

Validation of Fecal Glucocorticoid Metabolites as Non-Invasive Markers for Monitoring Stress in Common Buzzards (*Buteo buteo*)

Lara-Luisa Grundei ^{1,*}, Tanja E. Wolf ^{2,3}, Florian Brandes ⁴, Karolin Schütte ⁴, Fritjof Freise ⁵, Ursula Siebert ⁶, Chadi Touma ² and Michael Pees ¹

¹ Department of Small Mammal, Reptile and Avian Medicine and Surgery, University of Veterinary Medicine Hannover, Foundation, Bünteweg 9, 30559 Hannover, Germany

² Department of Behavioral Biology, School of Biology/Chemistry, Osnabrück University, Barbarastr. 11, 49076 Osnabrück, Germany

³ Mammal Research Institute, Faculty of Natural and Agricultural Sciences, University of Pretoria, Pretoria, 0028 South Africa

⁴ Wildlife Rescue and Conservation Center, Hohe Warte 1, 31553 Sachsenhagen, Germany

⁵ Department of Biometry, Epidemiology and Information Processing, University of Veterinary Medicine Hannover, Foundation, Bünteweg 2, 30559 Hannover, Germany

⁶ Institute of Terrestrial and Aquatic Wildlife Research, University of Veterinary Medicine Hannover, Foundation, Bischofsholer Damm 15, 30173 Hannover, Germany

* Correspondence: lara-luisa.grundei@tiho-hannover.de


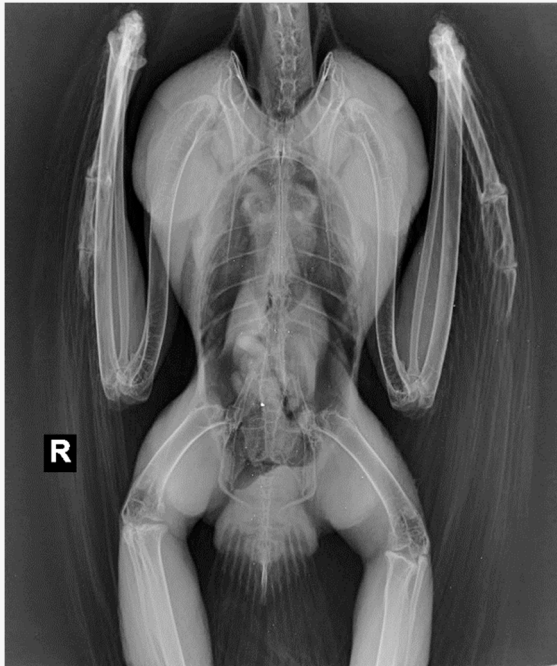
Supplementary Materials

Table S1: Results of blood examination (n=6) in female (F1, F2, F3) and male (M1, M2, M3) Common Buzzards.

Comprehensive metabolic panel (CMP)	Standard value	F1	F2	F3	M1	M2	M3
<i>a</i> -Amylase	- U/l	277.00	403.00	682.00	354.00	900.00	900.00
Cholinesterase	840-1702 U/l	2706.00	3780.00	3897.00	2922.00	2447.00	2385.00
Bile acids	20-118 µmol/l	2.52	19.71	13.51	3.90	7.15	3.20
Aspartate aminotransferase	50-105 U/l	463.80	716.10	843.90	355.80	439.90	329.90
Creatine kinase	357-850 U/l	970.00	1022.00	5052.00	560.00	1338.00	1808.00
Lactate dehydrogenase	625-1210 U/l	398.80	560.00	930.70	357.00	632.30	316.20
Total Protein	25-40 g/l	36.00	37.20	43.50	30.40	28.10	36.70
Glutamate dehydrogenase	- U/l	3.50	1.60	22.20	0.20	4.70	0.40
Uric Acid	326-675 µmol/l	405.00	691.00	696.00	132.00	221.00	232.20
Cholesterol	3.9-10.5 mmol/l	7.10	7.80	11.90	6.60	11.90	8.00
Triglycerides	- mmol/l	1.23	1.59	1.14	0.74	0.60	0.74

<i>Phosphorus</i>	0.77-2.1 mmol/l	0.50	0.40	0.20	0.20	0.40	0.40
<i>Calcium</i>	2.1-2.56 mmol/l	2.40	2.30	2.40	2.00	2.20	2.30
<i>Sodium</i>	153-164 mmol/l	161.00	155.00	156.00	159.00	166.00	150.00
<i>Potassium</i>	0.9-1.7 mmol/l	1.90	2.70	3.20	2.20	3.00	3.60

Table S2: Results of X-rays for female (F1, F2, F3) and male (M1, M2, M3) Common Buzzards (n=6); note small circular radiopaque artefact on the X-ray plate.

<i>Animal ID</i>	<i>Laterolateral</i>	<i>Ventrodorsal</i>
F1		

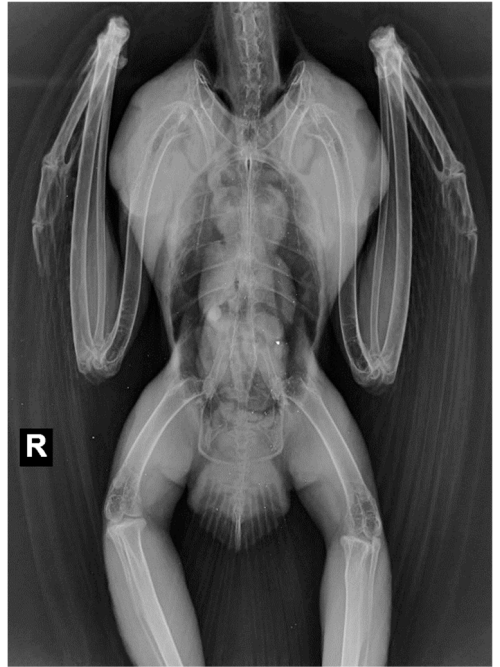
F2



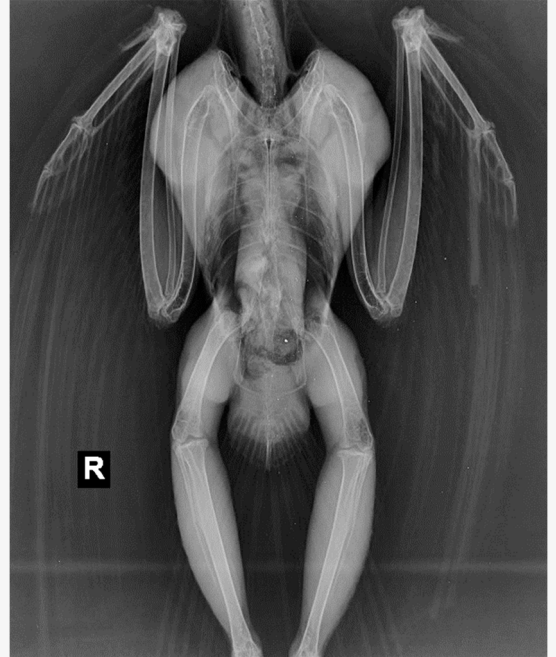
F3



M1



M2



M3

