

News and Views from the Zoo Research Group

Objectives for the BIAZA Research Group in 2006

At the December meeting of the BIAZA Research Group (BRG) the workplan for 2006 was determined as shown in the table below. The main objectives were drawn in part from the recently released BIAZA Strategy. We have identified four objectives to pursue that will help us prioritise and streamline the work carried out by BRG. The first and second objectives address the issues of communication and dissemination to the various stakeholder audiences. To date we have perhaps only been successful in reaching one, i.e. the zoo community in general, but specifically the research sector. It is imperative that the priorities and outputs of zoo research are communicated and indeed translated into practical management plans and husbandry guidelines, education programmes, the world of academic literature, and perhaps most crucially reconnecting with the academic institutions themselves (supervisors and course leaders) to encourage a greater understanding of 'how zoos work'. These activities in turn will facilitate the second two objectives. These focus more on steering as much of the research effort carried out in zoos towards genuine questions derived through an internal process, e.g. TAGs, veterinary issues, nutrition, population genetics, etc.

Objective	Task
To communicate zoo research within the zoo community, to academic colleagues and the general public	Hold research meeting at Colchester Zoo.
	Publish one or two of the recent research guidelines.
	Publish the poster.
	Send previous posters and other publications to national repository libraries.
	Publish four issues of Research Newsletter.
	Develop a knowledge transfer system to connect with ETC and CDC.
	Agree mechanism to widen the scope of the newsletter to include more non animal research.
To increase both the capacity for and quality of research in zoos	Assist with sourcing possible funding for zoo research: develop list of funding bodies.
	Assist in forming links between zoos and HSEs.
	In addition to the guidelines: assist in training to encourage zoos to carry out publishable research e.g. sampling and how to do research in zoos.
	Assist with upgrading the quality of publishable research in zoos & publish by a) hosting workshop and b) disseminating resultant guidelines.
To assist in the prioritizing of research in BIAZA zoos	Get research pro-forma working for research in zoos & put on website.
	Get research presence on all TAGs (or whatever replaces them) – progress questionnaire etc and identify and pursue at least 1 research topic from each TAG.
To achieve realistic growth in conservation research and knowledge in at least four specialist areas	Identify working group for Education evaluation. Establish framework including main contacts, partners etc.
	Identify working group for Population management – a link to TAG area & conservation. Establish framework including main contacts, partners etc.
	Identify working group for Reproduction Establish framework including main contacts, partners etc.
	Identify working group for veterinary research. Establish framework including main contacts, partners etc.

Research Snippets

The Role of dietary Essential Fatty Acids (EFA) in the Muco-Cutaneous Ulcer Syndrome (MCUS) of Captive Black Rhino (*Diceros bicornis*)

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Captive black rhino (*Diceros bicornis*) often suffer from a variety of diseases not seen in their wild conspecifics, including a highly prevalent and sometimes fatal skin condition known by several synonyms, including Muco-cutaneous ulcerative syndrome (MCUS). Large skin lesions occurring bilaterally across the body and orally are symptomatic of MCUS. These lesions may spontaneously regress, or persist to become chronic ulcers that are difficult to treat. Despite the syndrome prevailing in over 50% of black rhino held in US institutions, and certain cases in UK zoos, little is known about the aetiology of this disease. Dietary differences between captive and wild black rhino may offer a case for the role of nutrition in MCUS and other diseases of this species. Black rhinos are strict browsers, feeding on leaves and twigs of a variety of plant species within their wild habitat. This diet cannot be re-created in captive situations due to cost and availability of browse, such that most institutions offer a diet of commercial dry feed pellet and alfalfa hay; a diet more suited to the white rhino (*Ceratotherium simum*), which in contrast is a grazer species, choosing to feed on grasses and which rarely show clinical signs of MCUS. Comparison of wild and captive diets showed the former to contain appreciable quantities of essential fatty acids (EFA), whereby captive diets show disproportionate measures of EFA. EFA have long been associated with a range of skin conditions, and with health responses to dietary fatty acid supplementation (i.e. linseed oil) shown in certain cases of zoo-housed rhino, the role of EFA in MCUS makes for a convincing argument.

In order to investigate the possible role EFA may play in the aetiology of MCUS in captive UK black rhino, a pilot study of EFA supplementation via linseed lozenges was carried out at Paignton Zoo (n=2) during Summer 2005. Digital photographs and condition scores were used to help quantify whether the supplement was affecting skin condition in any way, while dietary intake studies at Paignton, Port Lympne and Chester Zoo have since been organised. Browse samples will be sent to the University of Manchester for EFA determination, with the aim to show the seasonal and institutional variation of fatty acids in the diet. Condition scores will again reveal any correlation between dietary EFA and skin problems, and recommendations regarding nutrient composition of browse may be gained.

Data collection and analysis are presently underway, however this project aims to shed some light on what is a relatively unfamiliar, yet important factor in successful captive black rhino conservation.

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The Effects of Overnight Enrichment on the Daytime, Night-time and Training Behaviour of Three Captive African Elephants (*Loxodonta africana*) at Blair Drummond Safari Park

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It is important to minimise chronic stress and stereotypical behaviours in captive animals for welfare reasons. Studies have shown that the introduction of certain enrichment devices can reduce locomotor stereotypical behaviours, which may have a positive impact on welfare. The aims of the project were twofold. First it aimed to determine whether overnight enrichment designed to encourage foraging behaviour reduced locomotor stereotypic behaviour in three African elephants. Second, the impact of this overnight enrichment on the performance of the elephants in their morning positive reinforcement training sessions was examined. It was predicted that enrichment would reduce stereotypes and improve the performance of the elephants during training, although their motivation to work for food rewards might be reduced. The three African elephants housed at Blair Drummond Safari Park are separated overnight and kept in individual heated stalls, preventing them from performing the natural foraging behaviours that their wild counterparts would normally exhibit at this time. Overnight monitoring with cameras revealed that the elephants performed some locomotor stereotypes. Enrichment was in the form of peanuts hidden in sawdust on the floor, or jam spread on logs chained in the enclosure. It was shown that locomotor stereotypes reduced significantly after enrichment (for two out of three of the elephants, the third elephant rarely stereotyped). Aggression during the training session was significantly reduced in one of the elephants but in one elephant there was also a significant decrease in the number of correctly performed behaviours during training. The study indicates the importance of providing overnight enrichment for elephants that naturally forage at this time, but that the impact of enrichment on training should be investigated further.

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