

Welcome to the EAZA Nutrition Group Newsletter!

In this edition...

NEWS FROM the MEMBERS

- } **Helena Marquès** is working on the nutrition chapter for the husbandry manual of the European Mink EEP. Appointed their nutrition advisor at the last EAZA meeting, she's assisting the Spanish breeding centre holding the species. Helena was also appointed nutrition advisor for the EAZA Penguin TAG. To start working with the group, she's evaluating a nutrition questionnaire that was sent in the past from the EAZA Penguin TAG to all the institutions holding penguins. The results of these surveys will provide a starting point for targeting areas that need major assistance.
- } Note from the Editor: more news on activities of Nutrition Advisors will follow in future editions of this Newsletter.

[Top](#)

RECENT REFERENCES

- } **G. Hohmann, M.M. Robbins and C. Boesch, editors (2006)** *Feeding Ecology in Apes and Other Primates*. xvi + 523 pp., hardback. Cambridge, UK: Cambridge University Press. ISBN 0-521-85837-2. £70.00.

Until recently there had been only two books that addressed the feeding ecology of a range of different primate species: *Primate Ecology: Studies in Feeding and Ranging Behaviour in Lemurs, Monkeys and Apes*, edited by Tim Clutton-Brock in 1977, and *Adaptations for Foraging in Nonhuman Primates: Contributions to an Organismal Biology of Lemurs, Monkeys, and Apes*, which Peter Rodman and John Cant redacted in 1984. Neither of them had the term feeding ecology in their title. Although Clutton-Brock's 1977 book is widely referred to as the classic book on primate feeding ecology, the editor even managed to completely avoid the term in his preface.

Almost thirty years later there now is a book that not only contains 19 very useful papers on ecological, physiological and behavioural interactions in wild primate nutrition, but that actually uses the term feeding ecology to caption this broad range of articles. The latest title in the 'Cambridge Studies in Biological and Evolutionary Anthropology' series, *Feeding Ecology in Apes and*

Other Primates comes out of a conference of the same title held in Leipzig in 2004. Instead of publishing conference proceedings, the editors (all three working at the Max Planck Institute for Evolutionary Anthropology in Leipzig) decided to invite additional authors not present at the conference to contribute and thus to organise a collection of integrated findings on key topics in this field. The book is organised into three parts. The first one, titled Field studies, comprises eight chapters. Seven of these present detailed quantitative data on diets of African apes, whereas the last one deals with neotropical capuchin monkeys. Interestingly, many of the studies used faecal samples and/or feeding trails to determine the diet composition of the studied species, and one of them compares these methods to the results obtained from actual observations of feeding bouts. The second part of the book uses nutritional data from long-term field studies on old- and new-world monkeys, gibbons, orang utans and humans to test different theories using new approaches. I particularly liked the chapter by Stuart Altmann, who applied an optimal diet model to the foraging of yearling baboons. During my personal observations of the feeding ecology of wild blue-eyed black lemurs in Madagascar I doubted that the diet my study animals were feeding on was "optimal" in terms of maximal energy gain per time unit or the like, and I ended up being very sceptical about optimal foraging models. Altmann experienced exactly the same, but instead of merely disposing of his model he adopted the strategy of considering it as normative rather than as descriptive and hence regarded deviations from the model as indications of potential differences in fitness of the animals rather than as a test of the model itself. By using this approach he was able to demonstrate that the yearling baboons with the least optimal diet (in terms of energy shortfall and protein surplus) had the least reproductive success as adults.

The part of Hohmann et al.'s book, however, that is probably the most useful for anybody engaging in primate nutrition research, both in situ and ex situ, is the third one. It encompasses five chapters altogether, two of which discuss different methods for estimating food intake and composition in wild primates whereas the three others are case studies that make use of some of these methodologies in different species of nonhuman primates.

All three parts of Feeding Ecology in Apes and Other Primates are preceded by very useful introductions written by well-known field primatologists Peter Rodman, Richard Wrangham and Katherine Milton, respectively. In summary, Feeding Ecology in Apes and Other Primates is a valuable addition to the few existing compilations of information on wild primate feeding ecology and nutrition and by all means deserves a place in every good zoo library.

[*Christoph Schwitzer*]

- } **V. Bels (editor) (2006):** *Feeding in Domestic Vertebrates – From Structure to Behaviour*. CABI Publishing, Reading.

Although the focus of this book is on domestic animals, it may be interesting for zoo staff, too, especially those involved in research to some extent. Besides some overview articles, it covers a wide range of “model animals” for wild taxa with omnivorous to herbivorous feeding habits (e.g. chicken, ostrich, rabbit, pig, horse, ruminants). [*Jürgen Hummel*]

- } **J. Guillaume, S. Kaushik, P. Bergot, R. Métailler (2001):** *Nutrition and Feeding of Fish and Crustaceans*. Springer-Praxis books in Aquaculture and Fisheries.

Written from the point of view of fish production, this volume also has a comparative point of view at many instances. It includes chapters on fish and shrimp larvae. [*Jürgen Hummel*]

- } **Riek (2006):** *Investigations on Milk Composition, Milk Intake and Body Weight Development in the Llama (Lama Glama)*. Cuvillier Verlag Göttingen.

In the dissertation of Alexander Riek (Institute of Animal Breeding and Genetics, University of Göttingen), lactation in llamas has been investigated in detail, including information like milk composition and milk intake of foals at different stages of lactation. This makes it a very important source of information for anyone involved in breeding or even handraising new-world camelids, besides being interesting from a comparative view on lactation. [*Jürgen Hummel*]

- } **J. Matthias Starck and Tobias Wang (Editors) (2005):** *Physiological and Ecological Adaptations to Feeding in Vertebrates*. Publisher: Science Publishers, Inc. Plymouth. UK.

Contents include:

- The diversity of Vertebrate Feeding Systems- K. Sschwenk and M. Rubega
- Concepts of and Factors Affecting Digestive Efficiency. I.D. Hume
- Carbohydrate hydrolysis and absorption: lessons from modelling digestive function. T.J. McWhorter
- Digestive constraints in mammalian and avian ecology. W.H. Karasov and T.J. M. McWilliams
- Paracellular Intestinal absorption of carbohydrates in mammals and birds. T.J. McWhorter
- Mass Balance models for animal isotopic ecology. C. Martinez del Rio and B.O. Wolf
- Structural flexibility of the digestive system of tetrapods- Patterns and processes at the cellular and tissue level. J.M. Starck
- Adaptive interplay between feeding ecology and features of the digestive tract in birds. P.F. Battley and T. Piersma

Top

ENG FAVOURITES

Thanks to Joeke Nijboer for sharing these websites, mostly dealing with feeds & feed composition.

- } In manufactured zoo animal feeds, several components may be from South America or Southeast Asia, e.g. oil palm and soy. The expansion of oil palm plantations and soy fields has become a major threat to tropical forests and other critical habitats. Zoos have an important role in conservation of habitats and should use oil palm or soy obtained from plantations which have a proper land-use planning and good plantation practices. For more information see: www.panda.org/news_facts/newsroom/index.cfm?uNewsID=79820
- } www.allaboutfeed.net This website contains international information from the magazine Feedmix, which contains information about foodstuffs and developments in the animal feed world. You can subscribe to their newsletter via the site.
- } www.fishbase.org A fish database with all you ever wanted to know about fishes - scientific and common names in more than 8 languages!

- } www.ibiblio.org/pfaf/D_search.html is a searchable database of 7000 useful plants (also available to download) that's part of the **Resource and Information Centre for Edible and other Useful Plants** created by **PLANTS FOR A FUTURE** (www.pfaf.org). You can download a copy of the database.

Top

ANNOUNCEMENTS

- } **April 2007:** Zoos in the Netherlands have set up a Dutch zoo nutrition group (NVD-voedingsgroep) which regularly discusses nutrition topics in Dutch zoos. In cooperation with the members of the Dutch zoo keeper journal (Harpij) we organize a nutrition day once a year focussed on a specific nutrition topic. This year the day will be held on April 26 in Burgers Zoo in Arnhem and will be focussed on browse. The aim of such a day is to improve the knowledge and understanding of zoo nutrition and to have an open discussion on a nutrition topic with keepers. [contact Joeke Nijboer j.nijboer@rotterdamzoo.nl].
- } **Spring 2007:** Zootrition software workshop planned during spring 2007 in Denmark [contact Kristina Johansen kristina@reepark.dk].
- } **October 2007:** The **2nd International Symposium on Pet Bird Nutrition** will take place from 4-5th of October 2007 at the University of Veterinary Medicine in Hannover, Germany. Register your interest by sending an email to petbirdnutrition2007@tiho-hannover.de
- } **October 2007:** The 6th IZW (Institute of Zoo and Wildlife) Conference on Behaviour, Physiology and Genetics will take place from the 7th to 10th of October in Berlin, including a workshop Nutrition and Energetics (Announced topics are: Feeding ecology, physiology and the impact of nutrition on life-history decisions of free-ranging animals; digestive physiology and feeding management of captive animals). More information on: <http://www.izw-berlin.de/>
- } **October 2007:** The Nutrition Advisory Group's 7th Conference on Zoo and Wildlife Nutrition will be held in conjunction with the American Association of Zoo Veterinarians and the American Association of Wildlife Veterinarians between 20-25 October 2007 in Knoxville, TN USA. More on www.nagonline.net.

- } **January 2008:** The 5th European Zoo Nutrition Conference will be hosted by Chester Zoo on 24-27th January 2008. Register your interest by emailing a.fidgett@chesterzoo.org.

Top

Membership of the EAZA Nutrition Group

The **EAZA Nutrition Group** and its members aim to provide nutrition advice to zoo-based conservation breeding programmes, by developing guidelines and protocols for general use. Membership is open to ALL individuals who support the aims of the EAZA Nutrition Group or want to know how they can improve nutrition in their zoo and is not limited to Europeans. If you're reading this newsletter and want to know more about zoo animal nutrition, it means YOU!

Joining the group is simple. Use the email link at the top of this newsletter [a.fidgett@chesterzoo.org], putting 'Join ENG' in the subject line. You will be sent a form to complete asking for your contact details and also to indicate your interests and/or expertise to create a very useful membership directory.

Your newsletter needs YOU!

Top

The purpose of the **EAZA Nutrition Group Newsletter** is to provide a regular means of circulating current information on zoo animal nutrition. A wide range of material will be considered for publication including announcements, notes, useful links, recent references, news & reviews.

The aim is to provide a process with a fast turn around to maintain communication in-between conferences and other meetings. And it's not just dedicated nutritionists who are likely to want or need to know this information (just as well, or we'd be a very small group!). An electronic newsletter keeps everyone up-to-date and will be available in PDF format for printing and displaying in your zoo or department.

Your newsletter needs you! We plan to bring this newsletter to you every 2 months and will rely on your feedback about the content - both how useful it is and also to send us ideas about what you want included.

And finally...

Top

- } **Goitrogens** - Chemical compounds that are toxic to the thyroid gland or that break down to produce toxic chemicals. Various foods contain goitrogens, like cassava, cabbage, turnips, kale and walnuts. Many of these compounds inhibit the uptake of iodine by the thyroid inducing goitre.

Editorial Board

Cora Berndt (Emmen Zoo); Andrea Fidgett (Chester Zoo); David Gomis (Zoo Mulhouse); Jürgen Hummel (University of Bonn/Cologne Zoo); Kristina Johansen (Ebeltoft Zoo); Annette Liesegang (University of Zurich); Helena Marquès (conZOOlting); Christoph Schwitzer (Bristol Zoo).



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