

Talk

TITLE

**Weathering the weather: effects of the environment on donkey, mule and horse welfare**

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It is widely believed that donkeys are less adapted to wet, temperate climates than horses. To date there has been no scientific study assessing the shelter needs of donkeys. Our research addressed this important welfare area through three studies conducted in Devon, UK: (1) a comparison of hair coat properties between horses, mules and donkeys over the four seasons, (2) a behavioural study of shelter use (man-made and natural), and (3) a study of heat loss using infrared thermography. In study 1 hair samples were taken from 42 animals, 18 donkeys, 16 horses and eight mules, in March, June, September and December. The weight, length and width of hair were measured as indicators of the hair coat insulation properties. The donkeys' coats properties did not differ much across the seasons, unlike the horses', indicating that donkeys do not grow a winter coat. The donkeys' coats were significantly lighter, shorter and thinner than that of horses and mules in winter. In study 2 the shelter seeking behaviour of 75 donkeys and 65 horses was observed over a period of 18 months. Results showed that donkeys' and horses' behaviour was differentially affected by environmental factors. When it rained there was a 54% increase in the number of donkeys in shelters and only a 14% increase in horses seeking shelter. Most donkeys stayed inside when the temperature was below 10°C and they came outside as temperatures increased. Horses preferred to be outside in temperatures up to 20°C, above which they started to seek shelter. In study 3 we used a thermoimaging camera to take photos of donkeys and horses at different temperatures. In addition to the rate of overall heat loss, the amount of heat lost from specific body areas was assessed (ears, neck, torso, rear and legs). In concordance with the findings of study 1 we found that in cold temperatures donkeys lose more heat than mules and horses, and also that their heat loss is higher through their ears and their rear. These findings provide valuable scientific evidence that can inform future guidelines on the welfare and shelter needs of equines and support the idea that donkeys are less well adapted to temperate climates and may require additional protection from the elements (in the form of man-made shelters) when compared to many horses.