

Please find the most recent VSV Situation Report attached with summary information below, with current situation information as of **June 22nd, 2023**.

Additional information/reminders:

- An **updated focal map of VSV affected and quarantined premises** has been posted to the [CDFA VSV website](#) and will be updated at least weekly during the outbreak incursion

VSV Situation Report 6/22/2023 (See full report attached for maps and additional information)

Since the last situation report (6/15/2023), there have been **8 new VSV-affected equine premises identified (3 confirmed positive, 5 suspect) in California including a new infected county, Ventura County**. There have been no new VSV-affected cattle premises identified. There are currently six (6) counties affected in California (Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties) and one county currently affected in Texas (Maverick County). All confirmed cases have been vesicular stomatitis New Jersey virus (VSNJV) serotype.

Since the start of the outbreak, **104 VSV-affected premises have been identified (36 confirmed positive, 68 suspect) in 2 states, California and Texas**. One hundred one (101) of these premises have had only equine species clinically affected, two (2) premises have had clinically affected cattle (San Diego County, California), and one (1) premises has had clinically affected rhinoceros (San Diego County, California).

California has identified 103 affected premises (35 confirmed positive, 68 suspect) in 6 counties (Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties). Texas has identified 1 affected premises (1 confirmed positive) in 1 county (Maverick County, Texas).

Additional information and maps of the affected area are contained in the attached situation report. The situation report is posted publicly on the APHIS website and accessible at the following link: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/vsv/vesicular-stomatitis>

Please contact CDFA immediately if you have suspicion of a VS case. Contact information for each of CDFA's district offices is attached. As a reminder, clinical signs of VS include excessive salivation, vesicles (blister-like lesions), erosions or ulcerations around the mouth, tongue, nostrils, teats, feet and coronary bands. As VS is **highly contagious** among susceptible species (primarily equids and cattle, but also camelids and small ruminants, and occasionally swine) as well as potentially **zoonotic**, we also want to ensure proper personal protective equipment and biosecurity measures are in place on your facilities.

Please notify your CDFA district office immediately if you or your personnel identify animals with consistent lesions.

Vector mitigation (specifically black fly and sand fly control) is critical in containing a potential VS outbreak. Please ensure adequate fly protective measures are in place on your facilities; such as insecticide use on animals and around facilities, manure management and reduction of fly breeding areas. Any suspect lesioned animals should be immediately isolated upon detection. As VS can also be transmitted via contaminated surfaces; extra precautions should be in place on dairies to avoid transmission of VS to other animals or personnel during milking.

Please reach out to your CDFA district office or myself for additional information on vector mitigation strategies, biosecurity recommendations and movement requirements. Please disseminate as widely as possible and discuss with your clients.

Respectfully;



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Vesicular Stomatitis Virus IN CATTLE

SYMPTOMS



1. Excessive Salivation
2. Lesions in the mouth & nose
3. Reduced appetite
4. Teat lesions or sloughing
5. Lesions around the feet and coronary band
6. Lameness



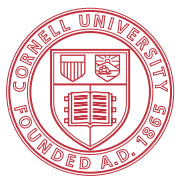
PREVENTION

1. Strict fly control in and around buildings
 - Manure management
 - Elimination of fly breeding areas
 - Appropriate insecticide use and application for cattle, milking parlors, and outdoor areas
2. Isolate suspect animals immediately and report

REPORT

Notify CDFA
immediately if you
have suspicion of
VSV.

Animal Health Branch
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Modesto District - (209) 491-9350
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Cornell University



Integrated Management of Flies in and around Dairy and Livestock Barns

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Introduction

In the past, management of flies in dairy and livestock barns often relied solely on insecticide use. But this single-tactic approach can aggravate fly populations' resistance to insecticides and inadvertently destroy natural enemies of flies. Today successful farmers are combining careful use of pesticides with other integrated pest management (IPM) practices.

Figures 1 and 3 are from *Flies and Disease*, vol. 1, 1971, by Bernard Greenberg, published by Princeton University Press. Franticek Gregor, artist. Reprinted by permission.



Figure 1.



Figure 2.



Figure 3.



Figure 4.



Figure 5.



Figure 7.



Figure 8.



Figure 6.



Figure 9.

IPM seeks to maximize the effectiveness of pest control while conserving beneficial insects and minimizing pesticide use. The cornerstone of effective IPM is correct identification along with accurate and timely monitoring of pests. Other components are various combinations of cultural, biological, and chemical control practices designed to keep fly populations below economically injurious levels. This fact sheet provides information on fly biology, economic importance, identification, monitoring, and management.

Biology and Importance

The two principal fly pests of confined livestock are house flies and stable flies. House flies, *Musca domestica* (fig. 1), are non biting insects that breed in animal droppings, manure piles, decaying silage, spilled feed, bedding, and other organic matter. They can complete their life cycle from egg to adult (egg, larva, and pupa) in 10 days under ideal conditions in summer months. Each female lives 10 to 21 days and can produce 150 to 200 eggs, which she lays in batches at 3- to 4-day intervals. Although house flies may be of only minor direct annoyance to animals, they have considerable potential for transmitting diseases and parasites.

Severe housefly infestations may increase bacterial counts in milk, and state inspectors routinely note the presence of flies in milk rooms. An abundance of flies can also become a serious nuisance both around the farm (fig. 2) and in nearby communities. Demographic changes in the Northeast in recent years have brought neighbors close to many once isolated dairy and livestock farms. These new neighbors often put great pressure on farmers to keep house fly populations to a minimum.

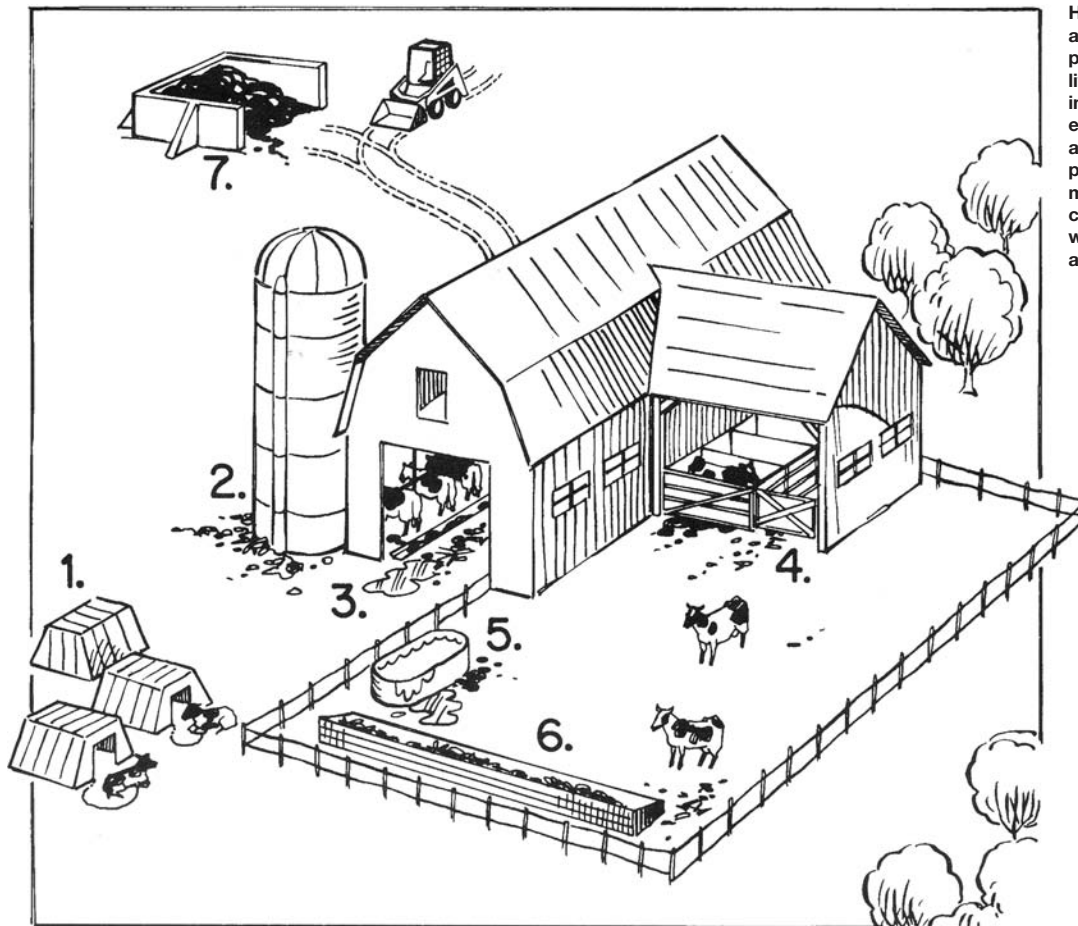
The stable fly, *Stomoxys calcitrans*, (fig. 3) is about the size of a house fly, but the adult has piercing mouthparts that protrude spearlike from under its head. Stable flies breed in wet straw and manure, spilled feeds, silage, grass clippings, and various other types of decaying vegetation. Stable flies take about 3 weeks (21 days) to develop through the egg, maggot, and pupal stages to become adults. The adult female fly lives about 20 to 30 days and lays 200 to 400 eggs.

Cattle are most irritated by these pests during the warm summer months. Both male and female stable flies feed on blood several times each day, taking one or two drops at each meal. Cows' stomping of feet is a good indication that stable flies are present because they normally attack legs and bellies (fig. 4). Production performance declines in infested herds because of the painful bites the cows sustain and the animals' fatigue from efforts to dislodge the flies.

Monitoring

House flies can be monitored using baited traps or spot cards. Baited traps are gallon plastic milk jugs in which four 2-inch holes have been cut in the upper part at the sides (fig. 5) to allow flies attracted to bait placed on the inside bottom of the jug to enter. The traps are suspended from rafters or other building supports with 18- to 24-inch-long wires. Spot cards are 3- by- 5-inch white tile cards that are attached to obvious fly resting surfaces (areas with large numbers of fly fecal and regurgitation spots) (fig 6)

The number of baited traps or spot cards required will vary according to the size of the barn, but there should be a minimum of five at equidistant locations throughout each animal



House and stable flies breed in areas where moist organic matter is present. Common fly breeding sites on livestock operations include locations in and around (1) calf hutches, especially inside corners; (2) silo leak and spill areas; (3) animal stalls and pens, feed preparation, storage and manger areas, near water sources; (4) calf, hospital, and maternity areas; (5) water tanks; (6) feed troughs; (7) inside and outside manure handling areas.

housing unit. These monitoring devices are left for 7 days. Then the number of flies collected in the traps or the number at fecal and vomit spots on the spot cards are counted.

Baited trap catches in excess at 250 flies per week or spot card counts of over 100 spots per card per week are considered high levels of fly activity. House flies in the Northeast are active from May through October; populations peak from mid-July through mid-September.

Stable flies are monitored by counting flies on all four legs of about 15 animals in the herd. An average of 10 flies per animal is considered a high level of fly activity.

Management

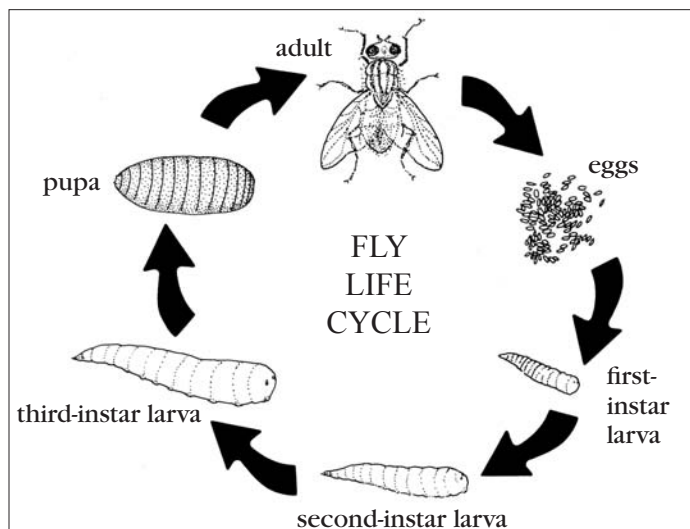
Cultural Control

A variety of cultural control practices can be used effectively to manage houseflies and stable flies.

- **Practice Sanitation.** The fly life cycle requires that immature flies (eggs, larvae, pupae) live in manure, moist hay, spilled silage, wet grain, or a similar environment for 10 to 21 days depending on temperature and fly species. Weekly removal and spreading of materials in which flies breed helps to break the fly's life cycle. Waste management is therefore the first line of defense in developing an effective fly management program. It is much easier and less costly to prevent a heavy fly buildup than to attempt to control large fly populations once they have become established.

The prime sources of flies in confinement areas are animal pens, especially those housing calves. The pack of manure and bedding under livestock should be cleaned out at least once a week. In free-stall barns the next most important fly breeding area is the stalls, which should be properly drained and designed to encourage complete manure removal. In stanchion barns, drops should be cleaned out daily. Wet feed remaining in the ends of the mangers, as well as green chop and other forage and feed accumulations around silos, are excellent locations for flies to breed and should be cleaned out at least weekly.

- **Use sticky tapes, paper, and ribbons.** Sticky ribbons, especially the giant ones, are very effective for managing small to moderate fly populations.
- **Maintain a fly-free zone in the milk room.** Installing and maintaining tightly closed screen doors and windows to the milk room can greatly reduce fly numbers in this sensitive area. Occasional flies that get in can be controlled with sticky tapes, light traps, or careful use of insecticides.



- **Prevent flies from emigrating from the facility.** Certain management practices can help minimize the amount of favorable outdoor fly breeding sites. Spreading manure and bedding as thinly as possible will help ensure that it dries out quickly. It should also be disked under to help kill fly larvae and pupae that may be present, especially under cool or overcast weather conditions, which slow the manure drying process. Drainage problems that allow manure to mix with mud and accumulate along fence lines in exercise yards should be eliminated. Gaps under feed bunks where moist feed can accumulate should be sealed.

Biological Control

Flies have natural enemies that are commonly present in dairy and livestock barns. Beetles (fig. 7) and mites (fig. 8) devour fly eggs and larvae. Fly pupae are attacked by small parasitoids (fig 9). Unnoticed and unaided by us, these natural biocontrol agents can take a heavy toll on the fly population.

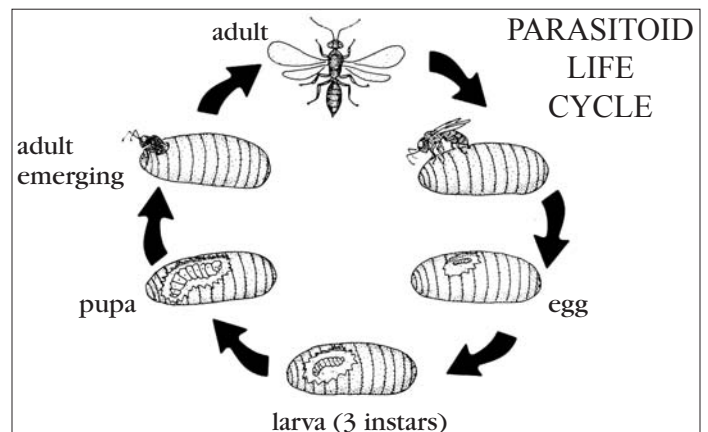
Parasitoids are among the most important of these natural biocontrol agents. Some species perform better in different climates, and some prefer different kinds of manure and other fly breeding materials. The species that is best adapted to farms in the Northeast is *Muscidifurax raptor*, which attacks fly pupae (fig. 9) inside barns as well as outside and is the main naturally occurring parasitoid on our farms.

Parasitoids are like "smart bombs"-they live only to find and kill fly pupae. Although the female parasitoid has a stinger, the only purpose she can use it for is to kill flies. When she finds a fly pupa, she stings and feeds on it. This kills the fly. She then uses her stinger to lay an egg inside the pupa. The egg hatches, and the parasitoid larva feeds on the dead fly. The young adult parasitoid then chews its way out of the fly's pupal case and searches for new pupae to kill. Development from egg to adult parasitoid is completed in about 3 weeks.

Evolution has led to a natural balance in which the parasitoid and the fly coexist. If we think of them as competitors in a race that happens each summer, the fly has certain advantages that help it to win unless we intercede. For example, the fly develops twice as fast from egg to adult, lives longer, and lays more eggs than *Muscidifurax raptor* parasitoids. As fly populations begin to grow in late May and early June, the parasitoid populations lag behind.

The parasitoid also lags behind the fly in developing resistance to insecticides. Many insecticide treatments for flies therefore have the undesirable side effect of killing large numbers of parasitoids. Each subsequent insecticide treatment

Life cycle drawings are from R. C. Axtell, *Fly Control in Confined Livestock and Poultry Production*, Technical Monograph, Ciba-Geigy Corporation, Greensboro, North Carolina, 1986. Reprinted by permission.



kills more beneficial insects and creates conditions that require repetitive treatments to keep flies in check.

Parasitoid populations can be conserved by using insecticides that are compatible with these important biocontrol agents. Baits and pyrethrin space sprays are good examples of compatible insecticides. Residual premise sprays are highly toxic to parasitoids and should be used only as a last resort.

Parasitoid Releases

Along with conserving natural enemies, it is possible to go one step further and release parasitoids to “jump-start” their population growth in the early summer. Such releases can be effective in managing fly populations if certain conditions are met:

- Waste management is a must; parasitoid releases complement manure management but cannot replace it.
- When insecticidal treatment is necessary for supplemental fly control, only insecticides that are compatible with parasitoids (space sprays and baits) should be used.
- Parasitoids are sold as immature insects in killed fly pupae. Local suppliers ship the parasitoids in cheesecloth bags. If most fly breeding on the farm occurs inside the barn, these bags should be stapled to posts and rafters near areas where fly breeding is a problem. If calves are housed in hutches, at least a portion of the bags should be opened and about three heaping teaspoons of pupae (approximately 1,000) placed in each hutch weekly.
- Many companies that sell parasitoids advertise their products in farm magazines, but not all of them sell the right species or provide parasitoids that are adapted for the northeastern climate. *Muscidifurax raptor* is the species recommended for use in the Northeast. *Nasonia* parasitoids are inexpensive but are inappropriate for use in dairies.
- Parasitoid releases should be started early, preferably in middle to late May, and continue weekly until the middle of August.
- How many parasitoids should be released? Weekly releases of either 200 parasitoids per milking cow or 1,000 parasitoids per calf have proven effective in research trials. But every farm is different, and release rates and schedules may require adjustment to achieve a level that is both effective and affordable for an individual farm.

- How cost effective are released parasitoids? Prices vary, but the average is about \$13 per batch of 10,000 parasitoids plus shipping charges. At a release rate of 200 per cow (= 26 cents) per week, total costs for the summer are between \$2,60 and \$4.70 per cow, depending on how long the releases are sustained.

In research trials, the cost of releasing parasitoids has been more than offset by reductions in insecticide treatments. On average, dairy farmers who use biocontrol in fly IPM programs make 80 percent fewer insecticide treatments than farmers who rely solely on insecticides for fly control. In addition, fly populations on IPM farms are about 50 percent lower than on conventionally managed farms. It is important to understand, however, that no single fly management strategy such as parasitoid releases alone will provide long-term control.

Chemical Control

Insecticides can play an important role in integrated fly management programs. Chemical control options include space sprays, baits, larvicides, residual premise sprays, and whole-animal sprays.

Space sprays provide a quick knockdown of adult flies in an enclosed air space. Because space sprays have very little residual activity, fly populations in the Northeast are still relatively susceptible to them. Baits are also very useful for managing moderate fly populations. Space sprays and baits are compatible with fly parasitoids.

Several insecticides are labeled for use as larvicides, either for direct treatment of manure or in controlled-release formulations. Direct application of insecticides to manure and bedding should be avoided in general because of harmful effects on the natural enemies of flies. The only exception is occasional spot treatment of breeding sites that are heavily infested with fly larvae. Controlled-release larviciding options include boluses and feed additives that result in the insecticide's being excreted with animal feces.

Treatment of building surfaces with residual sprays has been one of the most popular fly control strategies over the years. Unfortunately, however, flies have developed a high resistance to these materials. They should be used only as a last resort to control fly outbreaks that cannot be managed with other techniques.

Whole-animal sprays can be made directly on the animals. Although this approach can provide the animals with needed relief from stable fly bites, the control is short-lived.

Warning. Always read product labels carefully before applying any insecticide. Mix and apply as directed. Do not overdose. Do not treat too often, and follow all precautions exactly. Remember that improper practices can produce illegal residues even when correct materials are used. It is illegal to use an insecticide in any manner inconsistent with the label.

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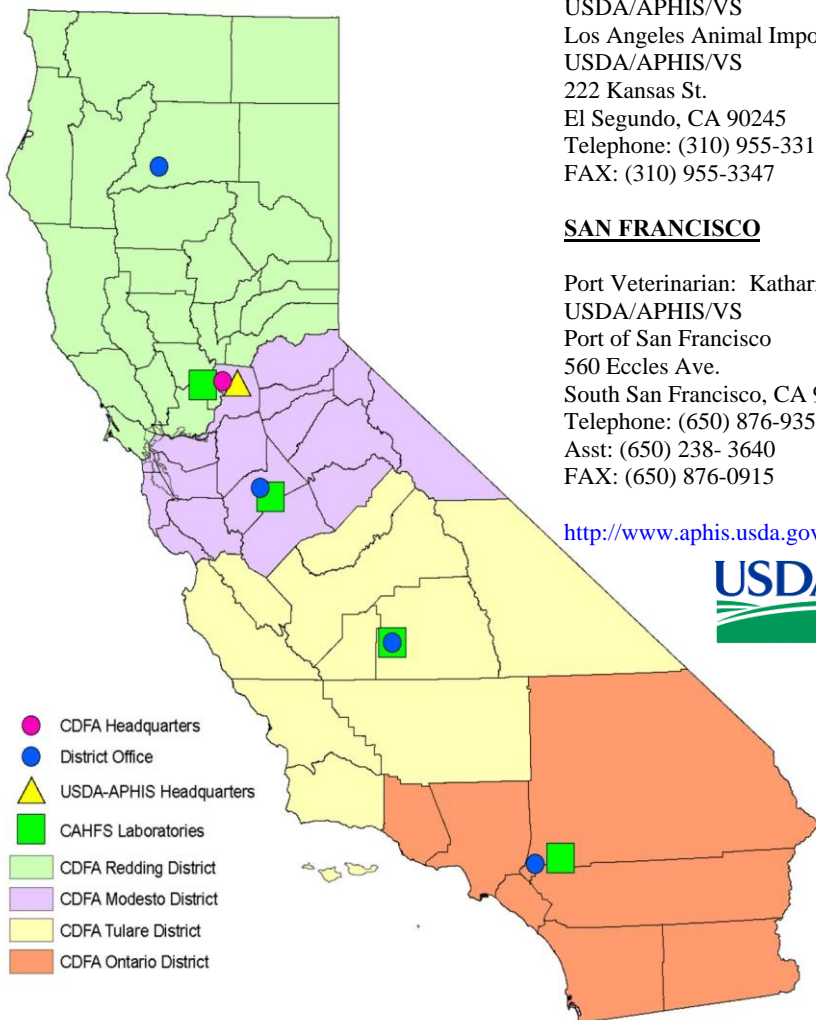
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**Animal Health & Food Safety Services
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2023 Vesicular Stomatitis Virus (VSV) Situation Report – June 22, 2023

Information current as of 4:00 pm MDT, 06/21/2023

Since the last situation report (6/15/2023), there have been **8 new VSV-affected equine premises identified (3 confirmed positive, 5 suspect) in California including a new infected county, Ventura County**. There are six counties currently affected in California (Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties) and one county currently affected in Texas (Maverick County). All confirmed cases have been vesicular stomatitis New Jersey virus (VSNJV) serotype. Updates are as follows:

California

- Riverside County – 1 new confirmed positive and 3 new suspect equine premises
- San Diego County – 1 new confirmed positive premises and 2 new suspect equine premises
- **Ventura County (New Infected County)** – 1 confirmed positive equine premises
- Since the last situation report (6/15/2023), the following previously confirmed positive or suspect premises have been released from quarantine: 4 equine premises in Riverside County, 2 equine premises in San Bernardino County, and 1 equine premises in San Diego County.

Texas

- No new confirmed positive or suspect premises have been identified.

Classification of Cases

Premises that have laboratory diagnostic confirmation of VSV are categorized as confirmed positive premises. Once a county is confirmed as VSV-positive, new equine premises presenting with clinical signs of VSV in that county are not required to be tested for confirmation of the disease, but the premises will be quarantined and classified as a suspect premises.

Quarantines

Confirmed positive and suspect premises are quarantined for at least 14 days from the onset of lesions in the last affected animal on the premises.

Epidemiology and Disease Control

Vesicular stomatitis virus circulates annually between livestock and insect vectors in southern Mexico and only occasionally results in incursion to the U.S. when climatic and ecological factors support movement of VSV-infected insect vectors northward. Known competent vectors for transmission of VSV include black flies, sand flies, and biting midges (*Culicoides spp.*), but other insect vectors may also be involved. Susceptible species are primarily equids (horses, donkeys, mules) and cattle, but can also include camelids (llamas, alpacas), swine, sheep, and goats. Control measures on VSV suspect

and confirmed positive premises include quarantine of all susceptible species, isolation of lesioned animals, enhanced biosecurity, and vector mitigation measures to reduce within-herd spread.

Summary of the Outbreak (New information in blue)

The 2023 VSV outbreak began on May 17, 2023, when the National Veterinary Services Laboratories (NVSL) in Ames, Iowa, confirmed the first VSV-positive premises in San Diego County, California. Texas was subsequently confirmed VSV-positive by NVSL on June 15, 2023 (Maverick County, Texas).

Since the start of the outbreak, **104 VSV-affected premises have been identified (36 confirmed positive, 68 suspect) in 2 states, California and Texas. One hundred one (101)** of these premises have had only equine species clinically affected, two (2) premises have had clinically affected cattle (San Diego County, California), and one (1) premises has had clinically affected rhinoceros (San Diego County, California).

California has identified **103** affected premises (**35** confirmed positive, **68** suspect) in **6** counties (Los Angeles, Orange, Riverside, San Bernardino, San Diego, and **Ventura** Counties). Texas has identified 1 affected premises (1 confirmed positive) in 1 county (Maverick County, Texas).

Of the **104** total VSV-affected premises, **35** premises have completed the quarantine period with no new clinical cases and have been released from quarantine. **Sixty-nine (69)** premises remain quarantined.

Summary and Status of VSV-Affected Premises

Table 1. Location, number, and status of VSV-affected premises. **New information in blue.**

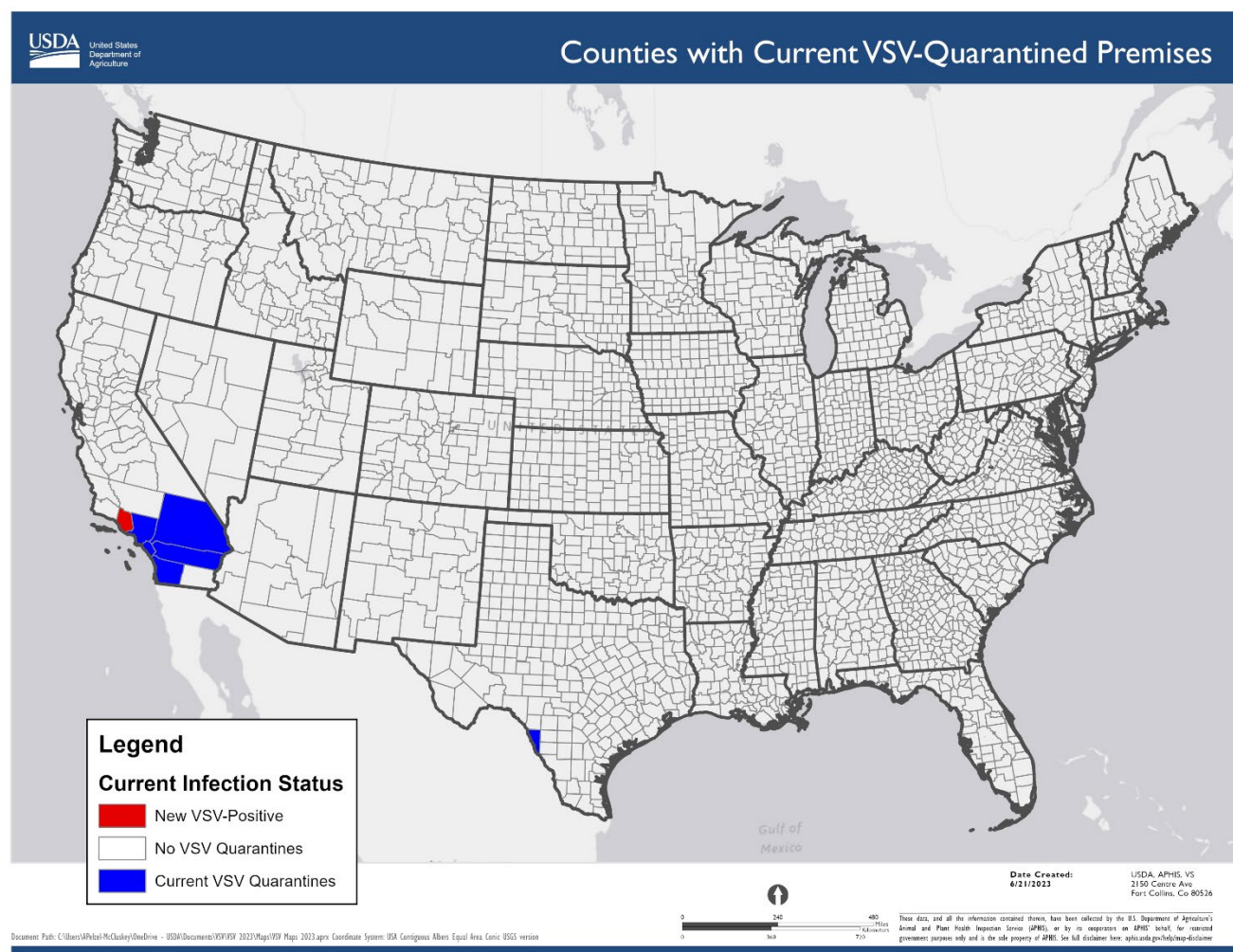
CALIFORNIA	Confirmed Positive Premises	Suspect Premises	Premises Released from Quarantine	Current Premises Quarantined
Los Angeles County	1	0	0	1
Orange County	1	0	0	1
Riverside County	5	27	13	19
San Bernardino County	3	2	2	3
San Diego County	24	39	20	43
Ventura County	1	0	0	1
TOTAL: 6 COUNTIES	35	68	35	68
TEXAS				
Maverick County	1	0	0	1
TOTAL: 1 COUNTY	1	0	0	1
TOTAL PREMISES ALL STATES	36	68	35	69

Table 2. Cumulative count of species clinically affected on VSV-quarantined premises. [New information in blue.](#)

State	Premises with clinically affected equine species	Premises with clinically affected bovine species	Premises with clinical signs in both equine and bovine species	Premises with clinical signs in other susceptible species	Total affected premises
CALIFORNIA	100	2	0	1*	103
TEXAS	1	0	0	0	1
TOTAL	101	2	0	1	104

*wildlife park premises with clinically affected and confirmed VSV-positive rhinoceros

Map 1 (Current). Counties with Current VSV-Quarantined Premises



Map 2 (Cumulative). Counties with Premises Quarantined for VSV in 2023

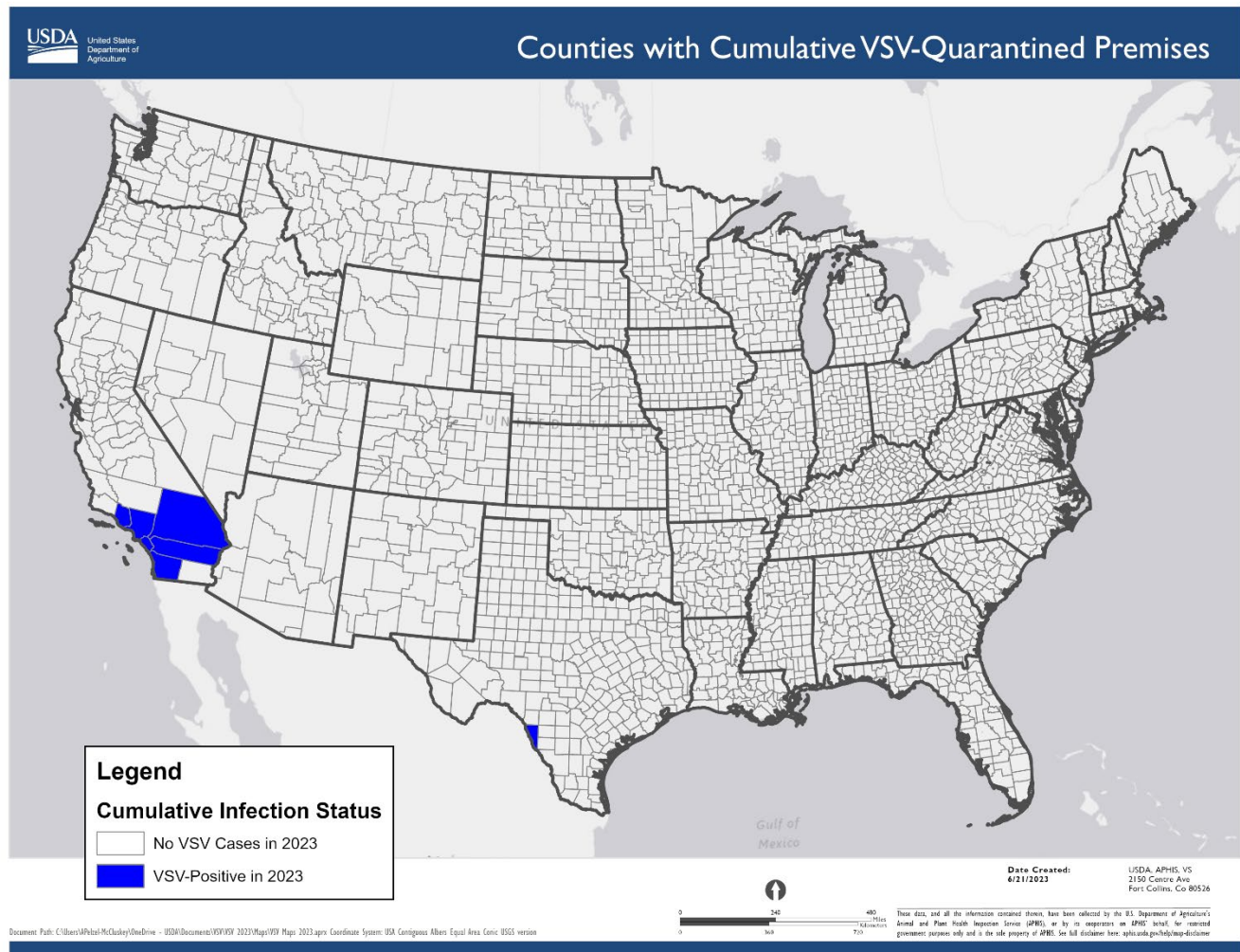


Table 3. Timeline of Events

Date	Event
May 17, 2023	VSV index case for the U.S. confirmed at NVSL – San Diego County, California.
May 19, 2023	New affected county confirmed – Riverside County, California
June 1, 2023	New affected county confirmed – San Bernardino County, California
June 5, 2023	New affected county confirmed – Orange County, California
June 8, 2023	New affected county confirmed – Los Angeles County, California
June 15, 2023	VSV index case for Texas confirmed at NVSL – Maverick County, Texas
June 21, 2023	New affected county confirmed – Ventura County, California