



Fig. S1.

The distribution of average daily temperatures across the study period. Date range is based on the date when the first experimental nest had 4 day-old-nestlings (10 of June) to the date when the last experimental nest had 11 day-old-nestlings (2 of July)

Table S1. Output of linear models on the oxidative status of males in relation to male melanin colouration and average temperature of the nestling period and their interactions

	Estimate	s.e.	d.f.	F	P
SOD					
Intercept	80.77	6.56			
Age			1,39	0.63	0.54
Old-young	-1.76	2.67			
Clutch size	-0.50	1.00	1,39	0.25	0.62
Blackness	0.041	0.029	1,39	1.96	0.17
BSM			2,39	1.14	0.33
Enlarged-control	-1.06	1.11			
Reduced-control	-1.01	1.24			
Temperature	-3.57	3.95	1,39	1.72	0.38
Removed:					
Temp × blackness	0.058	0.13	1,38	0.18	0.67
CAT					
Intercept	11.88	8.08			
Age			1,41	0.50	0.61
Old-young	-1.71	2.16			
Clutch size	-0.64	1.25	1,41	0.26	0.61
Blackness (social male)	0.054	0.037	1,41	2.18	0.15
BSM			2,41	0.99	0.38
Enlarged-control	-1.90	1.40			
Reduced-control	0.64	1.53			
Temperature	-4.19	4.87	1,41	0.74	0.39
Removed:					
Temp × blackness			1,40	0.12	0.73

	Estimate	s.e.	d.f.	F	P
GP					
Intercept	0.02	0.0074			
Age					
Old-young	0.0035	0.0031	1,40	0.38	0.69
Clutch size	-0.00049	0.0011	1,40	0.19	0.67
Blackness (social male)	0.0000083	0.000034	1,40	0.06	0.81
BSM			2,40	0.031	0.97
Enlarged-control	-0.00025	0.0013			
Reduced-control	0.00033	0.0011			
Temperature	-0.0058	0.0015	1,40	1.68	0.20
Removed:					
Temp × blackness			1,39	0.27	0.60
GST					
Intercept	0.011	0.0034			
Age			1,39	4278	0.074
Old-young	0.0020	0.00084			
Clutch size	-0.00047	0.00051	1,39	0.85	0.36
Blackness	0.0000040	0.000014	1,39	0.078	0.78
BSM			2,39	0.88	0.42
Enlarged-control	0.00042	0.00056			
Reduced-control	0.00080	0.00060			
Temperature	0.0078	0.0043	1,39	3.26	0.078
Temp × blackness	-0.00015	0.000064	1,39	5.69	0.022
GShtot					
Intercept	0.81	0.84			
Age			1,40	0.29	0.75

	Estimate	s.e.	d.f.	F	P
Old-young	-0.21	0.35			
Clutch size	0.012	0.13	1,40	0.0085	0.93
Blackness	-0.0012	0.0038	1,40	0.10	0.75
BSM			2,40	1.56	0.22
Enlarged-control	-0.17	0.15			
Reduced-control	-0.27	0.16			
Temperature	-0.29	0.51	1,40	0.33	0.57
Removed:					
Temp × blackness			1,39	0.51	0.48
GSHratio					
Intercept	0124	0.30			
Age			1,40	0.32	0.73
Old-young	-0.052	0.079			
Clutch size	-0.056	0.047	1,40	1.46	0.23
Blackness	0.00051	0.0014	1,40	0.14	0.71
BSM			2,40	0.90	0.42
Enlarged-control	0.063	0.053			
Reduced-control	-0.065	0.057			
Temperature	0.056	0.18	1,40	0.09	0.76
Removed:					
Temp × blackness			1,39	2.09	0.16
CARB					
Intercept	0.12	0.11			
Age					
Old-young	0.018	0.029	1,39	0.01	0.91
Clutch size	0.0038	0.017	1,39	0.04	0.84

	Estimate	s.e.	d.f.	F	P
Blackness	-0.00040	0.00050	1,39	0.62	0.44
BSM			2,39	0.68	0.51
Enlarged-control	0.021	0.019			
Reduced-control	-0.021	0.021			
Temperature	-0.11	-0.069	1,39	2.59	0.12
Removed:					
Temp × blackness			1,38	0.12	0.73

Oxidative status is measured as levels of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GP), glutathione S-transferase (GST), oxidative damage in proteins (CARB), total amount of glutathione (GSHtot) and ratio between reduced and oxidized glutathione (GSHratio). N=55.

Table S2. Output of linear models on the oxidative status of nestlings in relation to biological father melanin coloration, temperature during the nestling period and their interactions

	Estimate	s.e.	d.f.	F	P
SOD					
Intercept	39.53	22.75			
Sex			1,20	2.30	0.15
Female-male	8.73	4.89			
Body mass	2152	1.65	1,20	2.09	0.16
Blackness (biol father)	0.042	0.048	1,20	0.79	0.38
BSM			1,20	0.059	0.81
Enlarged-reduced	-0.78	3.18			
Temperature	-15.22	7.64	1,20	3.97	0.059
Removed:					
Temp × blackness			1,19	0.58	0.46
CAT					
Intercept	9.49	31.15			
Sex			1,20	0.33	0.73
Female-male	5.18	6.63			
Body mass	-0.11	2.25	1,20	0.0022	0.96
Blackness (biol father)	-0.046	0.064	1,20	0.52	0.48
BSM			1,20	0.024	0.88
Enlarged-reduced	-0.66	4.30			
Temperature	11.04	10.38	1,20	1.13	0.30
Removed:					
Temp × blackness			1,19	0.0003	0.99
GP					
Intercept	-0.0029	0.011			

	Estimate	s.e.	d.f.	F	P
Sex			1,20	2.28	0.13
Female-male	-0.0024	0.0024			
Body mass	0.00072	0.00082	1,20	0.78	0.39
Blackness (biol father)	0.000016	0.000022	1,20	0.52	0.48
BSM					
Enlarged-reduced	-0.00077	0.0015	1,20	0.25	0.62
Temperature	0.00026	0.0037	1,20	0.0053	0.94
Removed:					
Temp × blackness			1,19	0.33	0.57
GST					
Intercept	0.013	0.0082			
Sex			1,21	0.76	0.48
Female-male	0.0019	0.0018			
Body mass	0.0012	0.00059	1,21	4.24	0.078
Blackness (biol father)	0.0000019	0.000016	1,21	0.014	0.91
BSM			1,21	0.51	0.48
Enlarged-reduced	0.00078	0.0011			
Temperature	-0.0036	0.0027	1,21	1.78	0.20
Removed:					
Temp × blackness			1,20	0.14	0.89
GShtot					
Intercept	-0.13	2.7300			
Sex			1,21	1.16	0.33
Female-male	0.76	0.58			
Body mass	0.019	0.20	1,21	0.009	0.93
Blackness (biol father)	0.0046	0.0054	1,21	0.71	0.41

	Estimate	s.e.	d.f.	F	P
BSM			1,21	0.93	0.35
Enlarged-reduced	-0.36	0.37			
Temperature	-0.94	0.89	1,21	1-12	0.30
Removed:					
Temp × blackness			1,20	1.1800	0.29
GSHratio					
Intercept	-0.45	1.41			
Sex			1,18	2.82	0.084
Female-male	0.46	0.30			
Body mass	0.12	0.10	1,18	1.46	0.24
Blackness (biol father)	-0.0094	0.0028	1,18	11.12	0.0033
BSM			1,18	5.76	0.026
Enlarged-reduced	0.48	0.20			
Temperature	0.35	0.	1,18	0.75	0.46
Removed:					
Temp × blackness	-0.023	0.012	1,18	3.82	0.077
CARB					
Intercept	0.021	0.26			
Sex			1,19	1.095	0.35
Female-male	0.020	0.055			
Body mass	0.0047	0.019	1,19	0.061	0.81
Blackness (biol father)	-0.000053	0.00055	1,19	0.0093	0.92
BSM			1,19	0.015	0.90
Enlarged-reduced	-0.0045	0.038			
Temperature	-0.050	0.088	1,19	0.32	0.58
Removed:					

	Estimate	s.e.	d.f.	F	P
Temp × blackness		1,18	1.43	0.25	

Oxidative status is measured as levels of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GP), glutathione S-transferase (GST), oxidative damage in proteins (CARB), total amount of glutathione (GShtot) and ratio between reduced and oxidized glutathione (GSHratio). N=34.

Table S3. Output of linear models on the oxidative status of nestlings in relation to foster father melanin coloration, temperature during the nestling period and their interactions

	Estimate	s.e.	d.f.	F	P
SOD					
Intercept	46.95	20.97			
Sex			1,20	4.41	0.023
Female-male	6.84	2.97			
Body mass	1.28	1.49	1,20	0.74	0.40
Blackness (foster father)	0.0091	0.035	1,20	0.069	0.79
BSM			1,20	0.03	0.86
Enlarged-reduced	-0.42	2.41			
Temperature	-11.26	5.71	1,20	3.60	0.069
Removed:					
Temp × blackness			1,19	0.018	0.89
CAT					
Intercept	8.90	27.25			
Sex			1,20	2.0400	0.15
Female-male	7.28	3.77			
Body mass	-0.62	1.94	1,20	0.10	0.75
Blackness (foster father)	0.059	0.044	1,20	1.74	0.20
BSM			1,20	0.076	0.79
Enlarged-reduced	-0.85	3.11			
Temperature	4.42	7.41	1,20	0.36	0.56
Removed:					
Temp × blackness			1,19	1.035	0.32
GP					
Intercept	-0.0021	0.011			

	Estimate	s.e.	d.f.	F	P
Sex			1,20	2.023	0.15
Female-male	0.0017	0.0015			
Body mass	0.00047	0.00077	1,20	0.38	0.54
Blackness (foster father)	0.00000082	0.000019	1,20	0.0019	0.97
BSM			1,20	0.79	0.38
Enlarged-reduced	0.00011	0.0013			
Temperature	0.00049	0.0030	1,20	0.027	0.87
Removed:					
Temp × blackness			1,19	0.94	0.34
GST					
Intercept	-0.012	0.0081			
Sex			1,21	0.80	0.46
Female-male	0.0015	0.0011			
Body mass	0.0012	0.00058	1,21	3.96	0.074
Blackness (foster father)	0.0000078	0.000013	1,21	0.34	0.56
BSM			1,21	0.54	0.47
Enlarged-reduced	0.00068	0.00093			
Temperature	-0.0025	0.0022	1,21	1.40	0.25
Removed:					
Temp × blackness			1,20	0.57	0.46
GSHtot					
Intercept	-0.28	2.19			
Sex			1,19	2.42	0.11
Female-male	0.66	0.30			
Body mass	0.070	0.16	1,19	0.20	0.66
Blackness (foster father)	-0.0046	0.0038	1,19	1.50	0.23

	Estimate	s.e.	d.f.	F	P
BSM			1,19	2.96	0.098
Enlarged-reduced	-0.43	0.25			
Temperature	0.80	1.10	1,19	0.53	0.47
Temp × blackness	-0.033	0.016	1,19	4.50	0.044
GSHratio					
Intercept	-0.48	1.42			
Sex			1,18	1.17	0.33
Female-male	0.29	0.20			
Body mass	0.070	0.10	1,18	0.47	0.50
Blackness (foster father)	0.0055	0.0026	1,18	4.65	0.042
BSM					
Enlarged-reduced	0.36	0.17	1,18	4.78	0.075
Temperature	-1.65	0.72	1,18	6.99	0.017
Temp × blackness	0.029	0.010	1,18	8.00	0.0095
CARB					
Intercept	0.024	0.24			
Sex			1,19	1.38	0.27
Female-male	0.037	0.035			
Body mass	0.0041	0.018	1,19	0.010	0.92
Blackness (foster father)	0.0017	0.0017	1,19	0.10	0.75
BSM			1,19	0.25	0.63
Enlarged-reduced	-0.026	0.027			
Temperature	-0.062	0.063	1,19	0.96	0.34
Removed:					
Temp × blackness			1,18	1.27	0.27

Oxidative status is measured as levels of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GP), glutathione S-transferase (GST), oxidative damage in proteins (CARB), total amount of glutathione (GSHtot) and ratio between reduced and oxidized glutathione (GSHratio). N=38.