleaf groundcherry	Occasional
<i>Physalis mollis</i>	field groundcherry	Occasional
<i>Physalis peruviana</i>	Peruvian groundcherry	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Physalis philadelphica</i>	Mexican groundcherry	Occasional
<i>Physalis pubescens</i>	husk tomato	Occasional
<i>Physalis</i> spp.	ground cherry, husk tomato, tomatillo	Occasional
<i>Picea</i>	Spruce	Common
<i>Picea breweriana</i>	Brewer spruce	Common
<i>Picea engelmannii</i>	Engelmann spruce	Common
<i>Picea sitchensis</i>	Sitka spruce	Common
<i>Picea</i> spp.	spruce	Common
<i>Pieris</i> spp.	andromeda, fetterbrush, Japanese pieris, lily-of-the-valley bush	Common
<i>Pinus</i>	Pine	Common
<i>Pinus xattenuradiata</i>		Common
<i>Pinus albicaulis</i>	whitebark pine	Common
<i>Pinus attenuata</i>	knobcone pine	Common
<i>Pinus balfouriana</i>	foxtail pine	Common
<i>Pinus contorta</i>	beach pine	Common
<i>Pinus contorta</i>	Bolander beach pine	Common
<i>Pinus contorta</i>	lodgepole pine	Common
<i>Pinus contorta</i>	Sierra lodgepole pine	Common
<i>Pinus coulteri</i>	Coulter pine	Common
<i>Pinus edulis</i>	twoneedle pinyon	Common
<i>Pinus flexilis</i>	limber pine	Common
<i>Pinus halepensis</i>	aleppo pine	Common
<i>Pinus jeffreyi</i>	Jeffrey pine	Common
<i>Pinus lambertiana</i>	sugar pine	Common
<i>Pinus longaeva</i>	Great Basin bristlecone pine	Common
<i>Pinus monophylla</i>	California pine	Common
<i>Pinus monophylla</i>	singleleaf pinyon	Common
<i>Pinus monticola</i>	western white pine	Common
<i>Pinus muricata</i>	Bishop pine	Common
<i>Pinus pinea</i>	Italian stone pine	Common
<i>Pinus ponderosa</i>	ponderosa pine	Common
<i>Pinus quadrifolia</i>	Parry pinyon	Common
<i>Pinus radiata</i>	Monterey pine	Common
<i>Pinus sabiniana</i>	California foothill pine	Common
<i>Pinus</i> spp.	Pines	Common
<i>Pinus torreyana</i>	Santa Cruz Island Torrey pine	Common
<i>Pinus torreyana</i>	Torrey pine	Common
<i>Pinus washoensis</i>	Washoe pine	Common
<i>Pipturus</i> spp.	Mamaki	
<i>Pisum</i>	Pea	Very Common
<i>Pisum sativum</i>	garden pea	Very Common
<i>Pisum</i> spp.	garden pea, English pea, snow pea, sugar pea	Very Common
<i>Pittosporum</i>	Cheesewood	
<i>Pittosporum crassifolium</i>	stiffleaf cheesewood	
<i>Pittosporum</i> spp.	Pittosporum	
<i>Pittosporum tenuifolium</i>	Tawhiwhi	

Genus Species	Common Name	Genus Match Host Prevalence
<i>Pittosporum tobira</i>	Japanese cheesewood	
<i>Pittosporum undulatum</i>	Australian cheesewood	
<i>Plantago</i>	plantain	Common
<i>Plantago aristata</i>	largebracted plantain	Common
<i>Plantago bigelovii</i>	coast plantain	Common
<i>Plantago coronopus</i>	buckhorn plantain	Common
<i>Plantago elongata</i>	prairie plantain	Common
<i>Plantago erecta</i>	dotseed plantain	Common
<i>Plantago eriopoda</i>	redwool plantain	Common
<i>Plantago firma</i>	Chilean plantain	Common
<i>Plantago lanceolata</i>	narrowleaf plantain	Common
<i>Plantago major</i>	common plantain	Common
<i>Plantago maritima</i>	California goose tongue	Common
<i>Plantago maritima</i>	goose tongue	Common
<i>Plantago ovata</i>	desert Indianwheat	Common
<i>Plantago patagonica</i>	woolly plantain	Common
<i>Plantago psyllium</i>	sand plantain	Common
<i>Plantago pusilla</i>	dwarf plantain	Common
<i>Plantago rhodosperma</i>	redseed plantain	Common
<i>Plantago</i> spp.	Plantain	Common
<i>Plantago subnuda</i>	tall coastal plantain	Common
<i>Plantago virginica</i>	Virginia plantain	Common
<i>Platysace</i> spp.	native parsnip	Occasional
<i>Plumbago</i>	leadwort	Occasional
<i>Plumbago auriculata</i>	Cape leadwort	Occasional
<i>Plumbago</i> spp.	leadwort, plumbago	Occasional
<i>Podranea</i> spp.		
<i>Polygala</i>	<i>Polygala</i>	Occasional
<i>Polygala acanthoclada</i>	desert polygala	Occasional
<i>Polygala californica</i>	California milkwort	Occasional
<i>Polygala cornuta</i>	Sierra milkwort	Occasional
<i>Polygala heterorhyncha</i>	beaked spiny polygala	Occasional
<i>Polygala intermontana</i>	Intermountain milkwort	Occasional
<i>Polygala myrtifolia</i>	myrtle-leaf milkwort	Occasional
<i>Polygala</i> spp.	Milkworts	Occasional
<i>Polygala subspinoso</i>	spiny milkwort	Occasional
<i>Polygonum</i>	Knotweed	Common
<i>Polygonum amphibium</i>	longroot smartweed	Common
<i>Polygonum amphibium</i>	water knotweed	Common
<i>Polygonum amphibium</i>	water smartweed	Common
<i>Polygonum arenastrum</i>	oval-leaf knotweed	Common
<i>Polygonum argyrocoleon</i>	silversheath knotweed	Common
<i>Polygonum baldschuanicum</i>	Bukhara fleecflower	Common
<i>Polygonum bellardii</i>	narrowleaf knotweed	Common
<i>Polygonum bidwelliae</i>	Bidwell's knotweed	Common
<i>Polygonum bistortoides</i>	American bistort	Common

Genus Species	Common Name	Genus Match Host Prevalence
Polygonum bolanderi	Bolander's knotweed	Common
Polygonum californicum	California knotweed	Common
Polygonum capitatum	Pinkhead smartweed	Common
Polygonum convolvulus	black bindweed	Common
Polygonum cuspidatum	Japanese knotweed	Common
Polygonum davisiae	Davis' knotweed	Common
Polygonum douglasii	Austin knotweed	Common
Polygonum douglasii	Douglas' knotweed	Common
Polygonum douglasii	Johnston's knotweed	Common
Polygonum douglasii	large knotweed	Common
Polygonum douglasii	scatter knotweed	Common
Polygonum erectum	erect knotweed	Common
Polygonum fowleri	Fowler's knotweed	Common
Polygonum hickmanii	Hickman's knotweed	Common
Polygonum hydropiper	marshpepper knotweed	Common
Polygonum hydropiperoides	swamp smartweed	Common
Polygonum lapathifolium	curlytop knotweed	Common
Polygonum marinense	Marin knotweed	Common
Polygonum minimum	broadleaf knotweed	Common
Polygonum multiflorum	tuber fleecflower	Common
Polygonum orientale	kiss me over the garden gate	Common
Polygonum paronychia	beach knotweed	Common
Polygonum parryi	Parry's knotweed	Common
Polygonum patulum	Bellard's smartweed	Common
Polygonum pensylvanicum	Pennsylvania smartweed	Common
Polygonum persicaria	spotted ladythumb	Common
Polygonum phytolaccifolium	poke knotweed	Common
Polygonum polygaloides	fruitleaf knotweed	Common
Polygonum polygaloides	Kellogg's knotweed	Common
Polygonum polygaloides	milkwort knotweed	Common
Polygonum polygaloides	whitemargin knotweed	Common
Polygonum polystachyum	cultivated knotweed	Common
Polygonum punctatum	dotted smartweed	Common
Polygonum ramosissimum	bushy knotweed	Common
Polygonum ramosissimum	bushy knotweed	Common
Polygonum sachalinense	giant knotweed	Common
Polygonum shastense	Shasta knotweed	Common
Polygonum spp.	(fleece flower, knotweed, smartweed)	Common
Populus	cottonwood	Occasional
Populus xcanadensis	Carolina poplar	Occasional
Populus xinopina		Occasional
Populus xparryi		Occasional
Populus alba	white poplar	Occasional
Populus angustifolia	narrowleaf cottonwood	Occasional
Populus balsamifera	balsam poplar	Occasional
Populus balsamifera	black cottonwood	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Populus deltoides		Occasional
Populus fremontii	Fremont cottonwood	Occasional
Populus nigra	Lombardy poplar	Occasional
Populus spp.	cottonwood, poplar	Occasional
Populus tremuloides	quaking aspen	Occasional
Primula	primrose	Occasional
Primula spp.	cowslip, primrose, primula	Occasional
Primula suffrutescens	Sierra primrose	Occasional
Protea spp.	Protea	
Prunus	plum	Very Common
Prunus akebono	flowering cherry	Very Common
Prunus andersonii	desert peach	Very Common
Prunus angustifolia	Chickasaw plum	Very Common
Prunus angustifolia	Chickasaw plum	Very Common
Prunus armeniaca	apricot	Very Common
Prunus avium	Cherry	Very Common
Prunus avium	Cherry	Very Common
Prunus caroliniana	Carolina Laurel cherry	Very Common
Prunus cerasifera		Very Common
Prunus domestica	Plum	Very Common
Prunus domestica	Plum	Very Common
Prunus dulcis	sweet almond	Very Common
Prunus emarginata	bitter cherry	Very Common
Prunus fasciculata	desert almond	Very Common
Prunus fremontii	desert apricot	Very Common
Prunus ilicifolia	hollyleaf cherry	Very Common
Prunus laurel	Laurel	Very Common
Prunus laurocerasus	cherry laurel	Very Common
Prunus lusitanica	Portugal laurel	Very Common
Prunus lyonii	Catalina cherry	Very Common
Prunus mahaleb	Mahaleb cherry	Very Common
Prunus persica	peach	Very Common
Prunus serrulata		Very Common
Prunus spp.		Very Common
Prunus spp.	Japanese weeping cherry	Very Common
Prunus spp.	Double weeping rosebud cherry	Very Common
Prunus spp.	Pluot	Very Common
Prunus subcordata	Kellogg's Klamath plum	Very Common
Prunus subcordata	Klamath plum	Very Common
Prunus subcordata	Oregon Klamath plum	Very Common
Prunus virginiana	black chokecherry	Very Common
Prunus virginiana	chokecherry	Very Common
Prunus virginiana	western chokecherry	Very Common
Pseudopanax spp.	five-finger, lancewood	
Pseudotsuga	Douglas-fir	Common
Pseudotsuga macrocarpa	bigcone Douglas-fir	Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Pseudotsuga menziesii</i>	Douglas-fir	Common
<i>Pseudotsuga</i> spp.	big-cone pine, Douglas-fir, Japanese Douglas-fir	Common
<i>Pseudowintera</i> spp.	Horpito	Occasional
<i>Psidium cattleianum</i>	Strawberry guava	
<i>Pteridium</i>	brackenfern	Common
<i>Pteridium aquilinum</i>	hairy brackenfern	Common
<i>Pteridium aquilinum</i>	western brackenfern	Common
<i>Pteridium</i> spp.	Brackenfern	Common
<i>Pteris</i>	brake fern	Occasional
<i>Pteris cretica</i>	Cretan brake	Occasional
<i>Pteris felix</i>		Occasional
<i>Pteris multifida</i>	spider brake	Occasional
<i>Pteris</i> spp.	brake, dish fern, table fern	Occasional
<i>Pteris tremula</i>	Australian brake	Occasional
<i>Pteris vittata</i>	ladder brake	Occasional
<i>Pulicaria</i>	false fleabane	
<i>Pulicaria paludosa</i>	Spanish false fleabane	
<i>Pulicaria</i> spp.	false fleabane	
<i>Pyracantha</i>	firethorn	Very Common
<i>Pyracantha angustifolia</i>	narrowleaf firethorn	Very Common
<i>Pyracantha coccinea</i>	scarlet firethorn	Very Common
<i>Pyracantha crenulata</i>	Nepalese firethorn	Very Common
<i>Pyracantha fortuneana</i>	Chinese firethorn	Very Common
<i>Pyracantha</i> spp.	fire thorn, pyracantha	Very Common
<i>Pyrus</i>	pear	Very Common
<i>Pyrus communis</i>	common pear	Very Common
<i>Pyrus</i> spp.	Asian pear	Very Common
<i>Pyrus</i> spp.	pear	Very Common
<i>Quercus</i>	oak	Occasional
<i>Quercus xacutidens</i>		Occasional
<i>Quercus xalvordiana</i>	Alvord oak	Occasional
<i>Quercus xepingii</i>		Occasional
<i>Quercus xganderi</i>		Occasional
<i>Quercus xgrandidentata</i>		Occasional
<i>Quercus xhowellii</i>		Occasional
<i>Quercus xjolonensis</i>		Occasional
<i>Quercus xmacdonaldii</i>	MacDonald oak	Occasional
<i>Quercus xmoreha</i>	oracle oak	Occasional
<i>Quercus xmunzii</i>		Occasional
<i>Quercus xsubconvexa</i>		Occasional
<i>Quercus xtownei</i>		Occasional
<i>Quercus agrifolia</i>	California live oak	Occasional
<i>Quercus agrifolia</i>	coastal live oak	Occasional
<i>Quercus berberidifolia</i>	scrub oak	Occasional
<i>Quercus cedrosensis</i>	Cedros Island oak	Occasional
<i>Quercus chrysolepis</i>	canyon live oak	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Quercus cornelius-mulleri</i>	Muller oak	Occasional
<i>Quercus douglasii</i>	blue oak	Occasional
<i>Quercus dumosa</i>	coastal sage scrub oak	Occasional
<i>Quercus durata</i>	leather oak	Occasional
<i>Quercus engelmannii</i>	Engelmann oak	Occasional
<i>Quercus garryana</i>	Oregon white oak	Occasional
<i>Quercus ilex</i>	holly oak	Occasional
<i>Quercus john-tuckeri</i>	Tucker oak	Occasional
<i>Quercus kelloggii</i>	California black oak	Occasional
<i>Quercus lobata</i>	valley oak	Occasional
<i>Quercus pacifica</i>	Channel Island scrub oak	Occasional
<i>Quercus palmeri</i>	Palmer oak	Occasional
<i>Quercus parvula</i>	coast oak	Occasional
<i>Quercus parvula</i>	Santa Cruz Island oak	Occasional
<i>Quercus parvula</i>	Shreve oak	Occasional
<i>Quercus parvula</i>	Tamalpais oak	Occasional
<i>Quercus sadleriana</i>	deer oak	Occasional
<i>Quercus</i> spp.	oak	Occasional
<i>Quercus tomentella</i>	island live oak	Occasional
<i>Quercus turbinella</i>	Sonoran scrub oak	Occasional
<i>Quercus vacciniifolia</i>	huckleberry oak	Occasional
<i>Quercus wislizeni</i>	interior live oak	Occasional
<i>Racosperma</i> spp.	wattle	Very Common
<i>Ranunculus</i>	buttercup	Common
<i>Ranunculus acris</i>	showy buttercup	Common
<i>Ranunculus acris</i>	tall buttercup	Common
<i>Ranunculus alismifolius</i>	plantainleaf buttercup	Common
<i>Ranunculus andersonii</i>	Anderson's buttercup	Common
<i>Ranunculus aquatilis</i>	white water crowfoot	Common
<i>Ranunculus arvensis</i>	corn buttercup	Common
<i>Ranunculus bonariensis</i>	Carter's buttercup	Common
<i>Ranunculus bulbosus</i>	St. Anthony's turnip	Common
<i>Ranunculus californicus</i>	California buttercup	Common
<i>Ranunculus canus</i>	Sacramento Valley buttercup	Common
<i>Ranunculus cortusifolius</i>	Azores buttercup	Common
<i>Ranunculus cymbalaria</i>	alkali buttercup	Common
<i>Ranunculus eschscholtzii</i>	Eschscholtz's buttercup	Common
<i>Ranunculus flabellaris</i>	yellow water buttercup	Common
<i>Ranunculus flammula</i>	greater creeping spearwort	Common
<i>Ranunculus flammula</i>	greater creeping spearwort	Common
<i>Ranunculus glaberrimus</i>	elliptical buttercup	Common
<i>Ranunculus glaberrimus</i>	sagebrush buttercup	Common
<i>Ranunculus gormanii</i>	Gorman's buttercup	Common
<i>Ranunculus hebecarpus</i>	delicate buttercup	Common
<i>Ranunculus hydrocharoides</i>	frogbit buttercup	Common
<i>Ranunculus lobbii</i>	Lobb's buttercup	Common

Genus Species	Common Name	Genus Match Host Prevalence
Ranunculus longirostris	longbeak buttercup	Common
Ranunculus macounii	Macoun's buttercup	Common
Ranunculus muricatus	spinyfruit buttercup	Common
Ranunculus occidentalis	western buttercup	Common
Ranunculus orthorhynchus	Bloomer's buttercup	Common
Ranunculus orthorhynchus	straightbeak buttercup	Common
Ranunculus parviflorus	smallflower buttercup	Common
Ranunculus populago	popular buttercup	Common
Ranunculus pusillus	low spearwort	Common
Ranunculus repens	creeping buttercup	Common
Ranunculus sardous	hairy buttercup	Common
Ranunculus sceleratus	cursed buttercup	Common
Ranunculus spp.	buttercups, crowfoot	Common
Ranunculus suksdorfii	Suksdorf's buttercup	Common
Ranunculus trichophyllus	threadleaf crowfoot	Common
Ranunculus uncinatus	Idaho buttercup	Common
Ranunculus uncinatus	woodland buttercup	Common
Ranunculus verecundus	wetslope buttercup	Common
Raphanus	radish	Occasional
Raphanus raphanistrum	wild radish	Occasional
Raphanus sativus	cultivated radish	Occasional
Raphanus spp.	wild radish	Occasional
Reseda	mignonette	Occasional
Reseda alba	white upright mignonette	Occasional
Reseda lutea	yellow mignonette	Occasional
Reseda luteola	Weld	Occasional
Reseda odorata	garden mignonette	Occasional
Reseda spp.	mignonette	Occasional
Rhamnus	buckthorn	
Rhamnus alnifolia	alderleaf buckthorn	
Rhamnus alternus	Italian Buchthorn	
Rhamnus cathartica	common buckthorn	
Rhamnus crocea	hollyleaf buckthorn	
Rhamnus crocea	redberry buckthorn	
Rhamnus ilicifolia	hollyleaf redberry	
Rhamnus pirifolia	island redberry	
Rhamnus spp.	Rhamnus	
Rhaphiolepis spp.	Japanese-hawthorn	Very Common
Rhododendron	rhododendron	Common
Rhododendron x columbianum		Common
Rhododendron macrophyllum	Pacific rhododendron	Common
Rhododendron neoglandulosum		Common
Rhododendron occidentale	Sonoma azalea	Common
Rhododendron occidentale	western azalea	Common
Rhododendron spp.	azalea, rhododendron	Common
Ribes	currant	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
Ribes amarum	bitter gooseberry	Very Common
Ribes aureum	golden currant	Very Common
Ribes binominatum	ground gooseberry	Very Common
Ribes bracteosum	stink currant	Very Common
Ribes californicum	hillside gooseberry	Very Common
Ribes canthariforme	Moreno currant	Very Common
Ribes cereum	wax currant	Very Common
Ribes cereum	whisky currant	Very Common
Ribes cruentum	shinyleaf currant	Very Common
Ribes divaricatum	Parish's gooseberry	Very Common
Ribes divaricatum	spreading gooseberry	Very Common
Ribes divaricatum	straggly gooseberry	Very Common
Ribes hudsonianum	northern black currant	Very Common
Ribes hudsonianum	western black currant	Very Common
Ribes indecorum	whiteflower currant	Very Common
Ribes inerme	Klamath gooseberry	Very Common
Ribes inerme	whitestem gooseberry	Very Common
Ribes lacustre	prickly currant	Very Common
Ribes lasianthum	alpine gooseberry	Very Common
Ribes laxiflorum	trailing black currant	Very Common
Ribes lobbii	gummy gooseberry	Very Common
Ribes malvaceum	chaparral currant	Very Common
Ribes marshallii	Hupa gooseberry	Very Common
Ribes menziesii	canyon gooseberry	Very Common
Ribes montigenum	gooseberry currant	Very Common
Ribes nevadense	Jaeger's currant	Very Common
Ribes nevadense	Sierra currant	Very Common
Ribes quercetorum	rock gooseberry	Very Common
Ribes roezlii	Sierra gooseberry	Very Common
Ribes sanguineum		Very Common
Ribes sanguineum		Very Common
Ribes sericeum	Lucia gooseberry	Very Common
Ribes speciosum	fuchsiaflower gooseberry	Very Common
Ribes spp.		Very Common
Ribes thacherianum	Santa Cruz gooseberry	Very Common
Ribes tularensis	Tulare gooseberry	Very Common
Ribes velutinum	desert gooseberry	Very Common
Ribes velutinum	Gooding's gooseberry	Very Common
Ribes viburnifolium	island gooseberry	Very Common
Ribes victoris	Victor's gooseberry	Very Common
Ribes viscosissimum	sticky currant	Very Common
Ripogonum spp.	Supplejack	Occasional
Robinia	Locust	
Robinia hispida	bristly locust	
Robinia neomexicana	New Mexico locust	
Robinia pseudoacacia	black locust	

Genus Species	Common Name	Genus Match Host Prevalence
Robinia spp.	locust	
Rosa	rose	Very Common
Rosa ?pinetorum	pine rose	Very Common
Rosa bridgesii	pygmy rose	Very Common
Rosa californica	California wildrose	Very Common
Rosa canina	dog rose	Very Common
Rosa eglanteria	sweetbriar rose	Very Common
Rosa gymnocarpa	dwarf rose	Very Common
Rosa minutifolia	Baja rose	Very Common
Rosa multiflora	multiflora rose	Very Common
Rosa nutkana	Nootka rose	Very Common
Rosa pisocarpa	cluster rose	Very Common
Rosa sicula	Mediterranean rose	Very Common
Rosa spithamea	ground rose	Very Common
Rosa spithamea	Sonoma ground rose	Very Common
Rosa spp.	Rose	Very Common
Rosa woodsii	Tehachapi rose	Very Common
Rosa woodsii	Woods' rose	Very Common
Rosa yainacensis	Cascade rose	Very Common
Rubus	blackberry	Primary
Rubus aboriginum	garden dewberry	Primary
Rubus allegheniensis	Allegheny blackberry	Primary
Rubus armeniacus	Himalayan blackberry	Primary
Rubus glaucifolius	Cuyamaca raspberry	Primary
Rubus glaucifolius	San Diego raspberry	Primary
Rubus idaeus	American red raspberry	Primary
Rubus idaeus	grayleaf red raspberry	Primary
Rubus laciniatus	cutleaf blackberry	Primary
Rubus lasiococcus	roughfruit berry	Primary
Rubus leucodermis	whitebark raspberry	Primary
Rubus nivalis	snow raspberry	Primary
Rubus parviflorus	thimbleberry	Primary
Rubus spectabilis	salmonberry	Primary
Rubus spp.	blackberry, boysenberry, raspberry	Primary
Rubus ulmifolius	elmleaf blackberry	Primary
Rubus ursinus	California blackberry	Primary
Rubus vitifolius	Pacific dewberry	Primary
Rudbeckia	coneflower	
Rudbeckia californica	California coneflower	
Rudbeckia glaucescens	waxy coneflower	
Rudbeckia hirta	blackeyed Susan	
Rudbeckia klamathensis	Klamath coneflower	
Rudbeckia occidentalis	western coneflower	
Rumex	dock	Common
Rumex xacutus		Common
Rumex acetosella	common sheep sorrel	Common

Genus Species	Common Name	Genus Match Host Prevalence
Rumex aquaticus	western dock	Common
Rumex conglomeratus	clustered dock	Common
Rumex crispus	curly dock	Common
Rumex dentatus	toothed dock	Common
Rumex frutescens	wedgeleaf dock	Common
Rumex hymenosepalus	canaigre dock	Common
Rumex kernerii	Kerner's dock	Common
Rumex maritimus	golden dock	Common
Rumex obtusifolius	bitter dock	Common
Rumex occidentalis		Common
Rumex orbiculatus	greater water dock	Common
Rumex paucifolius	alpine sheep sorrel	Common
Rumex pulcher	fiddle dock	Common
Rumex salicifolius	lake willow dock	Common
Rumex salicifolius	Mexican dock	Common
Rumex salicifolius	toothed willow dock	Common
Rumex salicifolius	willow dock	Common
Rumex sanguineus	redvein dock	Common
Rumex spp.	common sheep sorrel, dock, garden sorrel	Common
Rumex stenophyllus	narrowleaf dock	Common
Rumex venosus	Veiny dock	Common
Rumex violascens	Violet dock	Common
Salix	Willow	Occasional
Salix xehrhartiana		Occasional
Salix xpendulina	Wisconsin weeping willow	Occasional
Salix xrubens	hybrid crack willow	Occasional
Salix xsepulcralis	weeping willow	Occasional
Salix alba	white willow	Occasional
Salix arctica		Occasional
Salix bebbiana	Bebb willow	Occasional
Salix boothii	Booth's willow	Occasional
Salix brachycarpa	shortfruit willow	Occasional
Salix breweri	Brewer's willow	Occasional
Salix delnortensis	Del Norte willow	Occasional
Salix drummondiana	Drummond's willow	Occasional
Salix eastwoodiae	mountain willow	Occasional
Salix eriocephala		Occasional
Salix exigua	narrowleaf willow	Occasional
Salix geyeriana	Geyer willow	Occasional
Salix gooddingii	Goodding's willow	Occasional
Salix hookeriana	dune willow	Occasional
Salix jepsonii	Jepson's willow	Occasional
Salix laevigata	red willow	Occasional
Salix lasiolepis	arroyo willow	Occasional
Salix lasiolepis	Bigelow's willow	Occasional
Salix lemmonii	Lemmon's willow	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Salix ligulifolia	strapleaf willow	Occasional
Salix lucida	greenleaf willow	Occasional
Salix lucida	Pacific willow	Occasional
Salix lucida	shining willow	Occasional
Salix lutea	yellow willow	Occasional
Salix melanopsis	dusky willow	Occasional
Salix nivalis	snow willow	Occasional
Salix orestera	Sierra willow	Occasional
Salix petrophila	alpine willow	Occasional
Salix planifolia	diamondleaf willow	Occasional
Salix planifolia	diamondleaf willow	Occasional
Salix prolixa	MacKenzie's willow	Occasional
Salix reticulata		Occasional
Salix scouleriana	Scouler's willow	Occasional
Salix sessilifolia	northwest sandbar willow	Occasional
Salix sitchensis	Sitka willow	Occasional
Salix spp.	Willow	Occasional
Salix tracyi	Tracy's willow	Occasional
Salvia	sage	Occasional
Salvia xbernardina		Occasional
Salvia xpalmeri		Occasional
Salvia aethiopis	Mediterranean sage	Occasional
Salvia apiana	compact white sage	Occasional
Salvia apiana	white sage	Occasional
Salvia brandegeei	Santa Rosa Island sage	Occasional
Salvia carduacea	thistle sage	Occasional
Salvia clevelandii		Occasional
Salvia columbariae	chia	Occasional
Salvia columbariae	Ziegler's sage	Occasional
Salvia dorrii	purple sage	Occasional
Salvia eremostachya	rose sage	Occasional
Salvia funerea	woolly sage	Occasional
Salvia greatae	lavender sage	Occasional
Salvia leucophylla	San Luis purple sage	Occasional
Salvia longistyla	Mexican sage	Occasional
Salvia mellifera	black sage	Occasional
Salvia microphylla	baby sage	Occasional
Salvia mohavensis	Mojave sage	Occasional
Salvia munzii	Munz's sage	Occasional
Salvia officinalis	kitchen sage	Occasional
Salvia pachyphylla	blue sage	Occasional
Salvia reflexa	lanceleaf sage	Occasional
Salvia sonomensis	creeping sage	Occasional
Salvia spathacea	hummingbird sage	Occasional
Salvia spp.	Sage	Occasional
Salvia vaseyi	scallopleaf sage	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Salvia verbenaca	wild clary	Occasional
Salvia virgata	wand sage	Occasional
Sambucus	elderberry	Occasional
Sambucus cerulea		Occasional
Sambucus nigra	blue elder	Occasional
Sambucus nigra	common elderberry	Occasional
Sambucus nigra	European black elderberry	Occasional
Sambucus racemosa	black elderberry	Occasional
Sambucus racemosa	red elderberry	Occasional
Sambucus spp.	Elderberry	Occasional
Santalum spp.	sandalwood	
Schlumbergera spp.	Zygocatus spp. (Christmas cactus, claw cactus, crab cactus)	
Senecio	ragwort	Common
Senecio aphanactis	chaparral ragwort	Common
Senecio aronicoides	rayless ragwort	Common
Senecio astephanus	San Gabriel ragwort	Common
Senecio blochmaniae	dune ragwort	Common
Senecio californicus	California ragwort	Common
Senecio cineraria	silver ragwort	Common
Senecio clarkianus	Clark's ragwort	Common
Senecio elegans	redpurple ragwort	Common
Senecio flaccidus	Douglas' ragwort	Common
Senecio flaccidus	Mono ragwort	Common
Senecio flaccidus	threadleaf ragwort	Common
Senecio fremontii	dwarf mountain ragwort	Common
Senecio hydrophiloides	tall groundsel	Common
Senecio hydrophilus	water ragwort	Common
Senecio integerrimus	Columbia ragwort	Common
Senecio integerrimus	lambstongue ragwort	Common
Senecio integerrimus	paleyellow ragwort	Common
Senecio jacobaea	stinking willie	Common
Senecio lyonii	island senecio	Common
Senecio mohavensis	Mojave ragwort	Common
Senecio pattersonensis	Patterson's senecio	Common
Senecio scorzonella	Sierra ragwort	Common
Senecio serra	tall ragwort	Common
Senecio spartioides	broomlike ragwort	Common
Senecio spp.	dusty-miller, groundsels	Common
Senecio squalidus	oxford ragwort	Common
Senecio sylvaticus	woodland ragwort	Common
Senecio triangularis	arrowleaf ragwort	Common
Senecio vulgaris	old-man-in-the-Spring	Common
Sequoia	Redwood	
Sequoia sempervirens	Redwood	
Sequoia spp.	coast redwood	
Sida	fanpetals	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Sida abutifolia</i>	spreading fanpetals	Occasional
<i>Sida rhombifolia</i>	Cuban jute	Occasional
<i>Sida spinosa</i>	prickly fanpetals	Occasional
<i>Sida</i> spp.	fanpetals, Virginia mallow	Occasional
<i>Sisymbrium</i>	hedgemustard	Common
<i>Sisymbrium altissimum</i>	tall tumbledustard	Common
<i>Sisymbrium erysimoides</i>	Mediterranean rocket	Common
<i>Sisymbrium irio</i>	London rocket	Common
<i>Sisymbrium loeselii</i>	small tumbleweed mustard	Common
<i>Sisymbrium officinale</i>	hedgemustard	Common
<i>Sisymbrium orientale</i>	Indian hedgemustard	Common
<i>Sisymbrium</i> spp.	hedge mustard	Common
<i>Smilax</i>	greenbrier	Occasional
<i>Smilax californica</i>	California greenbrier	Occasional
<i>Smilax jamesii</i>	English Peak greenbrier	Occasional
<i>Smilax</i> spp.	greenbrier, Jacob's ladder, wild sarsaparilla	Occasional
<i>Solanum</i>	nightshade	Occasional
<i>Solanum americanum</i>	American black nightshade	Occasional
<i>Solanum aviculare</i>	New Zealand nightshade	Occasional
<i>Solanum cardiophyllum</i>	heartleaf horsenettle	Occasional
<i>Solanum carolinense</i>	Carolina horsenettle	Occasional
<i>Solanum clokeyi</i>	Clokey's nightshade	Occasional
<i>Solanum dimidiatum</i>	western horsenettle	Occasional
<i>Solanum douglasii</i>	greenspot nightshade	Occasional
<i>Solanum dulcamara</i>	climbing nightshade	Occasional
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	Occasional
<i>Solanum furcatum</i>	forked nightshade	Occasional
<i>Solanum gayanum</i>	Chilean nightshade	Occasional
<i>Solanum heterodoxum</i>	melonleaf nightshade	Occasional
<i>Solanum lanceolatum</i>	orangeberry nightshade	Occasional
<i>Solanum lycopersicum</i>	garden tomato	Occasional
<i>Solanum marginatum</i>	purple African nightshade	Occasional
<i>Solanum mauritianum</i>	earleaf nightshade	Occasional
<i>Solanum nigrum</i>	black nightshade	Occasional
<i>Solanum parishii</i>	Parish's nightshade	Occasional
<i>Solanum peruvianum</i>	Peruvian nightshade	Occasional
<i>Solanum physalifolium</i>	hoe nightshade	Occasional
<i>Solanum rostratum</i>	buffalobur nightshade	Occasional
<i>Solanum scabrum</i>	garden-huckleberry	Occasional
<i>Solanum sisymbriifolium</i>	sticky nightshade	Occasional
<i>Solanum</i> spp.	horse nettles, nightshade, pepino, potato	Occasional
<i>Solanum tenuilobatum</i>	San Diego nightshade	Occasional
<i>Solanum triflorum</i>	cutleaf nightshade	Occasional
<i>Solanum tuberosum</i>	Irish potato	Occasional
<i>Solanum umbelliferum</i>	bluewitch	Occasional
<i>Solanum umbelliferum</i>	bluewitch nightshade	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Solanum villosum</i>	hairy nightshade	Occasional
<i>Solanum wallacei</i>	Catalina nightshade	Occasional
<i>Solanum xanti</i>	chaparral nightshade	Occasional
<i>Solanum xanti</i>	Hoffmann's nightshade	Occasional
<i>Solanum xanti</i>	San Luis Obispo nightshade	Occasional
<i>Solidago</i>	goldenrod	Common
<i>Solidago altissima</i>	late goldenrod	Common
<i>Solidago californica</i>	California goldenrod	Common
<i>Solidago canadensis</i>	Canada goldenrod	Common
<i>Solidago canadensis</i>	salebrosa goldenrod	Common
<i>Solidago gigantea</i>	giant goldenrod	Common
<i>Solidago guiradonis</i>	Guirado goldenrod	Common
<i>Solidago lepida</i>		Common
<i>Solidago multiradiata</i>	manyray goldenrod	Common
<i>Solidago multiradiata</i>	Rocky Mountain goldenrod	Common
<i>Solidago simplex</i>	Mt. Albert goldenrod	Common
<i>Solidago spathulata</i>		Common
<i>Solidago spectabilis</i>	Nevada goldenrod	Common
<i>Solidago</i> spp.	California goldenrod, Canada goldenrod, goldenrod	Common
<i>Solidago velutina</i>	threenerve goldenrod	Common
<i>Sollya</i>	sollya	
<i>Sollya heterophylla</i>	bluebell creeper	
<i>Sollya</i> spp.	Australian bluebells, bluebell creeper	
<i>Sonchus</i>	Sowthistle	Common
<i>Sonchus arvensis</i>	field sowthistle	Common
<i>Sonchus asper</i>	spiny sowthistle	Common
<i>Sonchus oleraceus</i>	common sowthistle	Common
<i>Sonchus</i> spp.	sowthistle	Common
<i>Sonchus tenerrimus</i>	slender sowthistle	Common
<i>Sophora</i> spp.	sophora	
<i>Spergula</i>	spurry	Occasional
<i>Spergula arvensis</i>	corn spurry	Occasional
<i>Spergula</i> spp.	corn spurry, spurry	Occasional
<i>Spiraea</i>	spirea	
<i>Spiraea douglasii</i>	rose spirea	
<i>Spiraea splendens</i>	rose meadowsweet	
<i>Spiraea</i> spp.	spirea	
<i>Syringa</i> spp.	lilac	Occasional
<i>Teucrium</i>	germander	
<i>Teucrium canadense</i>	Canada germander	
<i>Teucrium canadense</i>	western germander	
<i>Teucrium cubense</i>	small coastal germander	
<i>Teucrium fruticans</i>	shrubby germander	
<i>Teucrium glandulosum</i>	common germander	
<i>Teucrium</i> spp.	Germander	
<i>Thuja</i>	red cedar	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
<i>Thuja plicata</i>	western red cedar	Occasional
<i>Thuja</i> spp.	cedar, giant cedar, Oriental arborvitae, red cedar, white cedar	Occasional
<i>Tibouchina</i> spp.	glory bush, lasiandra, pleroma, princess flower	Occasional
<i>Tibouchina urvilleana</i>	Princess Flower	Occasional
<i>Tithonia</i> spp.	Mexican sunflower	Common
<i>Tolmiea</i>	youth on age	
<i>Tolmiea menziesii</i>	Piggy-back Plant	
<i>Trachelospermum jasminoides</i>	Star Jasmine	
<i>Tradescantia</i>	spiderwort	Occasional
<i>Tradescantia fluminensis</i>	small-leaf spiderwort	Occasional
<i>Tradescantia</i> spp.		Occasional
<i>Tradescantia virginiana</i>	Virginia spiderwort	Occasional
<i>Trifolium</i>	clover	Very Common
<i>Trifolium albopurpureum</i>	rancheria clover	Very Common
<i>Trifolium alexandrinum</i>	Egyptian clover	Very Common
<i>Trifolium amoenum</i>	showy Indian clover	Very Common
<i>Trifolium andersonii</i>	Beatley's clover	Very Common
<i>Trifolium andersonii</i>	fiveleaf clover	Very Common
<i>Trifolium andersonii</i>	Mono clover	Very Common
<i>Trifolium angustifolium</i>	narrowleaf crimson clover	Very Common
<i>Trifolium arvense</i>	rabbitfoot clover	Very Common
<i>Trifolium aureum</i>	golden clover	Very Common
<i>Trifolium barbigerum</i>	Andrews' clover	Very Common
<i>Trifolium barbigerum</i>	bearded clover	Very Common
<i>Trifolium beckwithii</i>	Beckwith's clover	Very Common
<i>Trifolium bifidum</i>	notchleaf clover	Very Common
<i>Trifolium bolanderi</i>	parasol clover	Very Common
<i>Trifolium breweri</i>	forest clover	Very Common
<i>Trifolium buckwestiorum</i>	Santa Cruz clover	Very Common
<i>Trifolium campestre</i>	field clover	Very Common
<i>Trifolium cernuum</i>	nodding clover	Very Common
<i>Trifolium ciliolatum</i>	foothill clover	Very Common
<i>Trifolium cyathiferum</i>	cup clover	Very Common
<i>Trifolium dedeckerae</i>	Dedecker's clover	Very Common
<i>Trifolium depauperatum</i>	balloon sack clover	Very Common
<i>Trifolium depauperatum</i>	cowbag clover	Very Common
<i>Trifolium dichotomum</i>	branched Indian clover	Very Common
<i>Trifolium dubium</i>	suckling clover	Very Common
<i>Trifolium eriocephalum</i>	Cusick's clover	Very Common
<i>Trifolium eriocephalum</i>	woollyhead clover	Very Common
<i>Trifolium fragiferum</i>	strawberry clover	Very Common
<i>Trifolium fucatum</i>	bull clover	Very Common
<i>Trifolium gemellum</i>	Spanish clover	Very Common
<i>Trifolium glomeratum</i>	clustered clover	Very Common
<i>Trifolium gracilentum</i>	Palmer's clover	Very Common
<i>Trifolium gracilentum</i>	pinpoint clover	Very Common

Genus Species	Common Name	Genus Match Host Prevalence
<i>Trifolium gymnocarpon</i>	hollyleaf clover	Very Common
<i>Trifolium gymnocarpon</i>	Plummer's clover	Very Common
<i>Trifolium hirtum</i>	rose clover	Very Common
<i>Trifolium howellii</i>	canyon clover	Very Common
<i>Trifolium hybridum</i>	alsike clover	Very Common
<i>Trifolium incarnatum</i>	crimson clover	Very Common
<i>Trifolium jokerstii</i>	Jim's clover	Very Common
<i>Trifolium kingii</i>		Very Common
<i>Trifolium lemmonii</i>	Lemmon's clover	Very Common
<i>Trifolium longipes</i>	Elmer's clover	Very Common
<i>Trifolium longipes</i>	Hansen's clover	Very Common
<i>Trifolium longipes</i>	longstalk clover	Very Common
<i>Trifolium longipes</i>	Oregon clover	Very Common
<i>Trifolium macilentum</i>		Very Common
<i>Trifolium macraei</i>	Chilean clover	Very Common
<i>Trifolium macrocephalum</i>	largehead clover	Very Common
<i>Trifolium microcephalum</i>	smallhead clover	Very Common
<i>Trifolium microdon</i>	thimble clover	Very Common
<i>Trifolium minutissimum</i>	dwarf clover	Very Common
<i>Trifolium monanthum</i>	mountain carpet clover	Very Common
<i>Trifolium mucronatum</i>		Very Common
<i>Trifolium obtusiflorum</i>	clammy clover	Very Common
<i>Trifolium oliganthum</i>	fewflower clover	Very Common
<i>Trifolium olivaceum</i>	olive clover	Very Common
<i>Trifolium polyodon</i>		Very Common
<i>Trifolium pratense</i>	red clover	Very Common
<i>Trifolium productum</i>	Shasta clover	Very Common
<i>Trifolium repens</i>	white clover	Very Common
<i>Trifolium resupinatum</i>	reversed clover	Very Common
<i>Trifolium retusum</i>	teasel clover	Very Common
<i>Trifolium siskiyouense</i>	Siskiyou clover	Very Common
<i>Trifolium spp.</i>	clover	Very Common
<i>Trifolium stellatum</i>	star clover	Very Common
<i>Trifolium striatum</i>	knotted clover	Very Common
<i>Trifolium subterraneum</i>	subterranean clover	Very Common
<i>Trifolium tomentosum</i>	woolly clover	Very Common
<i>Trifolium trichocalyx</i>	Monterey clover	Very Common
<i>Trifolium variegatum</i>	whitetip clover	Very Common
<i>Trifolium vesiculosum</i>	arrowleaf clover	Very Common
<i>Trifolium willdenovii</i>		Very Common
<i>Trifolium willdenovii</i>	tomcat clover	Very Common
<i>Trifolium wormskioldii</i>	cows clover	Very Common
<i>Triglochin</i>	arrowgrass	Occasional
<i>Triglochin concinna</i>	slender arrowgrass	Occasional
<i>Triglochin maritima</i>	seaside arrowgrass	Occasional
<i>Triglochin palustris</i>	marsh arrowgrass	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Triglochin spp.	arrow grass	Occasional
Triglochin striata	three-rib arrowgrass	Occasional
Ulex	gorse	Very Common
Ulex europaeus	common gorse	Very Common
Ulex spp.	furze, gorse, whin	Very Common
Ulma spp.		
Umbellularia	California laurel	
Umbellularia californica	California Bay Laurel	
Umbellularia californica	California Bay Laurel	
Urtica	nettle	Common
Urtica dioica	California nettle	Common
Urtica dioica	stinging nettle	Common
Urtica spp.	nettles, stinging nettles	Common
Urtica urens	dwarf nettle	Common
Vaccinium	blueberry	Common
Vaccinium caespitosum	dwarf bilberry	Common
Vaccinium cespitosum		Common
Vaccinium deliciosum	Cascade bilberry	Common
Vaccinium macrocarpon	cranberry	Common
Vaccinium membranaceum	thinleaf huckleberry	Common
Vaccinium ovatum	California huckleberry	Common
Vaccinium parvifolium	red huckleberry	Common
Vaccinium scoparium	grouse whortleberry	Common
Vaccinium spp.	Blueberry	Common
Vaccinium uliginosum	bog blueberry	Common
Verbena	vervain	Occasional
Verbena x clemensiorum	Amador County vervain	Occasional
Verbena abramsii	San Bernardino vervain	Occasional
Verbena bonariensis	purpletop vervain	Occasional
Verbena bracteata	bigbract verbena	Occasional
Verbena brasiliensis	Brazilian vervain	Occasional
Verbena californica	Red Hills vervain	Occasional
Verbena canescens	gray vervain	Occasional
Verbena hastata	swamp verbena	Occasional
Verbena lasiostachys	western vervain	Occasional
Verbena litoralis	seashore vervain	Occasional
Verbena menthifolia	mint vervain	Occasional
Verbena neomexicana	hillside vervain	Occasional
Verbena officinalis	herb of the cross	Occasional
Verbena rigida	tuberous vervain	Occasional
Verbena robusta		Occasional
Verbena scabra	sandpaper vervain	Occasional
Verbena spp.	verbena, vervain	Occasional
Veronica	speedwell	Occasional
Veronica americana	American speedwell	Occasional
Veronica anagallis-aquatica	water speedwell	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Veronica arvensis	corn speedwell	Occasional
Veronica beccabunga	European speedwell	Occasional
Veronica catenata		Occasional
Veronica chamaedrys	germander speedwell	Occasional
Veronica copelandii	Copeland's speedwell	Occasional
Veronica cusickii	Cusick's speedwell	Occasional
Veronica filiformis	threadstalk speedwell	Occasional
Veronica hederifolia	ivyleaf speedwell	Occasional
Veronica officinalis	common gypsyweed	Occasional
Veronica peregrina	hairy purslane speedwell	Occasional
Veronica peregrina	neckweed	Occasional
Veronica persica	birdeye speedwell	Occasional
Veronica scutellata	skullcap speedwell	Occasional
Veronica serpyllifolia	brightblue speedwell	Occasional
Veronica serpyllifolia	thymeleaf speedwell	Occasional
Veronica spp.	brooklime, speedwell	Occasional
Veronica triphyllos	finger speedwell	Occasional
Veronica wormskjoldii	American alpine speedwell	Occasional
Viburnum	viburnum	Occasional
Viburnum ellipticum	common viburnum	Occasional
Viburnum spp.	Arrowwoods	Occasional
Viburnum tinus	Viburnum	Occasional
Vicia	vetch	Primary
Vicia disperma	European vetch	Primary
Vicia americana	American vetch	Primary
Vicia articulata	oneflower vetch	Primary
Vicia benghalensis	reddish tufted vetch	Primary
Vicia bithynica	Bithynian vetch	Primary
Vicia cracca	bird vetch	Primary
Vicia faba	horsebean	Primary
Vicia hassei	Hasse's vetch	Primary
Vicia hirsuta	tiny vetch	Primary
Vicia lathyroides	spring vetch	Primary
Vicia ludoviciana	Louisiana vetch	Primary
Vicia lutea	smooth yellow vetch	Primary
Vicia nigricans	black vetch	Primary
Vicia nigricans	giant vetch	Primary
Vicia pannonica	Hungarian vetch	Primary
Vicia sativa	garden vetch	Primary
Vicia spp.	broad bean, tare, vetch	Primary
Vicia tetrasperma	lentil vetch	Primary
Vicia villosa	winter vetch	Primary
Vinca	Periwinkle	Occasional
Vinca major	bigleaf periwinkle	Occasional
Vinca minor	Vinca	Occasional
Vinca spp.	Periwinkles	Occasional

Genus Species	Common Name	Genus Match Host Prevalence
Viola	Violet	Occasional
Viola adunca	hookedspur violet	Occasional
Viola adunca	Kirk's violet	Occasional
Viola arvensis	European field pansy	Occasional
Viola aurea	golden violet	Occasional
Viola bakeri	Baker's violet	Occasional
Viola beckwithii	Beckwith's violet	Occasional
Viola beckwithii	western pansy	Occasional
Viola californica	California violet	Occasional
Viola canadensis		Occasional
Viola cuneata	wedgeleaf violet	Occasional
Viola douglasii	Douglas' golden violet	Occasional
Viola epipsila	dwarf marsh violet	Occasional
Viola epipsila	dwarf marsh violet	Occasional
Viola glabella	pioneer violet	Occasional
Viola hallii	Oregon violet	Occasional
Viola howellii		Occasional
Viola lanceolata	bog white violet	Occasional
Viola langsдорфii	Aleutian violet	Occasional
Viola lobata	pine violet	Occasional
Viola macloskeyi	small white violet	Occasional
Viola macloskeyi	smooth white violet	Occasional
Viola nephrophylla	northern bog violet	Occasional
Viola ocellata	pinto violet	Occasional
Viola odorata	sweet violet	Occasional
Viola palustris	marsh violet	Occasional
Viola palustris	marsh violet	Occasional
Viola pedunculata	Johnny-jump-up	Occasional
Viola pinetorum	goosefoot yellow violet	Occasional
Viola praemorsa	canary violet	Occasional
Viola praemorsa	upland yellow violet	Occasional
Viola psychodes	butterfly violet	Occasional
Viola purpurea	goosefoot violet	Occasional
Viola sempervirens	evergreen violet	Occasional
Viola sheltonii	Shelton's violet	Occasional
Viola sororia		Occasional
Viola spp.		Occasional
Viola tomentosa	feltleaf violet	Occasional
Viola tricolor	johnny jumpup	Occasional
Viola vallicola	sagebrush violet	Occasional
Viola vallicola	valley violet	Occasional
Vitis	grape	Very Common
Vitis aestivalis	summer grape	Very Common
Vitis aestivalis	summer grape	Very Common
Vitis californica	California wild grape	Very Common
Vitis girdiana	desert wild grape	Very Common

Appendix A, continued.

Genus Species	Common Name	Genus Match Host Prevalence
Vitis rupestris	sand grape	Very Common
Vitis spp.	grape	Very Common
Vitis vinifera	wine grape	Very Common
Weigela spp.	weigela	Occasional
Weinmannia spp.	Kamahi	
Wikstroemia spp.	Mou'a, Oahu false Ohelo	Common
Wilkesia spp.		
Wisteria spp.	Wisteria	Very Common
Zea	Corn	Occasional
Zea mays	Corn	Occasional
Zea spp.	corn, maize	Occasional
Zelkova serrata	Zelkova	
Zelkova spp.	Zelkova	
Zygocactus spp.		Occasional

Appendix B. Calco Red Environmental Assessment

Adult moths that are released into the environment will contain a marking agent known as Calco Red which is a dye that is incorporated into their larval diet during production at the rearing facility. This dye proposed for use in this program has been used extensively in the past for marking insects. The dye has been successfully used to mark Lepidopteran, Coleopteran, and Hymenopteran insects without adverse impacts to the insects being marked at concentrations used for rearing light brown apple moth (LBAM). Its use within the Lepidoptera order, which includes LBAM, has been extensive with published reports of its use in southwestern corn borer (Davis, 1973), black cutworm (Showers et al., 1989), painted apple moth in New Zealand (Stephens et al., 2008), codling moth (Knight, 2000), and pink boll worm (Graham and Mangum, 1971), among others, without significant effects on the marked insects.

Moths released into the area are expected to live approximately 2 weeks. Release of the maximum number of moths per acre per week (1,400) for 27 weeks, continuously, results in a total release of dye into the environment ranging from approximately 0.26 to 0.52 gram of dye per acre during the field evaluation project.¹

Terrestrial Environment

Given the number of moths released into the environment and the low levels of Calco Red, invertebrate predators and detritivores are not likely to be exposed to levels that would cause a harmful effect. The most common predators for lepidoteran would be arthropods, such as spiders and predaceous bugs. The lack of effects to the marked insects would suggest that impacts to predaceous and detritivorous invertebrates would not be anticipated.

There is a potential for vertebrate insectivores to be exposed to SIT-released LBAM while foraging at night when LBAM will be most active. The acute toxicity data regarding effects to vertebrate insectivores (e.g., small mammals and birds) is limited to mammalian data, and related dyes (which demonstrate oral acute median lethality toxicity values for most azo dyes) to range from 250 to greater than 2,000 mg/kg (DEPA, 1998). Assuming upper limit concentrations of the dye in moths, and that a insectivorous mammal, such as the shrew, would only feed on marked insects, they would have to consume several hundred times their daily food consumption rate to approach the lowest acute median lethality value. This is a conservative estimate of exposure because insectivores, such as the shrew, are general foragers and would feed on other invertebrates (i.e., earthworms, slugs), as well as vegetation and other material. The potential for exposure and risk which could result in significant impacts to vertebrate insectivore populations is not anticipated based on the available toxicity data, low residues of dye in individual moths, and the low probability that small mammals and birds will feed exclusively on marked LBAM.

¹ The maximum amount of Calco Red per moth is estimated to be .0132 mg.

Aquatic Resources

Several small ponds exist in the proposed treatment area, as well as Huichica Creek. Moth deposition into aquatic habitats is expected to be incidental and minor because the moths are not considered aquatic species and would only enter aquatic resources through accidental deposition from flying or being washed into aquatic water bodies after falling to the ground.

Assuming that all of the dye from 1,400 moths per week per acre over a 27-week period is deposited instantaneously into a shallow body of water, it would result in concentrations in the part per trillion range. When compared to the lowest available acute fish median lethal toxicity value for similar dyes, which range from approximately 0.7 parts per million to greater than 100 parts per million, the toxicity values are greater than 1,000 times above the estimated concentration, suggesting minimal risk to fish (DEPA, 1998).

Estimated toxicity of related dyes to the freshwater cladoceran, *Daphnia magna*, and algae are also expected to be above levels of dye that could occur in aquatic habitats in this project (DEPA, 1998). In the field, dye concentrations would be a fraction of the above estimated level because a small percentage of moths would enter a body of water after an individual release, as opposed to all moths over a 27-week period being deposited instantaneously, and the dye would be contained in the moth or bound to other organic material. These types of dyes have low solubility and adsorb to organic material, and would also degrade in aquatic systems over the 27-week period further reducing the potential for water column residues. In addition, Calco Red is not expected to bioconcentrate based on estimated and measured values for related dyes (DEPA, 1998).

Impacts to aquatic invertebrate detritivores are not expected to occur based on the low number of moths which could enter aquatic resources, the lack of effects of Calco Red to terrestrial invertebrates, and the lack of toxicity of similar dyes to a water column aquatic invertebrate at environmentally relevant levels.