

Vesicular Stomatitis Virus (VSV) in the United States



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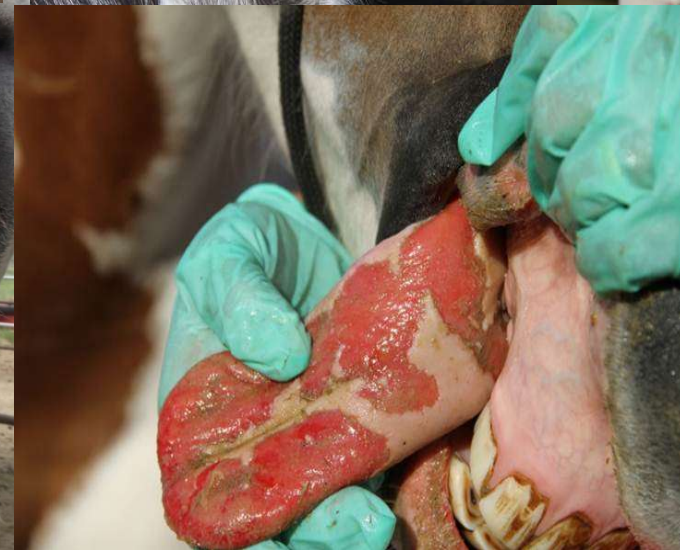
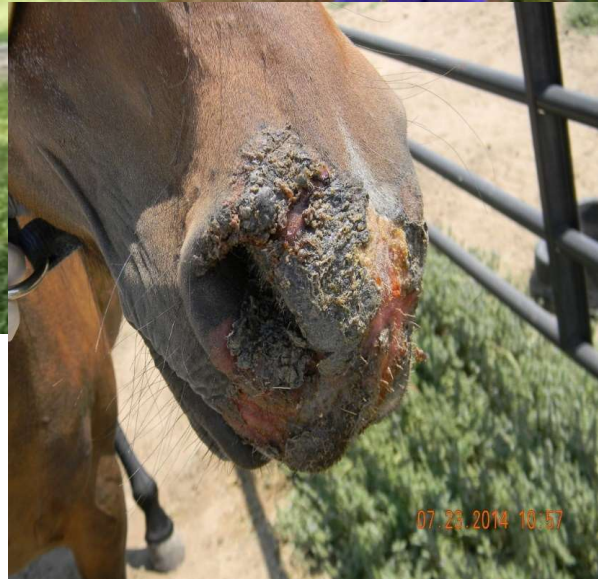
Fort Collins, Colorado

Vesicular Stomatitis Virus (VSV)

- *Vesiculovirus* transmitted by biting flies; disease of the Americas
- Two serotypes: VSV-New Jersey and VSV-Indiana-1
- Primarily affects horses, cattle, and occasionally swine but other susceptible species include sheep, goats, camelids, wildlife and humans
- Outbreaks occur sporadically in the U.S. in cycles of 2-10 years
- Historically, reported throughout the U.S. since the early 1900's
- Since the 1980's, outbreaks have primarily occurred in the southwestern and Rocky Mountain region of the U.S.
- Usually appears during the summer months and cases tend to cluster along river drainages and moving waterways (including irrigation canals)
- Known vectors: black flies, sand flies, biting midges (*Culicoides* spp.)

VSV Clinical Presentation

- Vesicles (blisters) typically occur on the lips, muzzle, tongue, ears, teats, sheath, and/or coronary bands
- Hypersalivation, anorexia, and weight loss secondary to oral lesions
- Lameness with coronary band lesions
- Virus is present in the lesions -- transmission by direct contact between animals also occurs and transmission by fomites – shared water troughs, buckets, feeders, equipment
- Self-limiting infection – no animal to animal spread once lesions healed
- Zoonotic disease – transmissible from animals to humans by direct contact with lesions; fever, extreme fatigue and myalgia of 3-5 day duration
- Reportable disease to state and federal animal health officials



Year	# States Affected	States	VSV Serotype	# Infected Premises
2004	3	CO, NM, TX	VSV-NJ	294
2005	9	AZ, CO, ID, MT, NE, NM, TX, UT, WY	VSV-NJ	445
2006	1	WY	VSV-NJ	13
2009	2	NM, TX	VSV-NJ	5
2010	1	AZ	VSV-NJ	2
2012	2	CO, NM	VSV-NJ	36
2014	4	AZ, CO, NE, TX	VSV-NJ	435
2015	8	AZ, CO, NE, NM, SD, TX, UT, WY	VSV-NJ	823
2019	8	CO, KS, NE, NM, OK, TX, UT, WY	VSV-IN	1,144
2020	8	AZ, AR, KS, MO, NE, NM, OK, TX	VSV-IN, VSV-NJ (TX)	326

Outbreaks of VSV in Recent History

Origin of US Outbreaks



Vesicular Stomatitis Epidemiology

- VSV **circulates year-round in southern Mexico**; only occasionally moves north (climatic factors that favor vector populations)
- Natural movement of infected vectors tends to **follow waterways** (black fly hatch)
- **# infected vectors increases by co-feeding**; venereal transmission in *Culicoides* (new finding)
- Infected black flies transmit virus to their eggs (overwintering event)
- While up to 70% of the herd on an affected premises will have titers indicative of exposure, only 10% or less of the herd will develop lesions
- Lesion formation depends on where the vector bites the animal
- Exposed animals maintain **titers for years** (cELISA and VN); titers are not protective

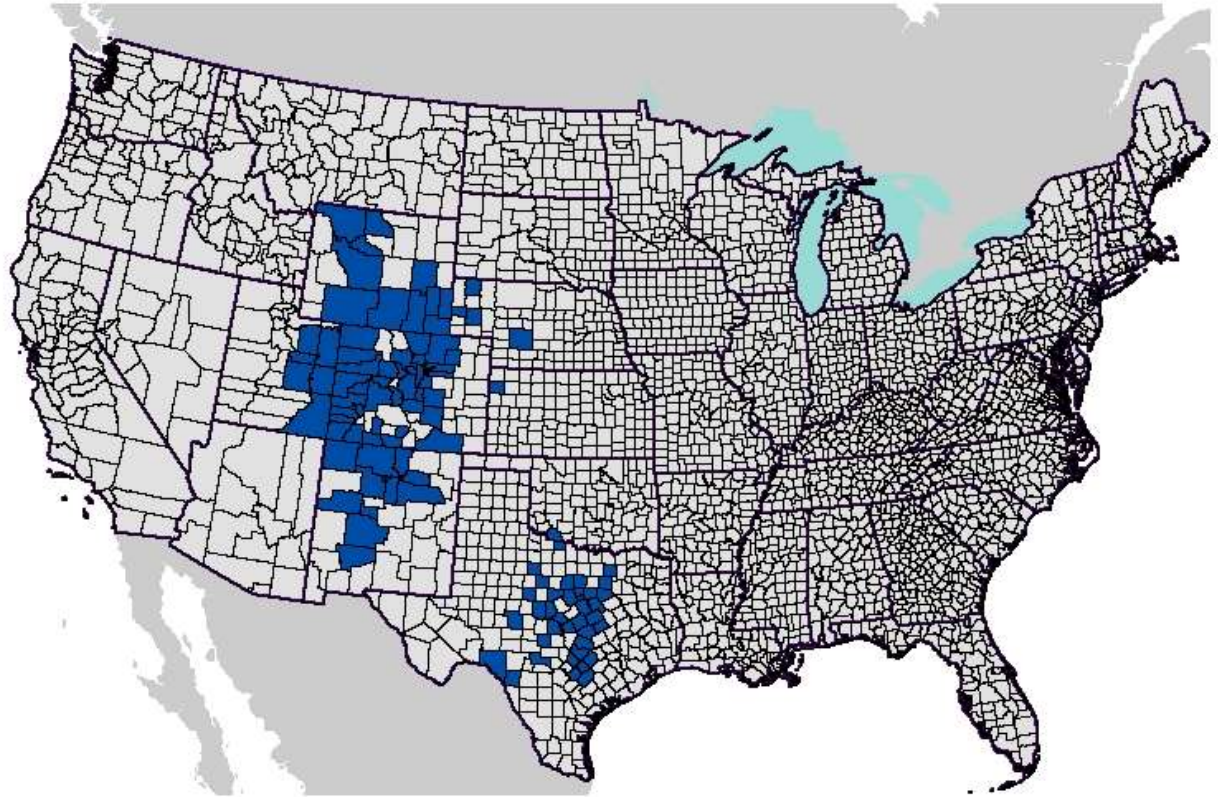
- Diagnosis by compatible clinical signs and confirmation on diagnostic testing (cELISA, CFT, PCR, VI)
- All confirmed and suspect cases = premises quarantine (all susceptible species). Quarantine minimum of 14 days from the onset of lesions in the last affected animal on the premises.
- Isolation of lesioned animals and aggressive vector mitigation on the premises
- Weekly situation reports posted to the APHIS-VS website
- <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/vsv/vesicular-stomatitis>

Current Response Procedures:

- Diagnosis
- Quarantine
- Vector Mitigation

2019 VSV Outbreak

- Began June 21, 2019
- VSV-Indiana (first incursion since 1998)
- **1,144 Quarantined Premises in 8 States**
 - 1,128 premises with equine lesioned
 - 15 premises with cattle lesioned
 - 1 premises with both equine and cattle lesioned
- Last quarantine released December 27, 2019





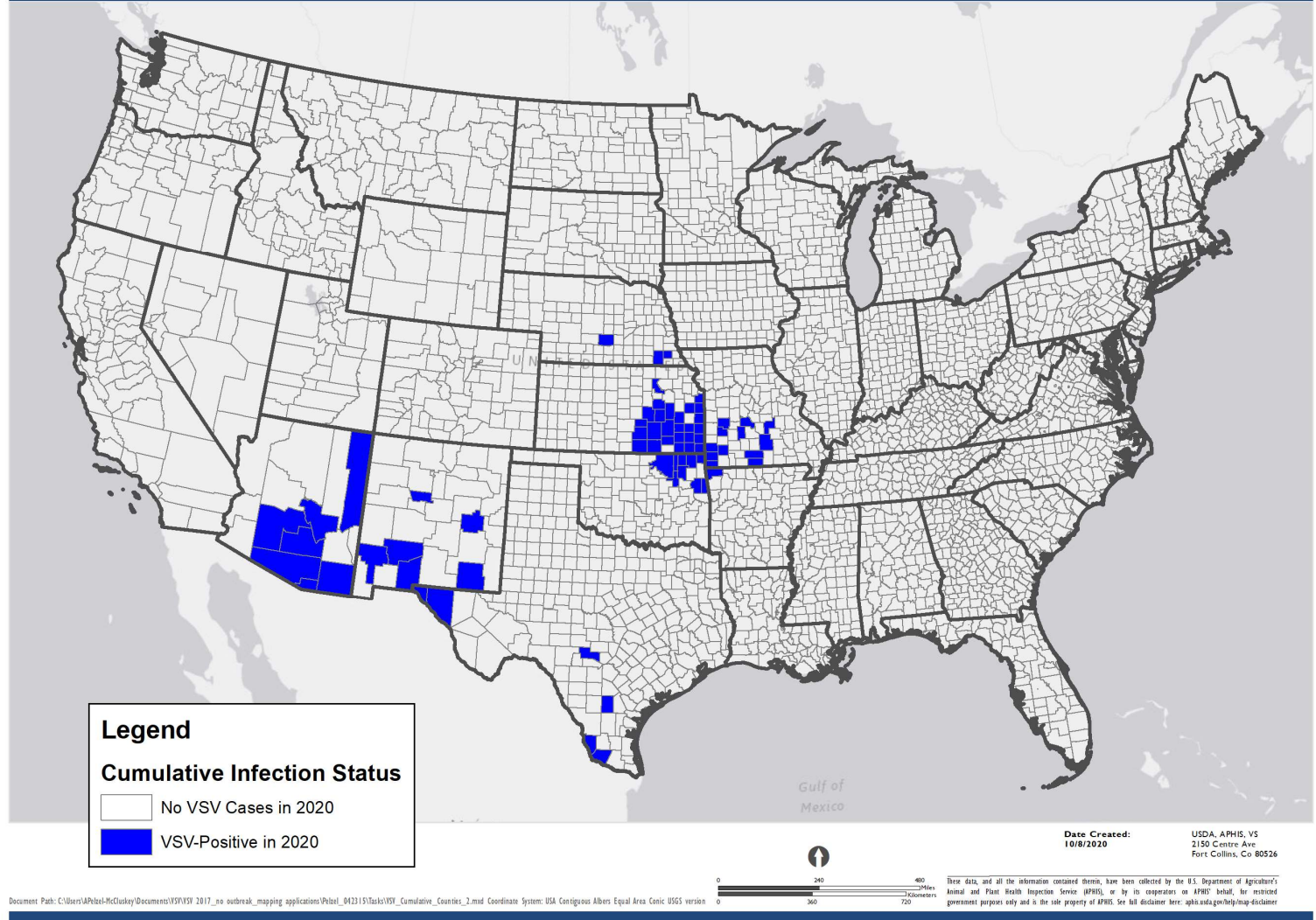
United States Department of Agriculture



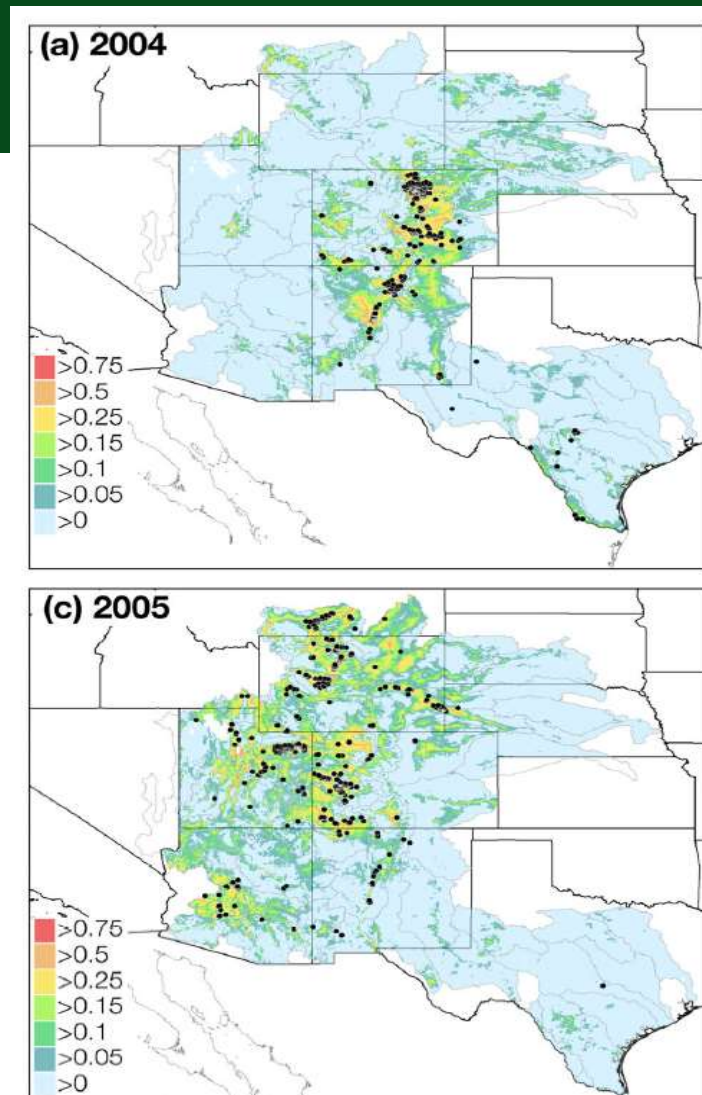
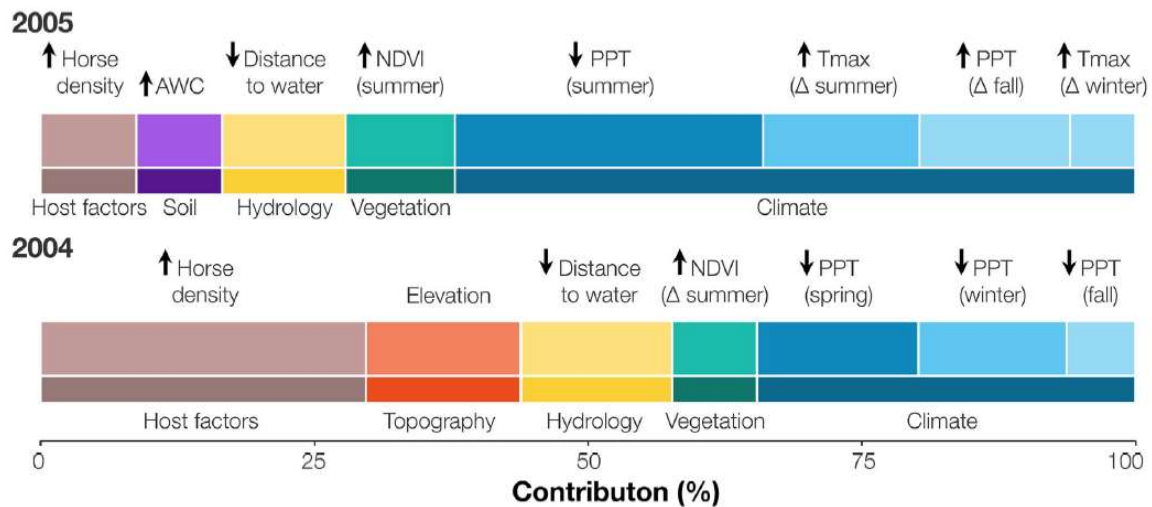
Counties with Cumulative VSV-Quarantined Premises

2020 VSV Outbreak

- April-Oct 2020
- 326 affected premises in 8 states (313 equine premises)
- Overwintered virus from 2019



VSV Incursion Years vs. Expansion Years



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Review

Review of Vesicular Stomatitis in the United States with Focus on 2019 and 2020 Outbreaks

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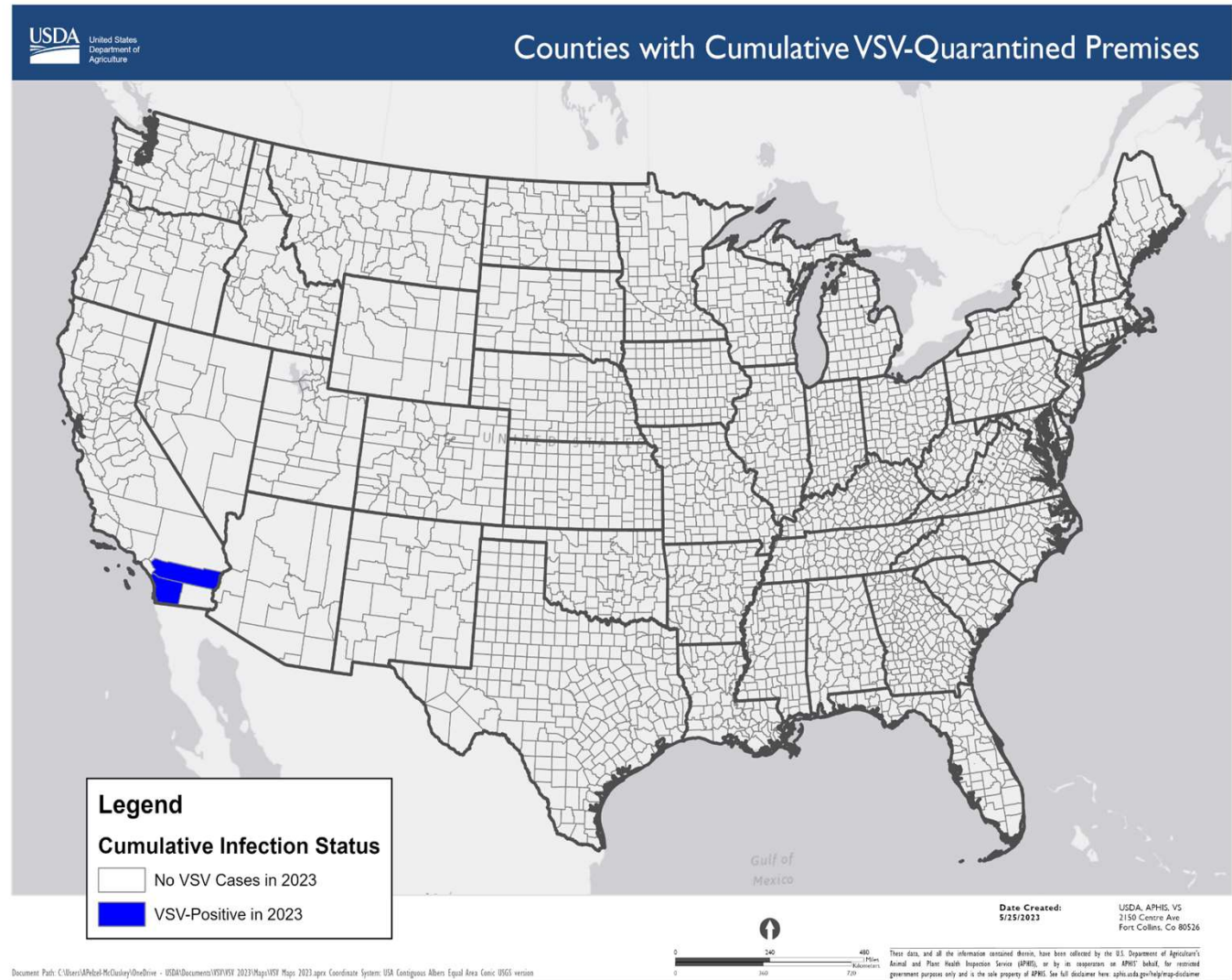
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2023 Current VSV Situation

- New incursion of VSV-NJ confirmed May 17th
- 26 affected premises (25 equine prems)
- San Diego and Riverside Counties, California





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