

Supplementary material

Appendix 1. Summary statistics for fatty acid compositions in plasma of adult great tit females. Hierarchical multilevel models were performed with backward elimination of non-significant factors (not presented here). Habitat type (deciduous *versus* evergreen habitat) and habitat sun-exposure (sun-exposed and open *versus* shade and dense vegetation) were included as fixed factors, and spring date, time and condition as covariates. In addition, the interactions of significance are presented.

Source	MUFA%		LA%		AA%		α -LNA%		EPA%		DHA%		DPA%	
	SS	F	SS	F	SS	F	SS	F	SS	F	SS	F	SS	F
♀														
Habitat type			37.67	9.52*					0.00	0.02				
Habitat sun-exp.			23.01	5.82*					1.52	8.11*				
Date	140.16	8.09*	111.97	28.30***			19.41	6.08*	4.35	23.25***	2.08	9.20*		
Date ²	93.09	5.37*	3.98	1.01					0.14	0.75	1.43	6.33*		
Time			107.55	27.19***	86.79	22.63***	91.30	28.59***			12.66	56.00***	4.15	24.42***
Time ²			40.93	10.35*			13.09	4.10*					2.17	12.79**
Condition			0.41	0.10										
H. type x cond.			18.14	4.59*										
H. type x date ²			28.16	7.12*					0.91	4.84*				

MUFA = monounsaturated fatty acids, LA = linoleic acid, AA = arachidonic acid, α -LNA = α -linolenic acid, EPA = eicosapentaenoic acid, DHA = docosahexaenoic acid, and DPA = docosapentaenoic acid. Saturated fatty acids (SFA) are removed from the table because none of the factors were significant. SS = Sum of Squares, F = F-value, *P = 0.05-0.001, **P = 0.001-0.0001; *** P < 0.0001

Appendix 2. Summary statistics for fatty acid compositions in plasma of adult great tit males. Hierarchical multilevel models were performed with backward elimination of non-significant factors (not presented here). Habitat sun-exposure (sun-exposed and open *versus* shade and dense vegetation) were included as fixed factor, and spring date, time and condition as covariates. In addition, the interactions of significance are presented. Habitat type (deciduous *versus* evergreen habitat) was initially included in all models, but eliminated from all models, thus not presented here.

Source	SFA%		MUFA%		LA%		AA%		α -LNA%		EPA%		DHA%		DPA%	
	SS	F	SS	F	SS	F	SS	F	SS	F	SS	F	SS	F	SS	F
♂																
Habitat sun-exp.	20.97	1.13														
Date			82.68	6.13*					24.19	5.02*	3.99	8.25*				
Date ²			68.34	5.07*												
Time					48.04	7.06*	126.91	27.49***	83.26	17.26***			4.08	14.03**	4.16	39.31***
Time ²															1.31	12.41**
Condition	57.58	3.09														
H. sun. x cond.	89.54	4.81*														

SFA = saturated fatty acids, MUFA = monounsaturated fatty acids, LA =linoleic acid, AA = arachidonic acid, α -LNA = α -linolenic acid, EPA = eicosapentaenoic acid, DHA = docosahexaenoic acid, and DPA =docosapentaenoic acid. SS = Sum of Squares, F = F-value, *P = 0.05-0.001, **P = 0.001-0.0001; *** P < 0.0001

Appendix 3. Summary statistics for fatty acid compositions in plasma of great tit nestlings. General linear mixed models (GLMM) with family identity nested within habitat plot were included as a random factor. Backward elimination was performed of non-significant factors (not presented here). Habitat type (deciduous *versus* evergreen habitat) and habitat sun-exposure (sun-exposed and open *versus* shade and dense vegetation) were included as fixed factors, and spring date, time and condition as covariates. In addition, the interactions of significance are presented.

Source	SFA%		LA%		AA%		α -LNA%		EPA%		DHA%		DPA%	
	DfDen	F	DfDen	F	DfDen	F	DfDen	F	DfDen	F	DfDen	F	DfDen	F
Habitat type					43.84	9.39*	44.11	6.32*						
Habitat sun-exp.			39.96	4.86*	44.88	19.64***			45.81	1.23				
Date	44.5	3.12	38.53	29.34	44.44	6.22*	42.75	4.13*	45.06	11.03*	46.53	7.16*		
Date ²	42.02	16.33**	36.71	29.34***	44.32	18.31***								
Time	46.37	0.01	41.89	14.86**							49.34	35.62***	44.45	10.40*
Time ²	53.31	7.40**									56.72	9.39*		
Condition					160.12	2.18	161.44	0.22	163.97	0.05				
H. type x cond.							161.60	5.06*						
H. type x date ²					44.42	14.17**								
H. sun. x cond.					159.02	6.90*			163.96	4.31*				
(Family[plot]) Random factor	Var \pm SE: 2.92 \pm 1.85, 13.4 %		Var \pm SE: 0.49 \pm 0.23, 22.86%		Var \pm SE: 1.21 \pm 0.34, 48.98%		Var \pm SE: 3.81 \pm 1.12, 45.82%		Var \pm SE: 0.17 \pm 0.04, 56.36%		Var \pm SE: 0.06 \pm 0.04, 12.82%		Var \pm SE: 0.02 \pm 0.01, 22.57%	

SFA = saturated fatty acids, LA =linoleic acid, AA = arachidonic acid, α -LNA = α -linolenic acid, EPA = eicosapentaenoic acid, DHA = docosahexaenoic acid, and DPA = docosapentaenoic acid. Monounsaturated fatty acids (MUFA) did not reveal any significant effect and are therefore removed from the table. Family identity explained 31.8% of the variation in MUFA. DfDen = degrees of freedom for the model (den= denominator), F = F-value, *P = 0.05-0.001, **P = 0.001-0.0001, *** P < 0.0001.