

Understanding the Impact of Rabbit Hemorrhagic Disease

Rabbit Hemorrhagic Disease (RHD) is a severe viral infection impacting both domestic and wild rabbit species, leading to rapid mortality within a short infection period. Mortality can become evident within 12–36 hours after the onset of fever (temperature exceeding 104°F). The causal agents of this disease are caliciviruses classified within the *Lagovirus* genus. There are three pathogenic groups of the virus: RHDV (known as the classic), which primarily affects animals older than 6–8 weeks (Asin et al., 2022); RHDV1, a subtype of the classic; and RHDV2, which affects rabbits at any age.

Clinical Presentation: Signs and Symptoms

RHD can manifest in three distinct clinical courses:

Peracute: Symptoms are manifested with sudden death and typically lacks noticeable clinical signs.

Acute: Rabbits with RHD exhibit anorexia, apathy, congestion of the palpebral conjunctiva, and neurological symptoms such as opisthotonos (backward arching of the head and spine), excitement, paralysis, and ataxia, blood in feces, and icteric skin coloration. Additional respiratory symptoms include tracheitis, dyspnea, and cyanosis, along with a foamy and bloody nasal discharge can be observed. This form also results in high mortality.

Subacute: Rabbits exhibit similar symptoms of the acute form, albeit milder, contributing to a higher rate of survivability.

Necropsy Findings

Most of the time RHD only indications are abrupt fatalities and blood-streaked noses resulting from internal bleeding (USDA-APHIS, 2020). Rabbit Hemorrhagic Disease produces similar organ lesions. A distinctive feature is the prominent hepatic necrosis. Necropsies of afflicted animals unveil an enlarged liver with a yellow-grey hue, along with hemorrhaging in the lungs, heart, kidney, and spleen (Asin et al., 2022).

Virulence, Prevalence, and Impact on Herds: A Detailed Analysis

Rabbit Hemorrhagic Disease is highly contagious, spreading through both direct and indirect pathways. The main mode of transmission is direct contact with an infected animal (Mohamed et al., 2021). Additionally, the

carcasses of animals that have succumbed to RHD can be sources of contamination, with the virus surviving as long as three months (Henning et al., 2005). Contaminated feed, water, or any materials carrying the virus pose potential infection sources.

The year 2010 saw the emergence of a new, more lethal RHDV type 2, surpassing the classic type, and expanding its host range to include hare, jackrabbit, and cottontail rabbit species, impacting rabbits of any age (Rocha et al., 2017). While RHDV is not transmissible to humans, instances of cross-species transmission have been documented (Rocha et al., 2017).

Variability Across Regions and Age Groups

The first reported RHDV2 outbreak in North America took place in 2016 in Quebec, Canada (USDA-APHIS, 2020), after which the virus proceeded to disseminate throughout the U.S. Since then, RHDV2 has established a stable endemic presence in Western and southern states, with numerous instances of detection reported in both native wild and domestic rabbits since 2020; see Figures 1 and 2, (USDA-APHIS, 2020).

Economic Impact of RHDV: Challenges and Consequences

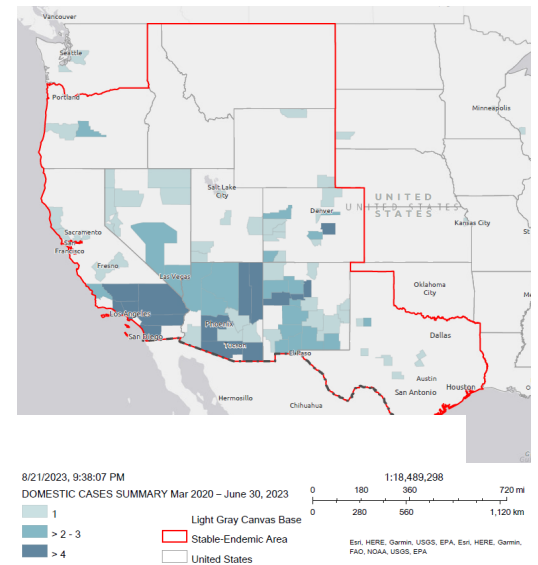
The July 2020 Emerging Risk Report from USDA-APHIS projected the U.S. rabbit industry at approximately \$2.2 billion, with around 80% attributed to pet supplies and care. The potential emergence of RHDV2 outbreaks carries the potential for severe repercussions across the rabbit industry.

Prevention

Rabbit owners should also protect their animals from RHDV2 by practicing good biosecurity, including:

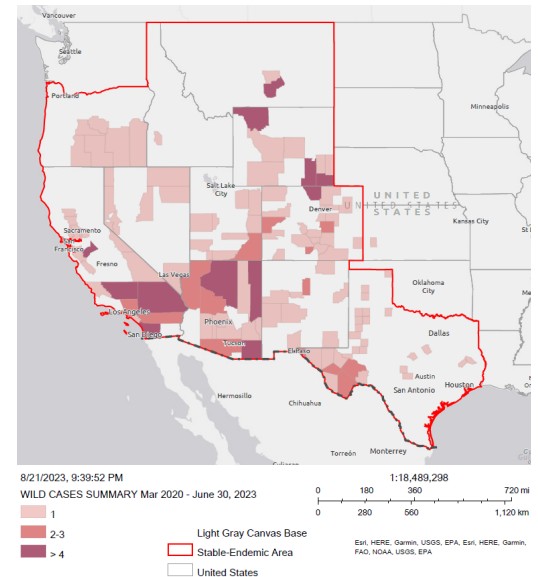
- Do not allow pet or wild rabbits to have contact with your rabbits or gain entry to the facility or home
- Do not allow visitors in or to handle rabbits without protective clothing
- Always wash hands before entering your rabbit area, after removing protective clothing and before leaving your rabbit area
- Do not introduce new rabbits from unknown or untrusted sources
- If you bring outside rabbits into your facility or home, keep them quarantined from other rabbits for at least

2020-June 2023 RHDV Domestic Cases



▲ Figure 1. RHDV Domestic Cases Summary March 2020-June 30, 2023. Source USDA Animal and Plant Health Inspection Services

2020-June 2023 RHDV Wild Cases



▲ Figure 2. RHDV Wild Cases Summary March 2020-June 30, 2023. Source USDA Animal and Plant Health Inspection Services

- 30 days, using separate equipment to avoid spreading disease
- Sanitize all equipment and cages moved on or off premises
- Establish a working relationship with a veterinarian to review biosecurity practices to identify and close possible gaps
- If you live near an area where RHDV2 is confirmed, do not touch any dead wild rabbits
- If you see multiple dead wild rabbits, contact your local state wildlife officials
- If you own domestic rabbits, do not release them into the wild
- Be careful disposing of a rabbit that has died. Contact your veterinarian for guidance

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