**Supplementary Tables**

**Supplementary File 1A.** Estimated marginal means and slopes of body composition and food consumption variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Body Mass (morning)** | | | **Fat Content (fat mass/body mass)** | | | |
| **Model a** | ~ Period | ~ Period \*  Date | | | ~ Period | ~ Period \*  Date | | |
| **Period (n)** | **Mean ± SE (g)** | **Slope ± SE (g/day)** | ***p*** | | **Mean ± SE (%)** | **Slope ± SE**  **(%/day)** | ***p*** | |
| Breeding  (13) | 2.77±0.05  (F, M) b | 0.00±0.00  (F) | 0.338 | | 4.70±0.80  (F, M) | 0.04±0.02  (F) | 0.053 | |
| Fattening (13) | 3.31± 0.06  (B, M) | 0.02 ± 0.00\* c  (B, M) | <0.001 | | 19.60±1.14 (B, M) | 0.81± 0.12\*  (B, M) | <0.001 | |
| Migration (13) | 3.73± 0.05  (B, M) | 0.00±0.00  (F) | 0.079 | | 29.90±0.83 (B, F) | 0.11±0.06  (F) | 0.061 | |
| Non-fatteners (3) | 2.81±0.13 | 0.00±0.00 | 0.201 | | 7.69±3.28 | 0.15±0.02 | <0.001 | |

**Supplementary File 1A. (cont.)** Estimated marginal means and slopes of body composition and food consumption variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Lean Mass** | | | **Food Consumption** | | | | |
| **Model a** | ~ Period | ~ Period \*  Date | | ~ Period + Day Length | ~ Period \* Week +  Period \* Day Length | | | |
| **Period (n)** | **Mean ± SE (g)** | **Slope ± SE (g/day)** | ***p*** | **Mean ± SE (kJ/day)** | **Slope ± SE (kJ/day)** | ***p*** | **Slope ± SE (kJ/hday)** | ***p*** | |
| Breeding  (13) | 2.67±0.03  (M) | 0.00±0.00\*  (M) | 0.020 | 67.4±2.2 (M) | 6.2±0.9\*  (M) | <0.001 | 27.0±4.13 | <0.001 | |
| Fattening (13) | 2.80±0.05  (M) | 0.00±0.01  (--) | 0.848 | 66.0±2.7  (M) | -6.7±2.5\*  (--) | 0.008 | -9.1±5.8 | 0.111 | |
| Migration (13) | 2.55±0.03 (B, F) | -0.02±0.00\*  (B) | <0.001 | 57.6±2.8  (B, F) | -2.7±1.8  (B) | 0.114 | 8.7±4.8 | 0.068 | |
| Non-fatteners (3) | 2.52±0.04 | 0.00±0.00\* | 0.004 | 69.5±7.8 | 3.6±1.5\* | 0.015 | 17.4±5.1\* | 0.001 | |
|  |  |  |  | Daylength:  *p=*0.009;  Square root transformation of Food Consumption |  |  |  |  | |

a Asterix in model indicates interaction.

b Statistically significant comparisons within parentheses, alpha taken at 0.05 (P<0.05).

c Asterix after value indicates significance.

**Supplementary File 1B.** Absolute and relative increases in body mass, fat mass, and fat content during the fattening period.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Absolute** | | **Relative (%)** | |
| **Value** | **Mean ± SE** | **Range** | **Mean ± SE** | **Range** |
| Fat Duration (days) | 10±1 | 6-18 | -------- | -------- |
| Body Mass Increase (g) | 0.58±0.05 | 0.34-0.90 | 19.6±1.6 | 11.6, 29.0 |
| Fat Mass Increase (g) | 0.60±0.05 | 0.34-0.84 | 216.2±28.8 | 83.1, 486.1 |
| Fat Content Increase (%) | 15.0±0.9 | 8.8-19.1 | 163.7±23.4 | 63.7, 390.1 |

**Supplementary File 1C.** Correlations between body mass gains and duration of the fattening period, with mean torpor duration in the fattening period and food consumption in the fattening period.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Body Mass Gains (g)** | | **Fat Duration (days)** | |
| **Model** | Body Mass Gains (g) ~  Mean Torpor Duration (h) +  Mean Food Intake (kJ) | | Fat Duration (days) ~  Mean Torpor Duration (h) +  Mean Food Intake (kJ) | |
|  | **Slope ± SE** | ***p*** | **Slope ± SE** | ***p*** |
| **Mean Torpor Duration (h)** | 0.07±0.01\* a | 0.004 | -0.60±0.75 | 0.468 |
| **Mean Weekly Food Intake (mL/day)** | 0.00±0.00 | 0.996 | -0.27±0.25 | 0.343 |

a Asterix after value indicates significance.

**Supplementary File 1D**. Estimated marginal means and slopes of torpor use variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Torpor Propensity** | | |  |  | **Duration** | | | | | |
| **Model** a | ~ Period | ~ Period \* Evening Fat % | | ~ Period \* Night Length | | ~ Period + Night Length | ~ Period \* Evening Fat % +  Period \* Night Length | | | |
| **Period (n)** | **Mean ± SE (%)** | **Slope ± SE** | ***p*** | **Slope ± SE** | ***p*** | **Mean ± SE (htorpor)** | **Slope ± SE**  **(htorpor / %fat)** | ***p*** | **Slope ± SE**  **(htorpor / hnight)** | ***p*** |
| Breeding  (13) | 61.6±11.1 | -0.70±0.22\* c  (F, M) b | 0.001 | -0.31±0.47 | 0.452 | 4.31±0.56 | -0.63±0.10\*  (F, M) | <0.001 | 0.52±0.32 | 0.077 |
| Fattening  (13) | 40.1±11.8 | 0.24±0.16  (B) | 0.132 | 1.02±1.43 | 0.476 | 3.61±0.81 | -0.07±0.12  (B) | 0.533 | 3.07±1.07 \* | 0.003 |
| Migration (13) | 65.1±11.1 | 0.26±0.11\*  (B) | 0.017 | 2.06±0.94\* | 0.028 | 3.68±0.47 | 0.10±0.07  (B) | 0.124 | 1.18±0.58 \* | 0.031 |
| Non-fatteners (3) | 48.6±10.1 | 0.06±0.06 | 0.376 | 0.01±0.04 | 0.831 | 2.95±0.49 | -0.09±0.23 | 0.181 | 0.67±1.30 | 0.180 |
|  | No pairwise differences:  *p*>0.101 |  |  |  |  | No pairwise differences:  *p*>0.743  Night Length: *p*=0.761 |  |  | No pairwise differences:  *p*>0.060 |  |

**Supplementary File 1D**. **(cont.)** Estimated marginal means and slopes of torpor use variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Pre-Torpor Energy Expenditure** | | | | | | | **Time of Torpor Entry** | | | | | |
| **Model a** | ~ Period +  Night Length | ~ Period \* Evening Fat % +  Period \* Night Length | | | | | ~ Period + Night Length | | ~ Period \* Evening Fat % +  Period \* Night Length | | | |
| **Period (n)** | **Mean ± SE**  **(kJ)** | **Slope ± SE (kJ/ %fat)** | ***p*** | **Slope ± SE (kJ/ hnight)** | ***p*** | | **Mean ± SE**  **(hentry)** | | **Slope ± SE**  **(hentry/ %fat)** | ***p*** | **Slope ± SE**  **(hentry/ hnight)** | ***p*** |
| Breeding  (13) | 3.19±0.37 | 0.39±0.06\*  (F, M) | <0.001 | 0.40±0.22\*  (F) | | 0.041 | 4.67±0.53 | | 0.55±0.09\*  (F, M) | <0.001 | 0.52±0.30  (F) | 0.054 |
| Fattening (13) | 3.73±0.55 | 0.05±0.09  (B) | 0.528 | -2.48±0.75\*  (B, M) | | <0.001 | 5.24±0.77 | | 0.05±0.12  (B) | 0.630 | -3.02±1.03 \*  (B) | 0.002 |
| Migration (13) | 4.04±0.31 | -0.06±0.05  (B) | 0.204 | -0.41±0.41  (F) | | 0.276 | 5.53±0.45 | | -0.08±0.07  (B) | 0.230 | -0.51±0.56  (--) | 0.333 |
| Non-fatteners (3) | 4.10±0.32 | 0.07±0.15 | 0.091 | 0.05±0.81 | | 0.883 | 6.16±0.41 | | -0.02±0.18 | 0.769 | 0.44±0.92 | 0.315 |
|  | No pairwise differences:  *p* >0.307;  Night Length:  *p*=0.015 |  |  |  | |  | No pairwise differences:  *p* >0.538  Night Length: p=0.012 | |  |  |  |  |

a Asterix in model indicates interaction.

b Statistically significant comparisons within parentheses, alpha taken at 0.05 (P<0.05).

c Asterix after value indicates significance.

**Supplementary File 1D**. **(cont.)** Estimated marginal means and slopes of torpor use variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fat % at Torpor Entry** | | | | | | | | |
| **Model** | ~ Period | ~ Period | ~ Period \* Time of Entry +  Period\* Night Length | | | | ~Period \*  Date | | |
| **Period (n)** | **Mean ± SE**  **(%fat)** | **Mean ± SE**  **(mgfat)** | **Slope ± SE (%fat/ hentry)** | ***p*** | **Slope ± SE (%fat/ hnight)** | ***p*** | **Slope± SE (%fat/ Date)** | ***p*** | |
| Breeding  (13) | 5.56±0.79  (F, M) | 14.27±3.95  (F, M) | 0.38±0.31  (M) | 0.191 | 0.84±0.78 | 0.253 | 0.05±0.02 \* | 0.042 | |
| Fattening  (13) | 26.72±1.51  (B, M) | 92.88±7.21  (B, M) | 3.72±1.45 \*  (--) | 0.007 | 14.25±5.71 | 0.009 | 0.14±0.24 | 0.538 | |
| Migration  (13) | 32.94±0.77  (B, F) | 125.15±3.85  (B, F) | -1.20±0.35\*  (B) | <0.001 | 0.99±1.41 | 0.450 | -0.06±0.07 | 0.402 | |
| Non-fatteners  (3) | 10.34±5.33 | 31.43+\_18.01 | 0.30±0.52 | 0.54 | 3.33±0.75 | <0.001 | 0.14±0.03 | <0.001 | |
|  | Night length does not improve model AIC | Night length does not improve model AIC |  |  | No pairwise differences:  *p* >0.057 |  | No pairwise differences:  *p* >0.921  Night length does not improve model AIC |  | |

**Supplementary File 1D**. **(cont.)** Estimated marginal means and slopes of torpor use variables, descriptions of the statistical models, and statistical comparisons within and among periods.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Torpid Overnight Fat Mass Loss** | | | | | | |
| **Model a** | ~ Period + Night Length | ~ Period \* Evening Fat % +  Period\* Night Length | | | | ~ Period \* Torpor Duration +  Night Length | |
| **Period (n)** | **Mean ± SE**  **(mgfat)** | **Slope ± SE**  **(mgfat/ %fat)** | ***p*** | **Slope ± SE**  **(mg fat/ hnight)** | ***p*** | **Slope ± SE (mgfat/ %fat)** | ***p*** |
| Breeding  (13) | 12.35±0.92 | 1.00±0.17 \*  (F, M) | <0.001 | 1.35±0.59 \*  (F) | 0.014 | -1.72±0.05\*  (M) | <0.001 |
| Fattening  (13) | 14.29±1.33 | 0.17±0.23  (B) | 0.407 | -4.81±1.98 \*  (B) | 0.010 | -1.67±0.10\* | <0.001 |
| Migration  (13) | 14.45±0.76 | -0.15±0.12  (B) | 0.145 | -0.02±1.07  (--) | 0.982 | -1.53±0.07\*  (B) | <0.001 |
| Non-fatteners  (3) | 14.40±1.56 | 0.36±0.39\* | 0.003 | -0.13±2.15 | 0.868 | -0.13±2.15 \* | <0.001 |
|  | No pairwise differences: *p* >0.304;  Night Length: *p*<0.001 |  |  |  |  | Night Length: *p*<0.001 |  |

a Asterix in model indicates interaction.

b Statistically significant comparisons within parentheses, alpha taken at 0.05 (P<0.05).

c Asterix after value indicates significance.