

Welcome to the EAZA Nutrition Group Newsletter!

In this edition...

NEWS FROM the MEMBERS

- } Brief report on **5th Comparative Nutrition Society** meeting (biannual) at Keystone, Colorado, USA; 4th to 9th of August 2006. The topics of the various contributions covered a tremendously wide range from insects and whale sharks to bears and deer, dealing with basic and/or applied aspects of feeding and nutrition. The keynote address was given by Charles Robbins on his studies on energy and protein metabolism of brown bears. Two new NRC-publications were presented: A book dealing with tolerances for minerals is out since 2005 ("Mineral tolerance of domestic animals"), and the book on small ruminants including sheep and goats, but also deer and south American camelids (and therefore with some relevance for zoo nutrition) is due by the end of this year. The conference programme can be found on the CNS-Website, where copies of this and previous conference proceedings can also be obtained (www.cnsweb.org).
[Jürgen Hummel]

- } **Storing browse...** If browse is fed in zoos with a temperate climate, it often has to be preserved for winter and spring. Browse can be preserved by freezing, drying and ensiling. It is unknown if branches and leaves with a length of 1.50 meter conserved in 200 liter drums contain sufficient epiphytic bacteria for rapid fermentation to start. Another problem with willow branches is the low density that can be obtained in drums, which hampers anaerobiosis. Therefore tests were performed in **Rotterdam Zoo** force-filling drums with willow. To improve anaerobiosis, drums were flushed with nitrogen. In order to improve the ensilaging process the following additives were added to the different drums: not treated, molasses, formic acid, Bonsilage Plus Granulat (a mixture of different lactic acid bacteria) and Bonsilage Plus Granulat /molasses mixture. After 6 weeks analyses were performed and showed that ensilaging leaves and branches with lactic acid bacteria and molasses under anaerobic condition improved the ensilaging process. An earlier preliminary study revealed that okapis, giraffes, kudus, tufted deer and bongos preferred ensiled browse silage over frozen browse. [Joeke Nijboer]

- } **Zootrition v2.6** is due for release in September (details coming soon on www.zootrition.org). So what's new? Well, the global database of feeds and recommendations has been updated, with many additions, corrections and revisions too numerous to list here, but for example - commercial feeds are all now listed by manufacturer first to help your search. The forms/appendices module has undergone most revision and the associated files (all in PDF format) are now split into:
- **Forms/References** - comprising resource materials including a file of all the data citations, and a document on vitamin nomenclature.
 - **Animal Assessment** - included are all the previous evaluation criteria (energy calculations, management food portions, intake, faecal scoring) but now also featuring hematology and nutrient SI conversion data for clinical assessors of nutrient status.
 - **Body Condition** scores, hopefully an inspiration for multiple additions in the future.
- } Congratulations to Dr. Christoph Schwitzer who started his new position as Research Officer at Bristol Zoological Gardens this month.

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RECENT REFERENCES

- } **International Zoo Yearbook: Volume 40** is now published and features articles on Elephants and Rhinoceros, including two papers on the feeding of these animals authored by Marcus Clauss and Jean-Michel Hatt. See www.blackwellpublishing.com/izy for more details and for sample articles free to download (unfortunately not the nutrition ones!).
- } **R.C. Rodrigues da Paz et al. (2006):** Influence of nutrition on the quality of semen in Jaguars *Panthera onca* in Brazilian zoos. *International Zoo Yearbook 40 (1)*, 351-359.

In Brazilian zoos wild felids in captivity are generally fed meat, mostly beef muscle and heart. However, a diet of muscle and organ meat alone will be deficient in many micronutrients for felids including calcium, phosphorus, copper, manganese, vitamins A, D and E, thiamin, folic acid and biotin. In this paper the authors wanted to determine the influence of specific vitamin and mineral supplementation on the quality of semen in eight Jaguars *Panthera onca*. The vitamin/mineral supplementation used was based on the National Research Council recommendations for the domestic cat *F. catus*. Semen was collected by electroejaculation at the beginning of the trial and every 2 months thereafter for 1 year (n= 7 collection dates). No significant differences were found between collections for semen volume, concentration, motility and vigour during the trial period. However the authors were able to measure a significant decrease in primary sperm abnormalities during the supplementation period – these originate

during spermatogenesis and may be the result of genetic, environmental or nutritional factors. While the authors acknowledge that further analysis of genetic variability and/or paternity of these animals is warranted, they are confident that the improvement in seminal characteristics in the animals studied was due to nutritional supplementation. [Andrea Fidgett]

- } **A. M. Shrader, N. Owen-Smith, J. O. Ogutu (2006):**How a mega-grazer copes with the dry season: food and nutrient intake rates by white rhinoceroses in the wild. *Functional Ecology* 20: 376-384.

The paper deals with the question how white rhinoceroses as megaherbivores cope with considerable seasonal changes in food quality during the dry season. Different ways to deal with this bottleneck situation could be to increase food intake (by widening diet, increasing bite size or extending foraging time) or to mobilize fat reserves. For equid perissodactyls it is assumed that they can enlarge their intake rate to keep their energy balance during the whole year. The authors studied rhinos at the western iMfolozi section in the Hluhluwe-iMfolozi Park and estimated year round intake of rhinos via detailed observations of foraging variables like bite size and bite mass. These were found to be rather constant year round. Assuming no considerable change in daily foraging time, the authors suggest that white rhinos used fat and other body reserves to overcome deficits in nutritional gains during the dry season, which they consider to be an appropriate strategy for megaherbivores like the white rhinoceros. [Jürgen Hummel]

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ENG FAVOURITES

Many thanks to Tjalling Huisman for sending in these food database websites and for highlighting that most tables give the composition of the edible part (for humans) rather than the whole food item.

- } www.lib.uaa.alaska.edu/hsis/about/akfood.pdf Food table for typical inuit food, with quite a few exotic items.
- www.fao.org/infoods/directory_en.stm A summary of human food tables, many of which are online.
- www.foodcomp.dk/fcdb_default.asp Danish food table: very clear in English and of course in Danish.

Plus a couple of useful ways to access journal articles online...

- } <http://elibrary.unm.edu/sora/Auk/index.php> All issues from Auk free online from 1880 to 1999.

- } <http://highwire.stanford.edu> Especially useful for those without easy access to university libraries.

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ANNOUNCEMENTS

- } **23rd Annual Conference of EAZA** is being hosted by Zoo Aquarium Madrid, from 3-7 October 2006. Our next business meeting will take place on the 5th October during this conference and there is room for posters or to give a short presentation during the meeting. Such presentations may deal with any topic that is of relevance to (parts of) the EAZA zoo community, making it ideal forum for discussing nutritional issues with a wider audience. If you are interested in presenting material please forward a short description to Andrea Fidgett in the first instance (a.fidgett@chesterzoo.org). Full details of the conference and a draft version of the programme are available online at www.eaza.net.
- } The **2nd International Symposium on Pet Bird Nutrition** is scheduled exactly 10 years after the very successful 1st Symposium held in 1997. It will take place from 4-5th of October 2007 at the University of Veterinary Medicine in Hannover, Germany. The scientific board consists of several well-known and respected avian scientists: Prof. L. J. Filippich (Australia); Dr. G. Harrison (USA); Prof. G. Janssens (Belgium); Prof. K. C. Klasing (USA) and Prof. Z. Sinovec (Serbia). Since the last Symposium, a great deal of research and experience has been gained in avian nutrition. Yet companion birds still show signs of malnutrition and information has not been adequately disseminated. Therefore, the goal of this 2nd symposium is to bring together practitioners, scientists, academics, aviculturists and industry personnel to address this issue and discuss nutrition and how to relate it to the care and management of pet birds. We want to encourage anyone who has done research in the field of avian nutrition, such as feeding experiments or the management of successful breeding of companion birds, to participate in the Symposium. Please register your interest by sending an email to petbirdnutrition2007@tiho-hannover.de.
- } A first announcement to inform you 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. Specific dates for the NAG portion of the meeting are yet to be determined but you'll hear more via this newsletter or www.nagonline.net.
- } Another (very) early announcement! The next **(5th) European Zoo Nutrition Conference** will be hosted by Chester Zoo in January 2008. Specific dates are still to be confirmed, but the meeting will likely be scheduled at the end of the month. Please register your interest and/or suggestions for speakers, topics or workshops by emailing a.fidgett@chesterzoo.org.

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](mailto:afidgett@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!

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...

- } **Nutraceutical** - While the term has no regulatory definition, it derives from 'nutritional' and 'pharmaceutical' and is used to describe a food with (or believed to have) medicinal properties. Although a relatively new term it's not a new concept; Hippocrates is quoted as saying, "Let your food be your medicine and let your medicine be your food."

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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