Equine Health During Historic Eastern Kentucky Flooding

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JULY 25-29, 2022, FLOODS

Historic flooding between July 25-29, 2022, resulting from record rainfall and the region's major rivers, unique ridged topography, and lack of soil/tree coverage of slopes lead to catastrophic flooding and landslides. Forty-three human lives were lost in six counties, 9,000 households worth up to $1 billion were damaged or destroyed, and 13 counties were declared major disaster areas.

MAJOR ONE HEALTH CHALLENGE FOR HORSES

The flooding also created a significant **One Health** challenge for Eastern Kentucky horses, their owners and equine health providers: Barns, shelters, and infrastructure such as fencing, water lines, sewer lines, electric & phone services, farmland, and vehicles were destroyed in many cases. Pastures were flooded, stored hay and feed were ruined, and residual standing water was contaminated. Many horses faced malnutrition, injuries, and illness directly from flooding. Contaminated and stagnant water can lead to ingestion of environmental toxins including petrochemicals and agricultural chemicals, as well as gastrointestinal pathogens and parasites. Warm, humid weather that followed, and standing water were ideal reservoirs for vector-borne diseases (e.g., West Nile Virus, Eastern & Western Encephalitis, Lyme disease, anaplasmosis, etc.).

Challenge: How to address and mitigate the many potential equine hazards caused by flooding and keep horses healthy?

PROJECT OVERVIEW

University of Kentucky Equine Extension Services contacted local county extension agents who in turn reached out to horse owners in seven counties to provide veterinary visits. Five veterinarians and two assistants volunteered to visit 34 farms and 163 horses over four dates. The program consisted of providing core equine vaccinations, deworming, distribution of topical wound treatments, insecticides, shampoos, perform body condition scoring (BCS) as a general health assessment, and information on sourcing forage.

RESULTS

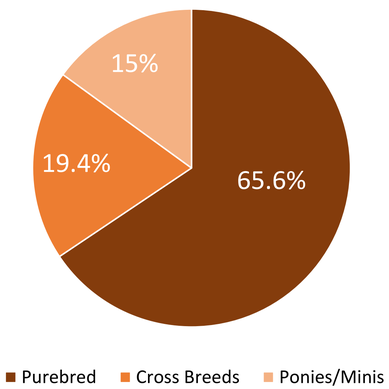
Region	Counties	No. Farms	No. Horses
E4	Knott, Letcher, Perry	13	100
E5	Breathitt, Owsley, Wolfe	9	46
E6	Floyd	7	17
Total		**34**	**163**

PROCEDURES

- Farms were visited between August 24 and September 10.
- 159 core vaccinations (rabies, tetanus, W/E Equine Encephalitis, West Nile Virus) and 158 deworming treatments administered.
- Horses were assessed by age, sex, breed, Region, and BCS.

DESCRIPTIVE RESULTS

- **Sex:** 52.8% of horses were male.
- **Age:** Average age was 11.3 years; recoded into <5 (23.1%), 5-11 (31.2%), 12-16 (21.2%, 17+ (24.5%) for functional purposes.
- **Breed:** 34 individual purebred and cross breeds were re-coded into purebreds, crosses, miniatures.
- **BCS:** Average of 4.6; recoded to thin (1-3), ideal (4-6), heavy (7-9).



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INFERENTIAL RESULTS OF BCS BY SEX, AGE, BREED, REGION

- **Sex:** No statistical difference was found.
- **Age:** A one-way analysis of variance was computed and mean BCS was lowest among the <5 group, which in the post-hoc analysis, was found to be statistically lower than the 5-11 and 17+ groups (F=6.28, df=4, p=0.00).
- **Breed:** A one-way analysis of variance was computed and mean BCS was lowest among the purebreds, which in the post-hoc analysis, was found to be statistically lower than the miniature group (F=2.80, df=3, p=0.03).
- **Region:** A one-way analysis of variance was computed and mean BCS was lowest within E5, which in the post-hoc analysis, was found to be statistically lower than E4 (F=2.14, df=3, p=0.02).

DISCUSSION & LIMITATIONS

- This project promoted One Health for flood-impacted horses. We protected against major equine disease risk through core vaccination and deworming. We raised awareness among owners of the risks to horses from flooding, such as increased parasite, coliform and vector-borne disease load, increase risk of lacerations and puncture wounds from debris, sun exposure, and displaced wildlife increasing rabies and other disease risk. We were able to raise awareness of hay drop points by the *Appalachian Horse Project* in conjunction with the *Kentucky Horse Council* for farms that lost stored hay and/or pasture in the flooding. BCS serves as a baseline for future evaluations.
- Notable limitations of the program included remote farms either not aware or contacted about the program, lack of baseline pre-flood BCS values for comparison, and inter-operator differences in BCS scoring due to a degree of subjectivity in scoring.

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