

LISBON ZOO – THE DEVELOPMENT OF AN ANIMAL NUTRITION DEPARTMENT

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ABSTRACT

The need to fight against structural and financial difficulties characteristic of a Zoo with 100 years and located in the middle of Lisbon, had limited its proper evolution. Only in 1995 occurred a profound restructuring at the Lisbon Zoo, in the midst of which arose the Animal Nutrition Department. Up to that time, the different keepers, in inadequate conditions for the purpose, executed the food preparation. When the Nutrition Department arose it became possible to centralize all the food preparation in a better facility, executed by a permanent staff team. This had allowed a gain of efficiency, productivity and better executed work. The facility improvement and the great staff specialization will allow the work of Wildlife Nutrition to begin within the next two years at the Lisbon Zoo.

Key words: reorganization, improvement, perspectives

INTRODUCTION

Following a hundred years in which Lisbon Zoo's main objective was exhibiting wild animals, the 90's decade has been marked by a profound change in mentality and objectives. Lisbon Zoo began to share the same objectives as the zoological community world-wide – the conservation and preservation of species threatened with extinction and the education of visiting public to increase awareness and efforts toward the conservation of natural habitats. One of many highlights of this evolution occurred in 1995, with an extensive reorganization of the Zoo's structure, in the midst of which arose the Animal Nutrition Department.

THE YEARS BEFORE

Up to that time, the responsibility for the feeding of the animals belonged to the general curator. The keepers of different species prepared the various diets. The keepers prepared the feeds according to monthly maps prepared by the general curator. The pellets were weighed daily at the general store and then carried to all the other foodstuff locations, to be distributed the following morning. From that site they also distributed the different fruits and vegetables for the different animals. The preparation of the different trays for the small animals occurred in their enclosures. In 1994, a vivarium was created with the objective to correct the qualitative deficiencies detected in the callitrichids diets. At our Zoo, this species presented a very low level of fertility, almost null, and also a depigmentation

phenomena. In the interrelation context among zoos, three Lisbon Zoo technicians went to Barcelona Zoo, where for some years a vivarium has existed. Back in Lisbon these technicians elaborated a project to adapt some old facilities for installing the Lisbon Zoo vivarium. By July 15th the vivarium has produced 43,639 grasshoppers, 24,215 crickets and 32,525 mealworms. With the reorganization that occurred in 1995, the vivarium was incorporated in the structure of the Nutrition Department.

THE FIRST YEARS – 1995/1998

In 1995, at the same time as the general reorganization of the zoo, an old free facility was readapted to create the physical structure of the Nutrition Department. At the same time keeper staff positions were created for the Department. In the first two years of its existence, the Nutrition Department has received great support from the people in charge and from the staff of the Zoological Department. Not only by their proximity, but also due to their extensive experience and due to the small number of persons working at the Nutrition Department (five at the time). In the day by day work routine only the keepers and the assistant curator were present at the Department, who were insufficient for the great volume of work:

- Small animal diets preparation
- Daily pellet weighing for herbivores and birds (around 500 kg)
- Pellet transportation twice a week from the general store to the Nutrition Department store
- Fruit and vegetable selection from those received from the supermarkets*
- Daily distribution of pellets, seeds, fruits and vegetables to the keepers (at the animal enclosures)
- Staff management
- Diets correction
- Food storage and management

* The fruits and vegetables offer come through a co-operative effort between the zoo and some Lisbon supermarkets and began at 1995. This has allowed the availability of a wide variety of fruits, vegetables, and bread in large amounts.

Table 1 – Total amounts of fruits, vegetables and bread offered by some Lisbon supermarkets.

	Fruits	Vegetables	Bread
1996	170 250 kg	312 019 kg	21 236 kg
1997	158 913 kg	438 960 kg	58 860 kg
1998	78 279 kg	490 084 kg	26 819 kg

STAFF PREPARATION

In 1996 it was possible to enlarge the Nutrition Department keeper staff. During the first three years of the Department, there was a high level of personnel rotation, 11 in total.

The formation level of some keepers is still limiting some changes considered important. The actual selection of interested persons with better preparation will allow implementing these changes. Without the creation of adequate foundations and structures, as said by Marqués (1999), it is useless to attempt to define and develop nutritionally well balanced diets. Firstly, it is necessary to train the staff for performing the various duties of the commissary well. Then it is necessary to begin introducing them to the field of nutrition. The period between 1995 and 1998 (included) has been fulfilled with these steps, not allowing much nutrition work to be done, thus limiting the Nutrition Department to function just as a commissary.

Work done between 1995-1998

- Red Panda diet correction
- Zoo Feeding Manual
- Educational poster (Nutrition) for the Educational Department
- Translation of papers on wildlife nutrition
- Bibliographic research and the development of an Animal Nutrition library

Bit by bit, the Nutrition Department's efficiency is improving, mainly through:

- 1 - Improvement of the keepers experience
- 2 – Streamlining of duties
 - a) Some equipment acquisition
 - Pallet carrier
 - Stacking machine
 - Fruits and vegetables shredder
 - Meat mincer
 - Scales
 - Computer
 - That allowed
 - Time economy
 - Better work quality
 - b) Some procedure modifications, that allowed
 - Reduction of the workload effort
 - Time economy

FACILITY

Furthermore, the Animal Nutrition Department also faced the difficulty of justifying its existence and of showing the rest of the staff, used to old routines, its necessity and importance for the Zoo and for the animals. For three years, the Animal Nutrition Department also had to run its operations in facilities that were totally inadequate for the requirements of this type of work, but at the time they were the best facilities available within the difficulties faced by the Zoo. During 1998, the Animal Nutrition Department facilities left their position in the middle of the Zoo.

Transfer benefits:

Reduction of vehicle traffic

Reduction of animal stress caused by the traffic of vehicles

Reduction of visitor disturbance

More space at the new facility

More isolation

Better accessibility for the suppliers

Allows the centralization of all the duties concerning the management, storage and food preparation

Modifications occurred:

Greater distance to the animal enclosures

Nutrition Department staff work increased

Daily procedures (food preparation and distribution) modification

PRESENT TIME AND FUTURE PERSPECTIVES

Due to the need to reorganize some Zoo Departments, soon (August 1999) there will begin a project for the restructuring and enlargement of the Nutrition Department facilities. Beyond this facility, in the Zoo there are some other places where foods for the animals are manipulated and prepared:

Butchery and freezers

Bakery

Bird Department kitchen

Based on the facilities improvement, on the experience of the keeper staff, on the efficiency improvement, and the assistant curator's experience improvement, the perspectives and main objectives for the next 2 years are:

HACCP model adoption for higio-sanitary control

Implementation of more continuous educational actions (on the Nutrition field) for all the keeper staff

Nutrition Department keeper staff training in other Zoos

Global centralization of all the management, storage and food preparation

Research implementation for diet improvement; based on the ZOOTRITION™ software; the diet improvement for herbivores is underway

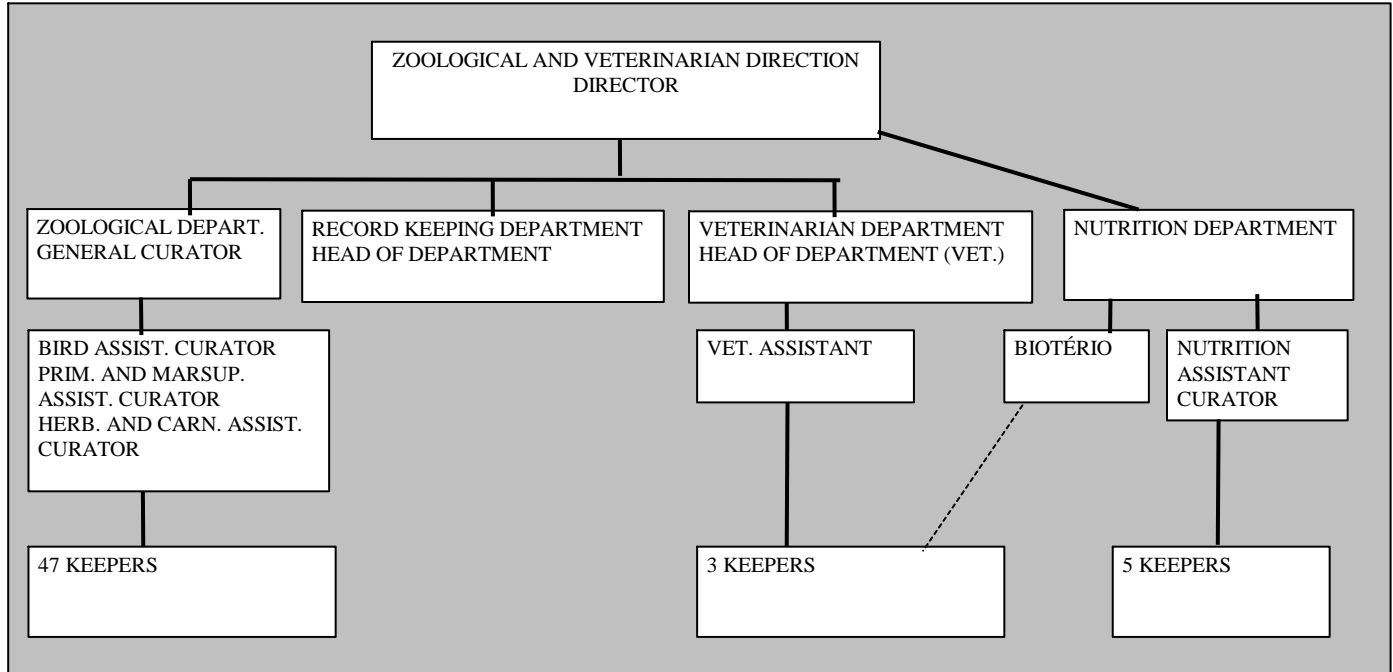
Study of new diets for the primates; also based on the ZOOTRITION™ software; the study of a new diet for the new world primates is underway

Implementation of new procedures for diet preparation, to combine feeding times with animals requirements

Implementation of protocols with laboratories, allowing for food analysis

Implementation of protocols with Universities, allowing for research work to be performed by students
 Co-operation with other Zoos in research works in the field of Nutrition

Table 2. **Zoological and veterinarian direction organigram (July 1999)**



CONCLUSION

Bit by bit, and more slowly than desirable, the basic levels (keepers and facilities) are being achieved, allowing work to really begin in Wild Animal Nutrition. At the same time and as said by Stewart (1987), it is beginning to be acknowledged that the existence of a nutritionist is as essential as that of a veterinarian for the well being of the animal collection.

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