

WILD HOOFSTOCK FEED SPACE REQUIREMENTS IN ZOOLOGICAL MIXED SPECIES HABITATS

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Abstract

San Diego Zoo Safari Park has eight mixed species field habitats ranging from 25 to 65 acres each, housing 48 different species of wild hoofstock, and totaling approximately 645 individual animals at time of study. These animals are fed their entire diet once per day and items are added into feed bunk spaces. Feed bunks are open on the ground without barriers or head rails unlike traditional livestock linear feed bunks (Wendling, n.d.). When animals or herds housed in these habitats presented with poor body condition, Wildlife Care Specialists would add additional food into feed bunks. While it was suspected available feed space was not sufficient to support the number of individuals on habitat, the San Diego Zoo Safari Park did not have data to provide recommendations on feed space requirements. To quantify feed space for the field habitats, a study was developed in August 2019 using stocking density and domestic hoofstock research. Goals of the study were to quantify feed bunk space availability, comprehensively map feed bunk locations via ArcGIS software, and identify feed bunk space requirements in mixed hoofstock field habitats.

Livestock industry standard for cattle head space in feed bunks is 0.6 meters per individual animal. However, research suggests that increasing head space to 1.0 meter will reduce aggression among domestic dairy cattle (Hetti Arachchige *et al.*, 2014). Increasing linear head space has the potential to increase feed intake, reduce forage waste, and improve individual welfare of the hoofstock housed in field habitats (Hetti Arachchige *et al.*, 2014). Data on species in habitats, average weights, and number of individuals was collected from ZIMS (Zoological Information Management Software). Each species was assigned an “animal unit” to define the required amount of linear feed space based on average species weight (Coffin, 2013). Feed bunk length, width, and height were measured, and locations were recorded using SurveyMap123 (Esri ArcGIS) software for all eight habitats. Total linear feed space was calculated using feed bunk measurements in each habitat and accounted for feeders accessible on multiple sides. Animal head shape, species social dynamics, and feeder height relative to species height were not included in this study but are opportunities for future research to gain a more holistic view of feed availability in these habitats.

Results were used to determine if field habitats had sufficient feed bunk space and provide recommendations to either move animals out of habitat or add feed bunk space. Due to the dynamic nature of these habitats, a calculator was created in order to determine feed space needs as animals' transition between habitats. These findings provide a foundation for future research focused on species feeding dynamics, carrying capacity in habitats, and consumption of feed items. San Diego Zoo Safari Park's wildlife care staff, veterinarians, and nutritionists now have a data-based tool to assist in making recommendations on holistic care and welfare of the field habitats' hoofstock species that factor in feed space availability.

Literature Cited

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