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Abstracts of Oral Communications and Poster Presentations



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Photo: Juvenile European hares/*Lepus europaeus kursiv* (Ingo Arndt)

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## Abstracts

### Age-dependent mating tactics in male bushbuck (*Tragelaphus scriptus*)

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In species with a highly competitive mating system, age may determine whether a male will be a territory holder and thereby have more access to females, or use alternative, non-territorial mating behaviours. We investigated mating tactics in three social/age classes of male bushbuck (*Tragelaphus scriptus*), i.e., adult territorial males (>5 years), young-adult non-territorial males (3-5 years) and subadult males (1-3 years). Territorial males were found to associate more frequently with females than subadult males, but young-adult males did not significantly differ from territorial males. In all three classes of males, the spatial distribution of the males relative to that of the females (i.e., their home range overlap) predicted the rate of association between males and females (Cole's coefficient of association). Territorial males showed very high rates of premating behaviour compared with the other two social/age classes and frequently attempted to monopolise females; however, copulation rates did not

significantly differ between adult territorial and young-adult non-territorial males. Agonistic behaviour was most frequently initiated by territorial males when approached by a young-adult male, whereas aggressive interactions between two territorial males were far less frequent. Our results indicate that two age-dependent mating tactics exist in male bushbuck, that of adult territorial males and a sneak-like tactic in young-adult males. Despite the high number of mating behaviours shown by subadults, territorial males may have an advantage over non-territorial males, because they have more unhampered opportunities to monitor females via deposited excreta in localised defecation sites.

### Reducing visual stimulations in European hares (*Lepus europaeus* Pallas) captured for translocation

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European hares are commonly captured by trammel nets in area fitted for wildlife reproduction and translocated in hunting area during the no hunting period and before their reproduction season. Since stress may be an important variable affecting the survival of animal in relocation programmes we tested the effect of the use of obscuring the eyes with a cloth tend immediately after net trapping of captured hares.

A total of 12 wild hares were captured by coursing with 3-4 dogs (greyhounds or lurches) in a protected area of Florence province (X = 1667003 Y = 4844543, ref. Rome, 1940) for the following release in a low-density area.

Immediately after capture the eyes of 6 hares were equipped with an obscuring cloth tend (treated) while the other 6 were normally handled to the wooden darkened capture-boxes without blinding their eyes (control).

All the hares remained inside the capture-boxes before blood drawing for a variable period of time. For sample collection all the hares were physically restrained with their eyes immediately covered and blood was always

collected within 1–2 minutes by the auricular vein. Blood samples (plasma) were analyzed for glucose, cholesterol, triglycerides, CK, AST, ALT, NEFA, BUN, total protein, albumins, globulins and cortisol concentrations. Body temperature, heart and respiratory rate, sex, and age were evaluated in each hare. The hares were then equipped with a radio tag (Biotrak TW3) and released again to the wildness.

The effects of treatment on haematic and physiological parameters were analysed by ANOVA. Subclinically stressed hares were discriminated from non-stressed hares by the use of a discriminant function based on CPK, AST and Glucose, then the incidence of subclinical stress was calculated on treated and control hares.

Results showed that the reference values (means  $\pm$  SE) were as follows: hares equipped with the obscuring cloth tend in the net: temperature  $38.8 \pm 0.32$  °C, respiratory rate  $95 \pm 9$  n/min, hearth rate  $122 \pm 15$  n/min, glucose  $104 \pm 26$  mg/dl, cholesterol  $82 \pm 15$  mg/dl, triglycerides  $40 \pm 6$ , CK  $3701 \pm 1629$  U/l, AST  $141 \pm 28$  U/l, ALT  $42 \pm 3$  U/l, NEFA  $50 \pm 2$  mg/l, BUN  $49 \pm 6$  mg/dl, total protein  $5.9 \pm 0.31$ , albumins  $4.9 \pm 0.20$  d/dl, globulins  $1.0 \pm 0.20$  g/dl, cortisol  $22 \pm 4$   $\mu$ g/dl; control hares: temperature  $37.2 \pm 0.37$  °C, respiratory rate  $81 \pm 10$  n/min, hearth rate  $106 \pm 17$  n/min, glucose  $87 \pm 33$  mg/dl, Cholesterol  $100 \pm 19$  mg/dl, triglycerides  $32 \pm 7$ , CK  $5510 \pm 1995$  U/l, AST  $192 \pm 34$  U/l, ALT  $31 \pm 4$  U/l, NEFA  $50 \pm 2$  mg/l, BUN  $58 \pm 8$  mg/dl, total protein  $5.7 \pm 0.38$ , albumins  $4.7 \pm 0.24$  d/dl, globulins  $1.0 \pm 0.24$  g/dl, cortisol  $15 \pm 5$   $\mu$ g/dl. Temperature and ALT were significantly lower in the control group compared to the treated group but the AST/ALT ratio was significantly higher in the control group compared to the treated group. Only one hare belonging to treated hares died within the 30 days following release. The incidence of subclinical stress was 28,6% in the treated hares and 80,0% in the control hares ( $\chi^2_c = 1.37$ ,  $p = 25.3\%$ ).

The results indicate that the technique to put an obscuring cloth tend on the eyes of hares remained trapped in the nets, reduce the subclinical stress caused during capturing.

#### Seizing the chances or merely daring to dream? Mate preferences in (eusocial) monogamous *Zambian mole-rats* (*Fukomys* sp.)

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Subterranean *Zambian mole-rats* of the genus *Fukomys* live in colonies where reproduction is restricted to a single breeding pair living in monogamy. The eusocial

colony structure with lifelong philopatry of the offspring is retained by restriction of mating due to incest avoidance. Colony members are generally xenophobic towards unfamiliar „intruders” of the same sex, but combining unfamiliar unrelated individuals of opposite sexes often results in mating. We performed behavioural preference and fidelity tests to investigate the intensity of pair-bonding of the reproductive pair of *Zambian mole-rats* (*Fukomys mechowii* and *Fukomys anselli*). By also involving non-reproductive animals in this study, we were able to test the cohesion of the eusocial colony structure.

Preferences in mate choice were tested in a 2-choice-labyrinth where the tested subjects had indirect contact to the animals of choice via a metal grid. In both species, the breeding males (kings) spent significantly more time sniffing a strange reproductive female (queen) than their own mate. If given the choice between a strange queen and her non-reproductive daughter, the tested kings significantly preferred the queen. Queens on the other hand did not show a preference for either their own mates or a strange king.

In the second experiment (fidelity test) with *F. anselli* we allowed the colonies' males to access the compartment of an unfamiliar unrelated female while their respective family stayed in an adjacent compartment (separated by a grid). Only the non-reproductive adult males seized their chances to copulate with the unfamiliar female while the kings remained faithful. The females readily copulated with almost any visiting male independent of the females' present reproductive status.

Our study reveals that in *Fukomys* mole-rats the males seem to be the choosy gender. We conclude that the current reproductive status of a male is crucial for its reproductive decisions and postulate that the maintenance of *Zambian mole-rats*' colonies depends strongly on the faithfulness of the kings.

#### Population Status and Principal Threats for Large Carnivores in alpine areas of Turkey

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Turkey constitutes a true bridge among three continents of the world; Asia, Africa and Europe. Due to this unique geographical position, it is one of the most important countries for alpine fauna and flora species in subtropical region and it hosts many large carnivorous species. These species are: Brown bear (*Ursus arctos*), wolf (*Canis lupus*), leopard (*Panthera pardus*), tiger (*Panthera tigris*), Eurasian lynx (*Lynx lynx*), caracal (*Caracal caracal*) and Striped hyena (*Hyaena hyaena*).



## REDUCING VISUAL STIMULATIONS IN EUROPEAN HARES AT CAPTURING

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### Introduction

European hares are commonly captured by trammel nets in area fitted for wildlife reproduction and translocated in hunting area during the no hunting period and before their reproduction season. Since stress may be an important variable affecting the survival of animal in relocation programmes we tested the effect of the use of obscuring the eyes with a cloth tend immediately after net trapping of captured hares.

### Materials and methods

A total of 12 wild hares were captured by coursing with 3-4 dogs (greyhounds or lurches) in a protected area of Florence province for the following release in a low-density area.

Immediately after capture the eyes of 6 hares were equipped with an obscuring cloth tend (treated) while the other 6 were normally handled to the wooden darkened capture-boxes without blinding their eyes (control). All the hares remained inside the capture-boxes before blood drawing for a variable period of time.



Study area in province of Florence

For sample collection all the hares were physically restrained with their eyes immediately covered and blood was always collected within 1 - 2 minutes by the auricular vein.



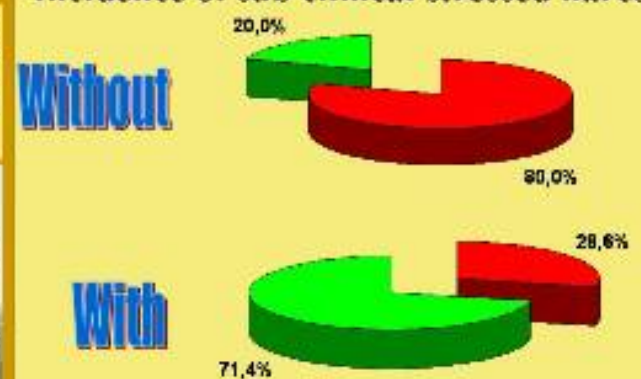
cloth used to obscure the eyes of captured hares tend to the eyes of the hares

Blood samples (plasma) were analyzed for glucose, cholesterol, triglycerides, CK, AST, ALT, NEFA, BUN, total protein, albumins, globulins and cortisol concentrations. Body temperature, heart and respiratory rate, sex, and age were evaluated in each hare. The hares were then equipped with a radio tag (Biotrak TW3) and released again to the wildness. The effects of treatment on haematic and physiological parameters were analysed by ANOVA. The incidence of sub clinical stressed hares and no stressed hares were calculated by the use of a discriminant function based on CPK, AST and Glucose (Paci et al. 2006 Ital. J. Anim. Sci. VOL. 5: 175-181)

### Results

Results showed that temperature and ALT were significantly lower in the control group compared to the treated group. AST did not differ between groups but the AST/ALT ratio was significantly higher in the control group compared to the treated group.

### Incidence of sub clinical stressed hares



Only one hare belonging to treated hares died within the 30 days following release. The incidence of subclinical stress was 28.6 % in the treated hares (With) and 80.0 % in the control hares (Without) ( $\chi^2_c = 1.37$ ,  $p = 25.3\%$ ).

### Obscuring cloth tend (Hare's hood)

	With		Without		Prob>F
	mean	Std Err.	mean	Std Err.	
Temperature °C	38.8	0.32	37.2	0.37	0.005
Respiratory rate n/min	95	9	81	11	0.318
Heart rate "	122	15	106	17	0.487
Glucose mg/dl	104	26	87	33	0.685
Cholesterol "	82	15	100	19	0.462
Triglycerides "	40	6	32	7	0.383
CK U/l	3701	1629	5510	1995	0.495
ALT (or GPT) "	42	3	31	4	0.049
AST (or GOT) "	141	28	192	34	0.165
AST/ALT ratio	3.3	1.13	6.2	1.22	0.044
NEFA mg/l	50	2	50	2.4	0.910
BUN mg/dl	49	6	58	8	0.421
Total protein g/dl	5.9	0.31	5.8	0.38	0.799
Ureic nitrogen mg/dl	23	2.9	27	3.6	0.421
Albumins "	4.9	0.20	4.7	0.25	0.672
Globulins "	1.0	0.20	1.0	0.24	0.979
A/G ratio	7.5	1.44	5.6	1.76	0.422
Cortisol µg/dl	22	4	15	5	0.325

### Conclusions

The results indicate that the technique to put an obscuring cloth tend on the eyes of hares remained trapped in the nets, reduce the subclinical stress caused during capturing.