Nutrition + Environmental Enrichment = Animal Well-Being

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Key words: physiological requirements; psychological requirements; natural diet; food presentation

INTRODUCTION

The nutritional managment of different species requires modifications in the shape and presentation of the diet, not only due to the idiosyncrasy of the animal but also due to the natural way to obtain the food. When possible, captive animals should be fed natural diets; however availability and cost make it very difficult for a wild diet to be duplicated in captivity. In some cases, the natural diet may not even be documented.

Zoos have the complete responsibility of mantaining animal health in every aspect. The exhibition of "stereotypical" behaviour is one of the most commonly voiced arguments against confinement of animals. The main objetive of this work is to demonstrate a means of combining different tasks to cover the physiological and the psychological requirements of animals in captivity. It is impossible to deny that those requirements should be covered to assure the animal well-being in captivity.

MATERIALS AND METHODS

Feeding or related behaviors make up a large proportion of the natural activity budget for most species. In captive situations, every effort is made to manipulate feeding to ensure that its effect on behaviour is as natural as possible. To achieve those objectives, we implemented enviromental enrichment routines or simply enrichment devices, the majority of which are related to nutritional managment, in different species.

To do this work we considered: nutritional managment in the zoo, feeding patterns in the wild, and enrichment devices available.

Simply Enrichment Devices: used whenever available.

Jaguarundi (*Felis yagouaroundi*), adult male, who lives alone. Devices used: meat inside tree trunk, meat hung over the pool and freeze blocks made with blood and meat.

Maned wolf (*Chrysocyon brachyurus*), adult female, who lives alone. Devices used: a porous tubular structure was placed partially in the ground leaving the holes above so that the scent of the food could be carried in the air. This device requires the animal to first locate the food by sense of smell, then to find it visually, and finally to retrieve the food through the holes in the tube

Giant Anteater (*Myrmecophaga tridactyla*), adult male, who lives alone. Device used: giant anthill or tacurundu, a typical element found in nature in places where anteaters live, made with branchs and papers. Inside the anthill we put the daily diet.

Enrichment Routines

These routines have been developed and implemented at the Buenos Aires Zoo for about 18 months, changing spatial and temporal presentation, recording observations before and after enrichment but there is not any statistical study made yet.

Tiger (*Panthera tigris*), adult male, who lives alone. Devices used: meat inside paper, hidden food in trees and rocks and frozen food. This program force, the animal to expend more effort and energy in obtaining the daily ration, increasing the time spent in procuring the food at the expense of other, non-desirable behaviours.

Primates (*Pan troglodytes*), family group (1 adult male, 1 adult female, 1 two-year-old female). Devices used: jelly with fruit inside, mealworm dispenser, honey dispenser. These animals increased the amount of time spent looking, digging, foraging and moving. In apes, enrichment not only stimulates their highly developed cognitive abilities, but also allows them to live appropriatly in social groups, reducing displays of inappropriate behaviour.

RESULTS

Felids and canids are fed meat or meat and bone, which they take inmediately, carry to a more “secure” location and, after few minutes, consume. The devices obliged the animal to use olfactory and visual senses in the search for and procurement of feedstuffs.

Anteaters are fed on a liquid diet put in a simple plate once a day. The enrichment device stimulates this animal to get the food using claws and the characteristic posture of this species to look for food.

Having worked with the enrichment routines for the past 18 months, we noticed an increase in the physical and psychological activities in the Chimpanzee population: solution of problems, use of tools, reduction of some sterotypic movements. Among some of the young Chimpazees, we recorded

increased docility, making the work of the keepers, veterinarians and biologists much easier.

CONCLUSIONS

Food presentation is one of the most effective enrichment methods to decrease undesirable or inappropriate behaviours. As with all enrichment protocols, variety is the key and it is recommended to present food in different ways to prevent habituation or boredom. Enrichment is now recognized as a new and valuable tool in our zoo, and is being refined and strengthened day-by-day. Our enrichment goal is to meet both the psychological and physiological requirements or needs of our animals, while at the same time offering the zoo patron a more enjoyable and educational perspective about zoo animals.

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