

APPENDIX

Data-S1<- Inter-relationship melanin-based measured traits

Preliminarily we analysed the inter-relationship between the common kestrels plumage spots. With this aim we divided kestrels dorsum in four areas (a) back, (b) auxiliary feathers, (c) greater coverts and (d) median and lesser coverts (Fig S1). In each of them we counted the number of spots and randomly selected 5 of them to measure the size, except for the great coverts where we always measured the same spot (red circle). Then we constructed LMM, between the number of spots and the size in each area for both males and females. We included individual identity as a random effect to avoid pseudoreplication (Hurlbert 1984) because we have repeated measures of the same individuals. Our results show that there is a high positive relation between the number of spots (Table S1) and the area in the four zones of males kestrel dorsum (Table S2). That is, if one male has a great number of spots in the back, it will have a lot of spots in the other patches and the same with the back spot size. In the case of the females we did not found any consistent pattern (Tables S3 and S4). We also analysed the relation between the number and size of the spots in each patch. For both males and females (Tables S5 and S6) there is not a consistent pattern in the relationship suggesting that these two variables have different influences.

	Number of back spots	Number of auxiliary feather spots	Number of greater covert spots	Number of median and lesser covers spots
Number of back spots		1.201±0.176****	0.658±0.234***	0.249±0.032****
Number of auxiliary feather spots	1.201±0.176****		0.167±0.088*	0.087±0.012****
Number of greater covert spots	0.658±0.234***	0.167±0.088*		0.041±0.011***
Number of median and lesser covers spots	0.249±0.032****	0.087±0.012****	0.041±0.011***	

Table S1. Results of LMM analysing the inter-relationship of the spot number in four patches of male common kestrels (*Falco tinnunculus*). * $P < 0.1$ (Marginally significant) ** $P < 0.05$ *** $P < 0.01$ **** $P < 0.0001$ (n=175)

	Back spot size	Auxiliary feather spots size	Greater covert spot size	Median and lesser covers spot size
Back spot size		0.254±0.038****	0.050±0.138***	0.352±0.101****
Auxiliary feather spots size	0.254±0.038****		0.106±0.024***	0.762±0.176***
Greater covert spot size	0.050±0.138***	0.106±0.024***		1.917±0.532***
Median and lesser covers spot size	0.352±0.101****	0.762±0.176***	1.917±0.532***	

Table S2. Results of LMM with normal errors analysing the inter-relationship of the spot size in four patches of male common kestrels (*Falco tinnunculus*). Significant variables are in bold. * $P < 0.1$ (Marginally significant) ** $P < 0.05$ *** $P < 0.01$ **** $P < 0.0001$ (n=175)

	Number of back spots	Number of auxiliary feather spots	Number of greater covert spots	Number of median and lesser covers spots
Number of back spots		0.379±0.182	0.002±0.341	0.099±0.080
Number of auxiliary feather spots	0.379±0.182		0.0533±0.202**	0.141±0.050**
Number of greater covert spots	0.002±0.341	0.0533±0.202**		0.034±0.028
Number of median and lesser covers spots	0.099±0.080	0.141±0.050**	0.034±0.028	

Table S3. Results of LMM analysing the inter-relationship of the spot number in four patches of female common kestrels (*Falco tinnunculus*). * $P < 0.1$ (Marginally significant) ** $P < 0.05$ *** $P < 0.01$ **** $P < 0.0001$ (n=68)

	Back spot size	Auxiliary feather spots size	Greater covert spot size	Median and lesser covers spot size
Back spot size		0.076±0.073	0.012±0.034	0.163±0.133
Auxiliary feather spots size	0.076±0.073		0.065±0.058	0.456±0.209**
Greater covert spot size	0.012±0.034	0.065±0.058		1.058±0.392**
Median and lesser covers spot size	0.163±0.133	0.456±0.209**	1.058±0.392**	

Table S4. Results of GLMM with normal errors analysing the inter-relationship of the spot size in four patches of female common kestrels (*Falco tinnunculus*). * $P < 0.1$ (Marginally significant) ** $P < 0.05$ *** $P < 0.01$ **** $P < 0.0001$ (n=68)

Parameter	Estimate	SE	<i>F</i>	<i>P</i>
Number of back spots (n=175)				
Back spot size	0.146	0.263	F _{1,49} =0.311	0.579
Number of auxiliary feathers spots (n=175)				
Auxiliary feather spot size	0.069	0.055	F _{1,49} =1.566	0.216
Number of greater coverts spots (n=175)				
Size of greater covert spots	0.054	0.015	F _{1,49} =13.258	0.0007
Number of median and lesser coverts (n=175)				
Size of median and lesser covert spots	0.152	0.716	F _{1,49} =0.045	0.831

Table S5. Results of the LMM analysing the relationship between the number and size of the spots in each patch in male common kestrels (*Falco tinnunculus*). Significant variables are in bold.

Parameter	Estimate	SE	<i>F</i>	<i>P</i>
Number of back spots (n=68)				
Back spot size	-0.088	0.337	F _{1,19} =0.068	0.795
Number of auxiliary feather spots (n=68)				
Auxiliary feather spot size	-0.441	0.122	F _{1,19} =13.055	0.001
Number of greater coverts spots (n=68)				
Size of greater coverts spots	0.061	0.032	F _{1,19} =3.444	0.079
Number of median and lesser coverts (n=68)				
Size of median and lesser coverts spots	0.676	0.537	F _{1,19} =1.579	0.224

Table S6. Results of the LMM analysing the relationship between the number and size of the spots in each patch in female common kestrels (*Falco tinnunculus*). Significant variables are in bold.

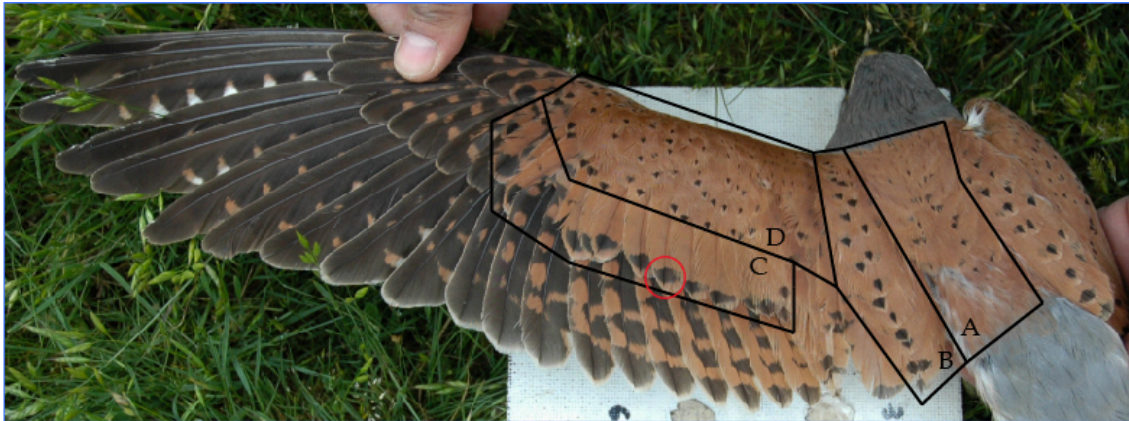


Fig. S1 Common kestrel dorsum divided in four areas: (a) back, (b) auxiliary feathers (c) greater coverts and (d) median and lesser coverts. The red circle represents the measured spot of that area.

Data-S2 <- Measured trait repeatability

Trait	Males		Females	
	R	P	R	P
Back spot size	0.742	< 0.0001	0.711	< 0.0001
Auxiliary feathers spot size	0.606	< 0.001	0.210	0.10
Median and lesser spot size	0.337	0.04	0.390	0.01

Table S7. Results of the repeatability analysis done for the size of the measured traits in both males and females.

We also measured the repeatability (Lessells & Boag 1987; Nakagawa & Schielzeth 2010) of the measures that we took for both males and females. Our results indicate that only the measures of the size of back spots are repeatable enough. Considering what we stated below the number and size of both males and female

common kestrel is the only melanin-based trait that we can measure efficiently.

This is the main reason that we follow to use these traits in our analyses.

Data-S3<- Number of observations for males and females in each age class.

Age	2	3	4	5	6	7	8	9	Total
<i>Males</i>									
Reproductive traits	53	24	13	13	4	1	1	-	109
Ornamental traits	51	23	12	13	4	1	1	-	105
<i>Females</i>									
Reproductive traits	31	18	10	5	4	2	2	2	75
Ornamental traits	31	18	10	5	4	2	2	2	75

Table S8. Number of observations on each age class in males and females.

References

- Hurlbert, S.H. (1984) Pseudoreplication and the Design of Ecological Field Experiments. *Ecological Monographs*, **54**, 187-211.
- Lessells, C.M. & Boag, P.T. (1987) Unrepeatable repeatabilities a common mistake. *The Auk*.
- Nakagawa, S. & Schielzeth, H. (2010) Repeatability for Gaussian and non-Gaussian data: a practical guide for biologists. *Biological Reviews*, **85**, 935-956.