

# MANAGING ZOO DIET INFORMATION: INTRODUCING THE NEXT GENERATION OF SOFTWARE

*Andrea L. Fidgett, PhD,<sup>1\*</sup> Mark S. Edwards, PhD,<sup>2</sup> Loren Peterson,<sup>3</sup> Meryll Webster<sup>3</sup>*

<sup>1</sup>*North of England Zoological Society, Chester Zoo, Chester, CH2 1LH, UK*

<sup>2</sup>*California Polytechnic State University, Animal Science Department, 1 Grand Avenue, 010-0147, San Luis Obispo, CA 93407-0255, USA*

<sup>3</sup>*Format International Ltd, Format House, Poole Road, Woking, Surrey, GU21 6DY, UK*

## ABSTRACT

We all want to feed our animals well. Yet within zoos and aquariums different stakeholders concentrate on different aspects of feeding; some may be mostly concerned with the nutrient content, others with the way food is presented. The physical and behavioral health of animals may be a principal focus and sustainability, efficiency and costs are becoming increasingly significant drivers. Obviously all of these aspects require consideration to achieve the initial premise of ‘wanting to feed our animals well’. Sharing knowledge about best feeding practices can improve global management of living collections, with anecdotal descriptions replaced by meticulous observation, documentation and analysis. Recording and cataloguing feeding practices and the outcome of adjustments, along with the means for systematic retrieval of said records at some later point in time, would represent a significant advance in the evaluation and dissemination of effective feeding practices. But how can we achieve this vision?

There is a gap within the current suite of software provided by International Species Information System (ISIS); the facility to record diet notes is currently available within both the Animal Records Keeping System (ARKS) but as a free text box, it can be completed with varying attention to detail. Bespoke software designed for the zoo community could:

- ensure diet information is stored in a rigorous, standardized format
- be linked with animal stock numbers, allowing comparison with food purchasing/accounts
- be used for diet formulation, permitting the exchange of true ‘diet’ data – the nutrients that are being offered and consumed in specific quantities, not just a list of the food ingredients involved
- allow easy collation of diets used for many species at a single collection thereby fulfilling criteria for legal purposes or professional accreditation.

Furthermore, diet information for a single species held in many collections could be easily collated, providing a useful research tool for producing zoo husbandry guidelines; it could also be a valuable educational tool. Pragmatic reasons for using a customized diet management program include legislative drivers, plus economic incentives (e.g. the facility to check the quantity of food that should be fed matches what is being ordered).

A number of programs currently in use offer some of the functionality described, but none can do all of the above. Also, with no investment or management evident, all of these programs are becoming technically obsolete and incompatible with modern technology. With ISIS deploying the Zoological Information Management System (ZIMS) in 2010, it was timely to consider the design and build of a single, zoo diet information management program which at a future date might ‘plug-in’ to the ISIS software suite. A group of like-

minded individuals, members of the EAZA Nutrition Group and AZA's Nutrition Advisory Group, were invited to a short workshop in advance of the 6th European Zoo Nutrition Conference (January 2010). Their task was to discuss if and how we might work together to design and build the next generation software. Key questions to address were: who are the main contributors to what and how animals get fed, what information do they need to feed their animals effectively, and what can be done to optimize animal feeding in zoos?

An 'interim' steering group formed to move this project forward and investigate additional stakeholders from other regions (tools developed have application beyond the EAZA region), potential sources of funding and technical partners. Integration with ISIS is vital, though development should be driven by zoo nutrition community.

Since the workshop, a partnership has been forged with Format International to develop and design a bespoke software application. Based in UK, Format International designs technical software for the food and feed industry worldwide and specializes in formulation software, recipe design, management and auditing. Having seen the list of 'needs' agreed by workshop participants, there is a good match between the functionality required for zoo nutrition and features in their standard packages. Some customization (terminology, classification) is required which Format is able and willing to provide.

Working together now for almost a year through a series of meetings and workshops, our vision is a zoo diet management system for all those concerned with feeding our animals well, encompassing features associated with feeding, formulation, inventory management and auditing.

## **ACKNOWLEDGMENTS**

The authors wish to thank all those who have contributed to the discussion, development and design process to date: Cora Berndt, Marcus Clauss, Ellen Dierenfeld, Nate Flesness, David Gardner, Richard Gibson, Tjalling Huisman, Anthony Hutchinson, Geert Janssens, Karen Lisi, Helena Marques, Mike Maslanka, Joeke Nijboer, Amy Plowman, Jolanda Polet, Christoph Schwitzer, Stephanie Sanderson and Ann Ward.

## **REFERENCES**

Fidgett, A.L. and Webster M. 2011. Managing zoo diet information; what do we need from the next generation software? Zooquaria Nutrition News, the European Association of Zoos and Aquaria (EAZA), Issue 5, pp 12-13.