

NUTRITION CASE STUDIES: HOT TOPICS AND CHALLENGES

Shannon Livingston, MSc, Heidi Bissell, PhD*, and Kathleen Sullivan, PhD**

Disney's Animals, Science, and Environment, 1180 N Savannah Circle, Bay Lake, FL 32830, USA.

Abstract:

The authors will each present a recent case, hoping to engage the audience to share ideas and discuss similar cases they have encountered.

Case 1:

Recent prevalence of cases of deep horn and hoof cracking in white rhinoceros (*Ceratotherium simum simum*) across the US led to an evaluation of mineral and vitamin content of feed and corresponding serum values in the species at Disney's Animal Kingdom[®]. Current indications find low to negligible vitamin A values in numerous white rhinos when tested across multiple laboratories but confirm the presence of vitamin A in feed items including pellets, mainly in the acetate form. We continue to collect information and investigate proper treatment to replenish vitamin A supplies in these animals.

Case 2:

In many species of birds, such as the Caribbean flamingo (*Phoenicopterus ruber*) and African penguin (*Spheniscus demersus*), it is important to control the rate of chick growth to prevent leg deformities. This can be done by carefully adjusting handfeeding amounts to keep daily gain within narrow targeted ranges.

Case 3:

Nutrients are available in various forms, not all of which may be available for use by the body or reported in lab analysis. When designing diets, it can be challenging to not only ensure that target nutrient values are achieved but then also try to account for the form of the nutrient that can be utilized. A hand rearing diet for Roseate Spoonbills (*Platylea ajaja*) prepared at Disney's Animal Kingdom[®] was sent for analysis when metabolic bone disease was suspected. Levels of calcium, phosphorus and vitamin D were found to be in expected amounts. Vitamin A was tested at 2 labs with one lab finding undetectable amounts of vitamin A in the form of acetate and palmitate. A second lab showed appreciable amounts of vitamin A as retinol. It is unclear if the difference in the form of vitamin A could be a contributing factor in the bird's medical condition but can impact evaluation of the diet if the present form is not detected during nutritional analysis.