

Narrative 11: Zoo animal and exotic pet nutrition and husbandry

Our work on pellet formulation

Berndt, ..., Hummel, Clauss (2004) The formulation of a beet pulp-based pelleted food for captive wild ruminants and preliminary experiences. *Proc Eur Ass Zoo Wildl Vet* 5: 371-372

and on using browse silage

Hatt, Clauss (2006) Browse silage in zoo animal nutrition – feeding enrichment of browsers during winter. In: Fidgett A, Clauss M, Eulenberger K, Hatt JM, Hume I, Janssens G, Nijboer J (eds) *Zoo animal nutrition III*. Filander Verlag, Fürth, Germany, pp. 201-204

contributed to developments in the design of commercial pelleted diets for, and to changes in the feeding regime of, zoo animals.

Being involved in feeding recommendations for both zoo animals and exotic pets led to the formulation of husbandry guidelines, e.g. for giraffe

Hummel & Clauss (2006) Feeding. In: *EAZA husbandry and management guidelines for Giraffa camelopardalis*. Burger's Zoo, Arnhem, pp. 29-61

and to

several invited lectures on zoo animal nutrition at conferences as well as seminars at specific institutions, including the International Conference on Diseases of Zoo and Wild animals, Warsaw, Poland, 2014 on *Nutritional diseases*, the 4th Symposium on Wild Animals and Exotics, IAAS_UTAD, Villareal, Portugal, 2015 and 2021, on *Zoo animals and bear nutrition*, the Nordic Wild and Zoo Veterinary Conference, Eksilstuna, Sweden, 2019, on *Zoo animal nutrition*, and the 43rd Brazilian Conference of Zoo Animal Medicine, Belo Horizonte, Brazil, 2019 on *Challenges in zoo animal nutrition*.

as well as an invited review for rabbit husbandry

Clauss & Hatt (2017) Evidence-based rabbit housing and nutrition. *Vet Clin N Am - Exotic Anim Pract* 20: 871-884

During this work, we developed and applied several body condition scores for various zoo animals, e.g. for elephants in the multi-paper doctoral thesis of Christian Schiffmann

For his thesis and the distinct additional contributions and services, Christian Schiffmann was awarded the Annual Award of the Vetsuisse Faculty of the University of Zurich, 2019.

Involvement in studies on vitamin and mineral status of zoo animals, in particular with respect to iron storage disease, led to the

invitation to participate in the 2011 and 2016 Workshops on Iron Storage Disease in black rhinoceros hosted by Disney's Animal Kingdom, Florida, USA

with a resulting review publication

Clauss & Paglia (2012) Iron storage disease in captive wild mammals – the comparative evidence. *J Zoo Wildl Med* 43: S6-S18

but the work also covers aspects of fatty acids, tannins, and other nutritional or non-nutritional diseases (partially in the framework of the peculiar teaching unit 'Zoo Research Camp').

Amongst the different works on various nutritional and husbandry aspects, one on a case series in flamingos

Hammer, ..., Clauss (2007) Bill impaction in a group of captive Caribbean flamingos (*Phoenicopiterus ruber ruber*). *J Zoo Wildl Med* 38: 465-470

and on seemingly narcoleptic elephants

Schiffmann, ..., Clauss, Hatt (2018) When elephants fall asleep: a literature review on elephant rest with case studies on elephant falling bouts, and practical solutions for zoo elephants. *Zoo Biol* 37: 133-145

are especially appealing, and in a theoretical work we assessed how the design of a scoring system can influence the outcome of surveys

Ertl, ..., Clauss (2019) Theory of medical scoring systems and a practical model for the foot health of Asian elephants (*Elephas maximus*) in European zoos. *Anim Welf* 29: 163-176

Our work on water intake in rabbits

Partially funded by a grant from the Swiss Federal Veterinary Office in 2008

e.g., Tschudin, Clauss et al. (2011) Preference of rabbits for drinking from open dish vs. nipple drinkers. *Vet Rec* 168: 190-190a
achieved attention both from the editors of the journal as well as of several institutional bodies

The publication "Preference of rabbits for drinking from open dish vs. nipple drinkers" was given an **editorial** of its own in the same issue of the Veterinary Record.

For her dissertation thesis, Anja Tschudin received the **Award Semesterpreis der Universität Zürich 2010** and the **Award of the Gesellschaft Schweizer Tierärztinnen und Tierärzte 2011**.

Survey of current husbandry practices, while academically not particularly challenging, are important to document not only the status quo, but also progress in that husbandry. Therefore, since my own doctoral thesis in 2000 that

represented a comprehensive evaluation of husbandry practices for moose, we are continuously interested in performing similar surveys to understand, and possibly influence, current animal husbandry practice.

Kleinlugtenbelt, ..., **Clauss (2023)** Large carnivore feeding in European zoos. *Der Zoologische Garten NF* 91: 9-39

Currently, we are exploring ways to feed zoo carnivores in more challenging ways, including the option of failure (mimicking unsuccessful hunts) and using species-specific peculiarities, e.g. the propensity of polar bears for long periods of motionless waiting during their predation on seals.