

Brustbein Gesundheit bei Legehennen

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Lohmann Süd Tagung
Bad Windsheim

Dr. Matthias Schmutz
Lohmann Breeders



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Brustbein-Brüche



Kein Bruch



Alter und frischer Bruch

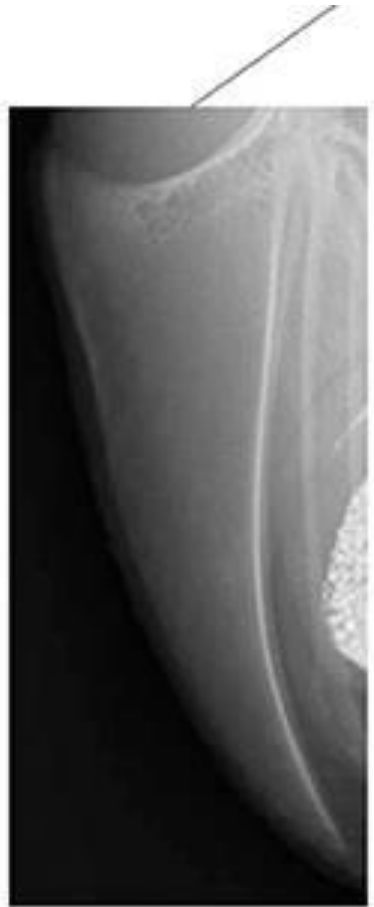
Multiple keel bone fractures



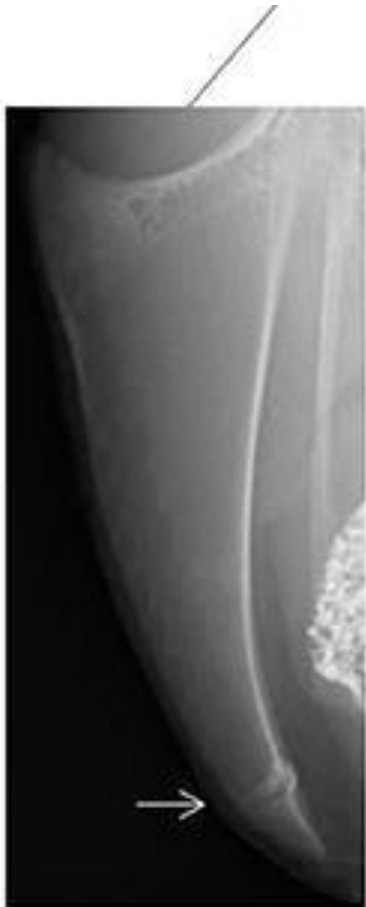
Röntgenbilder



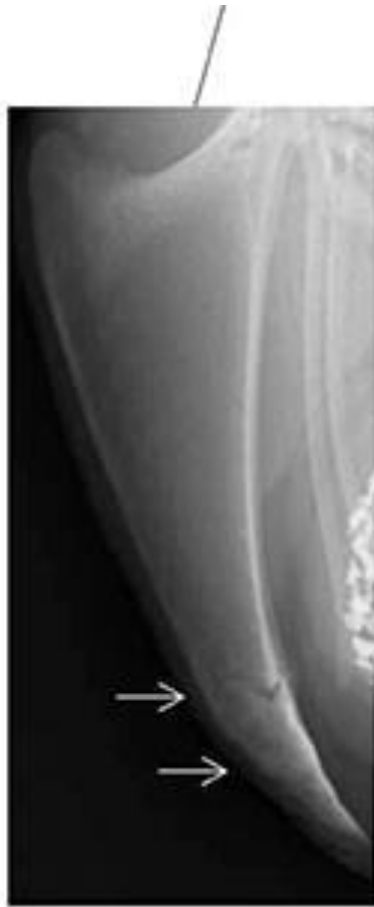
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1



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4



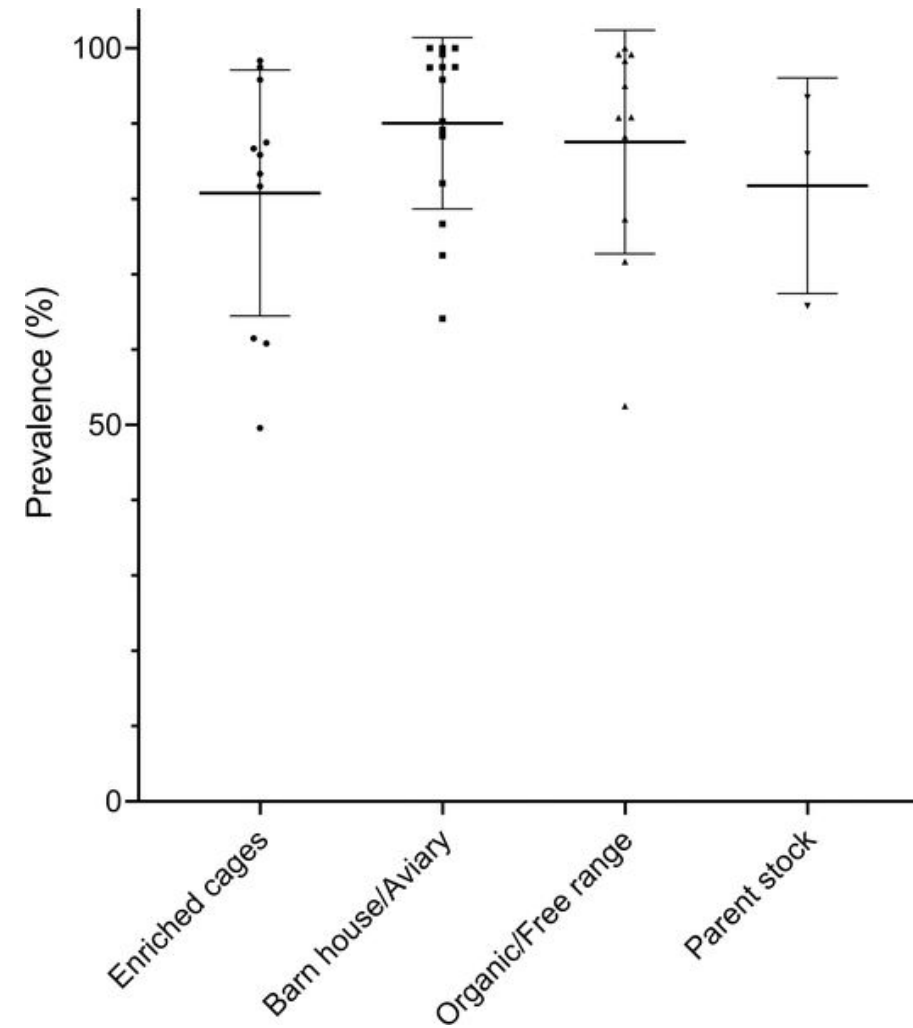
5

Table 2. Distribution of the hen lines in 29 flocks out of the study population.

Hen line (n = 29)	No. flocks	KBF Prevalence (%)
Bovans Brown	1	88.24
Dekalb White	1	99.16
Hisex	2	98.75
Lohmann Brown	2	79.32
Lohmann Brown-Lite	3	93.84
Lohmann LSL Classic	17	86.55
Lohmann LSL Parent Stock	3	81.55

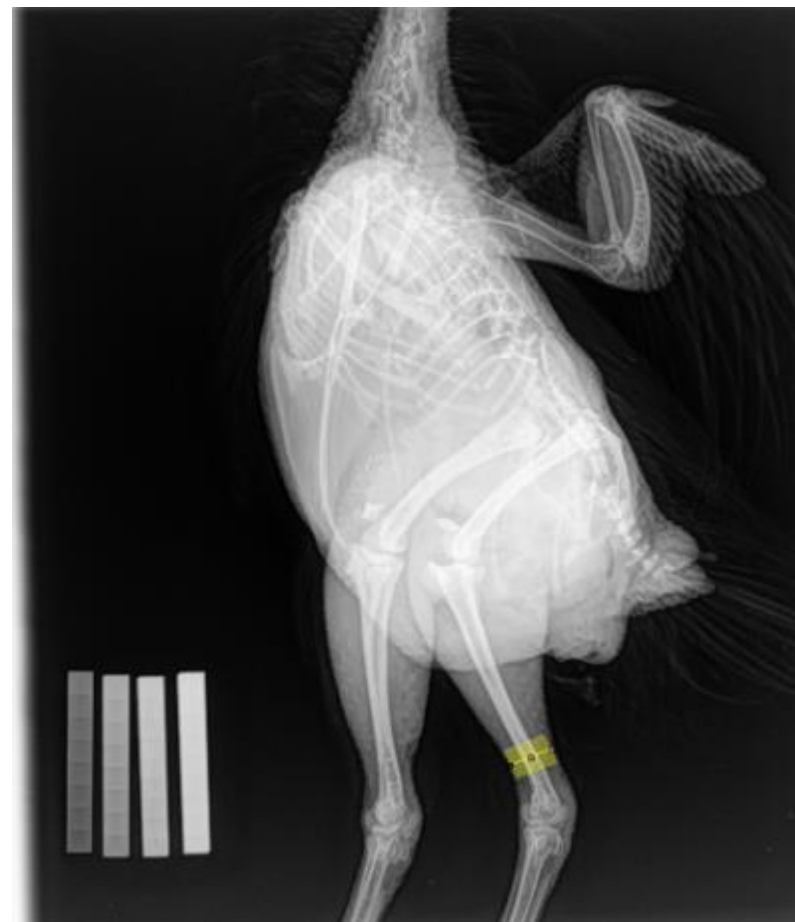
<https://doi.org/10.1371/journal.pone.0256105.t002>

Fig 1. Scatter plot of the flock prevalence of KBF within each production system.

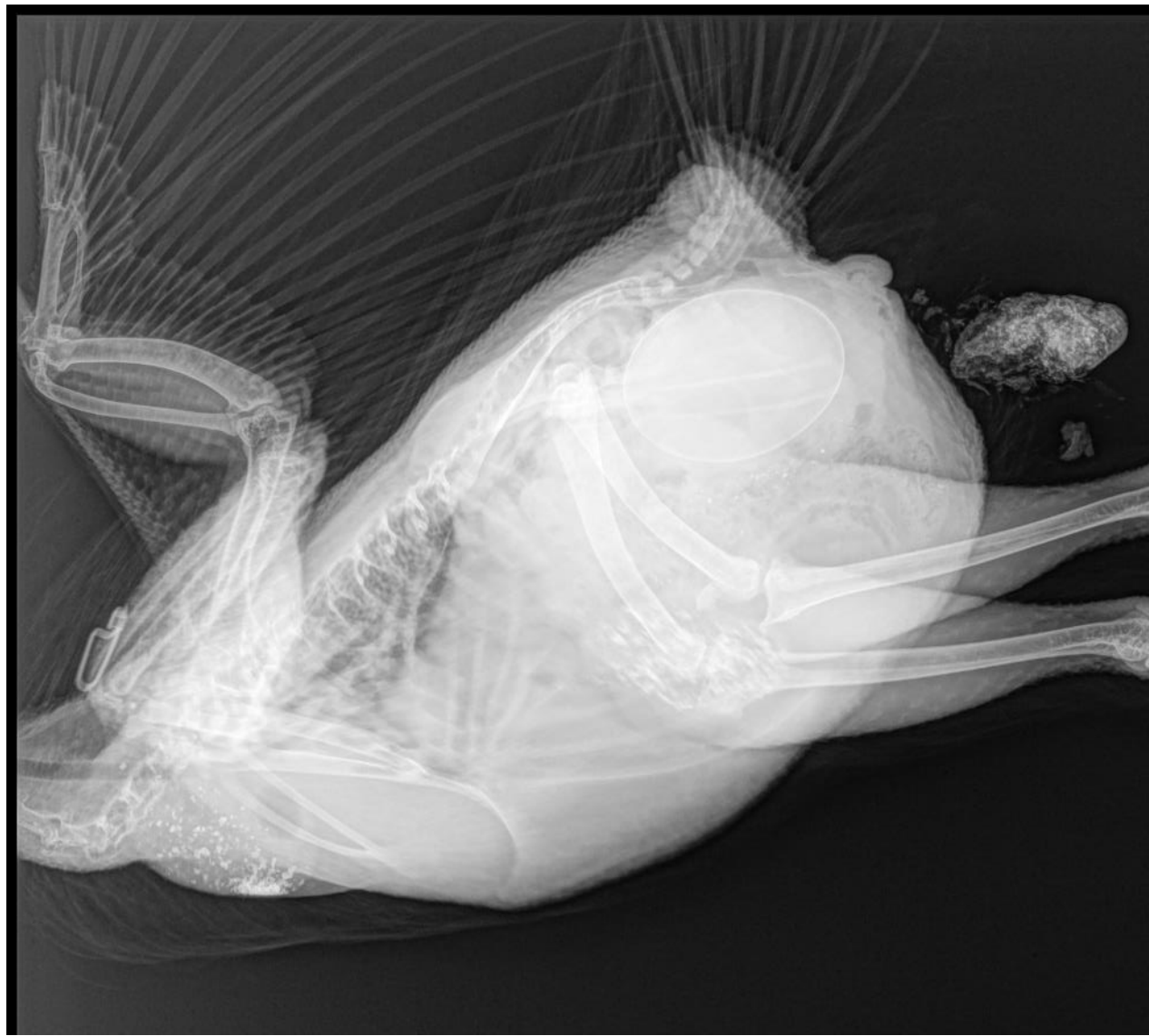


	Estimated average No. fractures/hen
Production system	
Enriched cages	1.4543
Barn house/ Aviary	2.9300
Organic/Free range	2.5943
Age at onset of lay (weeks)	
20	2.4503
21	2.7789
22	1.8904
24	1.9131
Body weight at depopulation (g), 500 g intervals	
1000	2.3036
1500	2.3408
2000	2.2243
2500	2.0532
Estimated daily egg weight/hen at onset of lay (g)	
25	1.6685
30	1.9458
35	3.1913
40	2.8499
45	2.4993

Thøfner
ICN, Dahl
J,
Christensen JP (2021)
Keel bone
fractures in
Danish
laying
hens:
Prevalence
and risk
factors.
PLOS ONE
16(8):
e0256105.
<https://doi.org/10.1371/journal.pone.0256105>



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Palpation Note



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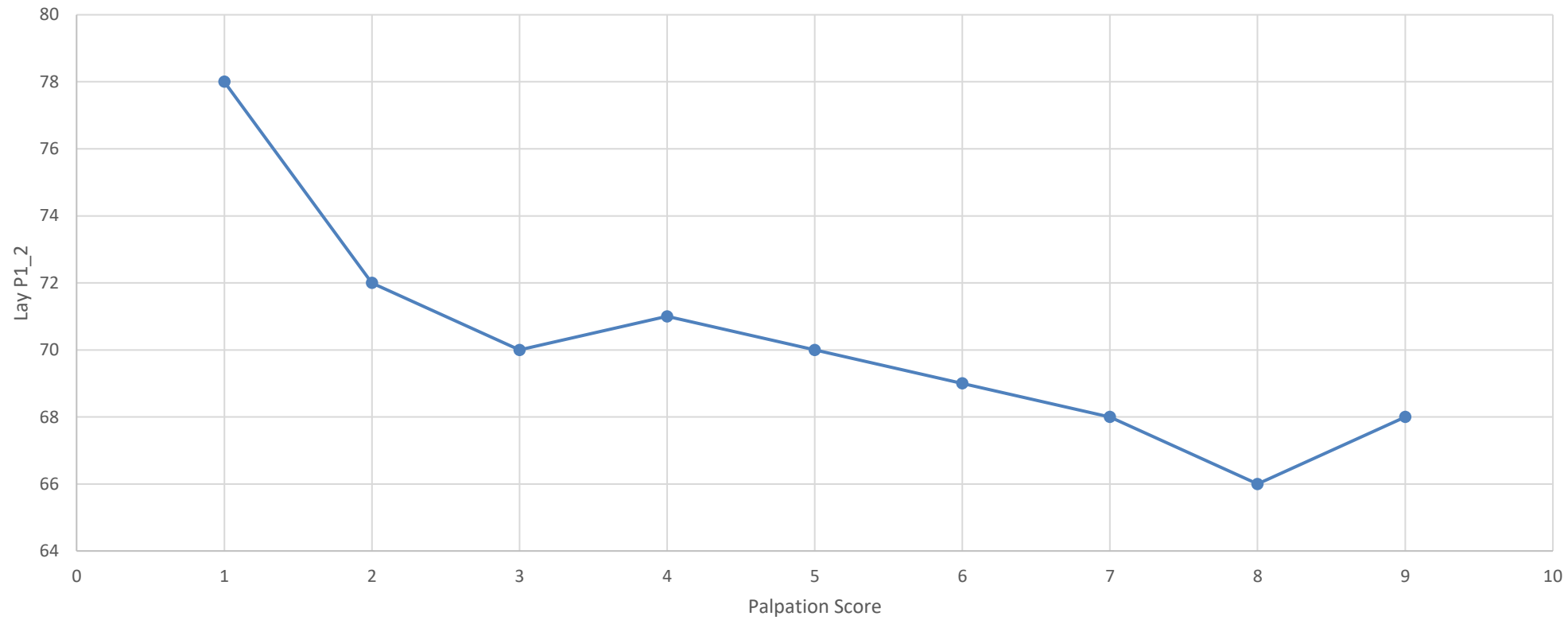
Line	Heritability Palpation Note	Genetische Korrelation Zu Legebeginn (P1_2)
A	0,26	-0,32
B	0,13	-0,34
C	0,32	-0,29
D	0,17	-0,51
E	0,22	-0,18
F	0,04	-0,21

Zusammenhang mit Legebeginn



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Relation Keel Bone - Sexual Maturity



Reliable Bone phenotype for Layer breeding

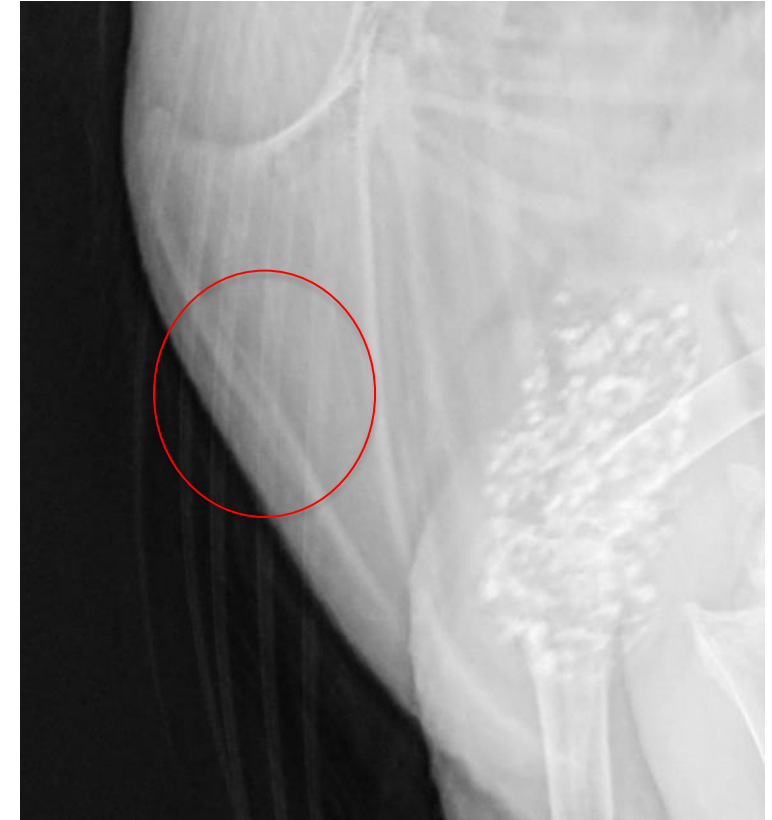
2. X-Ray



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Keel bone extremely difficult to measure

- Position of keel / covered by body
- Thickness / density of keel very low
- Correlation between long bones and keel bone
 $r_g = 0.5 - 0.7$ (Bishop et al. 2000)
- Investigation on keel
 - Subjective palpation
 - Relation shape index and bone quality
 - Scoring of fractures/ deformations



Literatur-Vergleich Weiße/Braune Hennen



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Rufener and Makagon | 543

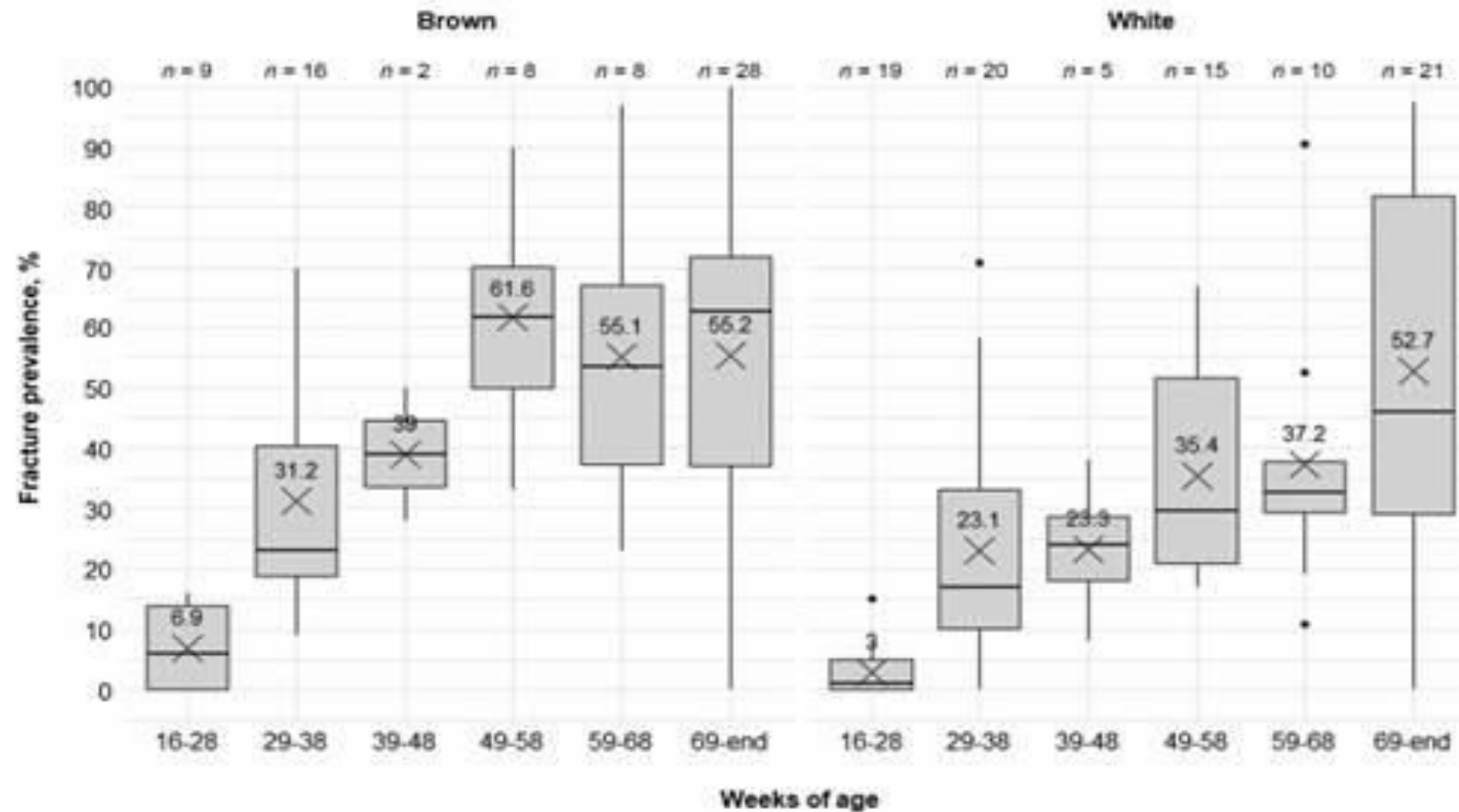


Figure 3. Keel bone fracture prevalence (%) across age categories and strains. Boxplots show medians and interquartile and absolute ranges of raw data plus outliers. The cross and numbers indicate mean prevalence. n indicates the number of entries within one category.

Untersuchung bei Wildhühnern (Red Jungle fowl)



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Animals 2020, 10, 1655

4 of 8

Table 1. Overview of keel bone findings in the jungle fowl.

	Hens ¹			Roosters ²		
	n	%	95% CI ³	n	%	95% CI
Fractures						
Yes	1	8.3%	0–48%	0	0%	–
No	11	92%	52–99%	17	100%	–
Deviations ⁴						
Yes	10 ³	83%	47–97%	1 ³	5.9%	0.7–36%
No	2	17%	3.5–52%	16	94%	64–100%

¹ n = 12; ² n = 17; ³ Confidence interval; ⁴ all observed deviations were very slight.

3.2. Keel Bone Fractures

Only one of the 29 keel bones presented a visible fracture during autopsy, see Table 1. The keel bone belonged to a female jungle fowl. The fracture was not palpable due to barely any callus formation and it was only detected during autopsy. The fracture site was located caudally, on the tip of the bone. The fracture was on the dorsal side of the bone, which is not accessible by external palpation. It was visible as a dark line with a slight elevation, observed both visually and detectable with the fingertip. Figure 1 shows the keel bone with fracture, Figure 2 is a comparable keel bone with no fracture. It must be noted that the color of the bone varied between individuals, from dark red towards pinker colors.

1 von 12 Hennen hat Brustbein-Bruch
10 von 12 Hennen haben Brustbein-Deformation

Kittelsen et al.;
Animals, 2020

Fakten / Botschaft:



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- Brustbeinbrüche sind keine Erscheinung die “neu” ist, es wurde früher aber weniger darauf geachtet als auf Brüche der Röhrenknochen
- Es ist ein multifaktorielles Problem
- Es tritt auch bei Wild-Hühnern und Niedrig-Leistungs-Hennen auf
- Die negative Beziehung zur Leistung der Hennen, v.a. zum Eigewicht ist bei weitem nicht so deutlich wie behauptet wird
- Die einzige deutliche negative Beziehung besteht zum Legebeginn / Frühreife
 - Mögliche kurzfristige Verbesserung: Lichtprogramm für späteren Legebeginn
 - Züchterisch: “Langsam-Legende Henne” mit genetisch spätem Legebeginn

Thank you for your attention!



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