Errata for
Dynamic Energy Budget theory
for metabolic organisation

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Numbers refer to section, page and line; a negative line number means line from bottom.

1.1.2, {2}, 26 The ‘,’ at the end of the sentence should be ‘.’ (error spotted by Koji Tominaga)

1.1.4, {6}, -6 'size, size' should be 'size, age' (error spotted by Nina Marn)

1.2.3, {11}, 8 The shape coefficient $\delta_M$ converts shape-specific physical length to structural length: $L = \delta_M L_w$.

1.3.1, {19}, 24 *Scophthalmus maximum* must be *Scophthalmus maximus* (error spotted by Jaap van der Meer)

1.3.8, {22}, -17 'effected' must be 'affected' (error spotted by Matt Malishev)

2, {24}, 16 'volumetric length' must be 'structural (volumetric) length'

2.1.4, {23}, 24 'volumetric length' must be 'structural (volumetric) length'

2.1.4, {33}, -4 Legends to Figure 2.6: the units of $X$ and $K$ are cells/ml, while the symbols indicate dimension C-mol per volume. It would have been more consistent to suppress the mentioning of the symbols (error spotted by Jaap van der Meer)

2.1.4, {34}, 18 $t_b = \hat{h}^{-1}$ must be $t_b = (N\hat{F})^{-1}$, and 3 lines below must read $\hat{h} = t_c^{-1} = \hat{h}_m N (\hat{h}_m / \hat{F} + N)^{-1}$.

2.3.3, {41}, 11 'a elegant' must be 'an elegant' (error spotted by Jaap van der Meer)

2.5.1, {46}, -9 'Heating volume stands for the reduction in volume . .' must be replaced by 'Heating length stands for the reduction in length ..' (error spotted by James Maino)

2.6.1, {52}, 8 'energy density' must be 'reserve density' (2 times)

2.6.1, {53}, . Reference numbers in Fig. 2.11 must be replaced: [918] by [919], [431] by [433], [962] by [963]

2.6.2, {56,57}, . Reference numbers in Fig. 2.12 must be replaced: [525] by [527], [428] by [430], [738,1244] by [740,1245], [1225] by [1226], [885] by [886]

2.6.2, {60}, . Reference numbers in Fig. 2.13 must be replaced: [588] by [590], [986] by [987], [985,1197] by [986,1198]

2.6.2, {62}, -11 $U_E^b = f[E_m]L_b^3$ should be replaced by $U_E^b = f[E_m]L_b^3 / \{\hat{p}_A\}$ (error spotted by Starrlight Augustine)

2.6.2, {66}, 9 Eq (2.49) must read

$$u_H(\tau) = \frac{g^3(1-k)}{3^3 k^4} \left(6k\tau - 3k^2\tau(2 + \tau) + k^3\tau^2(3 + \tau) - 6(1-k)(1 - \exp(-k\tau))\right)$$
2.6.2., {57}, 2 ‘maintenance rate constant’ constant should be ‘maintenance rate coefficient’ (error spotted by Nina Marn)

2.7, {70}, . Reference numbers in Fig. 2.17 must be replaced: [494] by [796], [440] by [442]

2.7.1, {72}, 6 Eq (2.59): $-Hk_1^P$ must be $-k_1^P$

2.9, {77}, -13 ‘energy density’ must be ‘reserve density’

3.2.3, {85}, 4 Eq (3.6): ’i ∈ {C,H,O,N}’ must be ’∗ ∈ {C,H,O,N}’ (error spotted by Ana Llandres)

3.4, {93}, -15 Table 3.3: $\dot{\kappa}_M = j_{EV}y_{VE}$ must be $\dot{\kappa}_M = j_{EM}y_{VE}$

3.4, {93}, -12 Table 3.3: $j_{EV} = -[J_{EV}]/[M_V]$ must be $j_{EM} = [J_{EM}]/[M_V]$ (error spotted by Elke Zimmer and Ben Martin)

3.4, {93}, -12 Table 3.3: the units of $\dot{p}_T$ must be J d$^{-1}$ m$^{-2}$ (error spotted by Elke Zimmer)

3.7.4, {106}, -9 Eq (3.35): $\frac{k_{S_1}k_{S_2}j_{S_1}^j}{k_{S_2}+j_{S_1}^j+j_{S_2}}$ must be $\frac{k_{S_1}k_{S_2}j_{S_1}^j}{(k_{S_2}+j_{S_1}^j)(k_{S_2}+j_{S_1}^j+j_{S_2})}$

3.7.3, {105} Lower-left panel of Figure 3.7: $j_A^+ = \frac{1}{k_{B}+j_{B}}$ must be $j_A^+ = \frac{1}{k_{A}+j_{A}}$

3.7.4, {107}, 6 Eq (3.38): $\rho$ must be $\rho_{S_2}$ (error spotted by Erik Noonburg)

3.7.4, {107}, 6 Eq (3.38): $w$ must be $\rho_{S_2}$ (error spotted by Mike Keenan)

3.7.4, {107}, 9 Eq (3.39): $a$ must be $A$ in numerator for $j_{S_2}^j$

4.1.1, {115}, 19 ‘energy density’ must be ‘reserve density’ (2 times)

4.1.4, {118}, 6 $e \leq l + l_T$ must be $e \geq l + l_T$ (error spotted by Elke Zimmer)

4.1.4, {120}, -8 ‘(2.10)’ must be ‘(2.11)’ (error spotted by Nina Marn)

4.1.5, {122}, 11 Eq (4.6): $j_{EC}$ must be $\kappa j_{EC}$. Also holds for line 1 (2 times)

4.2.2, {128}, 10 Eq (4.15): $(e - \dot{r}/\dot{k}_E)$ must be $e(1 - \dot{r}/\dot{k}_E)$, two times (error spotted by Tjalling Jager)

4.2.2, {129}, -7 ‘energy density’ must be ‘reserve density’

4.2.2, {130}, 19 Just under Eq (4.22): ‘which’ must be $Y_g$. (error spotted by Jaap van der Meer)

4.2.2, {131}, . Reference numbers in Fig. 4.11 must be replaced: [1168] by [1169], [212] by [214], [671] by [673], [798] by [800]
4.2.2, \{132\}, 11 In the table for yield coefficients under Droop: $Y_g \frac{g}{f+g}$ must be $Y_g \frac{g}{f+g}$.
(error spotted by Jaap van der Meer)

4.2.3, \{133\}, -16 ‘energy density’ must be ‘reserve density’

4.3, \{144\}, 8 ‘energy density’ must be ‘reserve density’

4.3, \{146\}, -3 Figure 4.19: The values for $M_{CV}/M_V$ in the table must be

<table>
<thead>
<tr>
<th>$M_{CV}/M_V$, mol/mol</th>
<th>200</th>
<th>0.585</th>
<th>0.217</th>
<th>0.198</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M_{CV}/M_V$, mol/mol</td>
<td>400</td>
<td>0.645</td>
<td>0.263</td>
<td>0.092</td>
</tr>
<tr>
<td>$M_{CV}/M_V$, mol/mol</td>
<td>472</td>
<td>0.703</td>
<td>0.297</td>
<td>0.000</td>
</tr>
</tbody>
</table>

(error spotted by Ana Llandres)

4.4, \{147\}, -11 In (4.49) the term $\left(1 - n_{NE} \frac{n_{CV}}{n_{NN}}\right) \eta_{VG} \hat{p}_G$ must be replaced by $\left(1 - n_{VE} \frac{n_{CV}}{n_{NN}}\right) \eta_{VG} \hat{p}_G$
(error spotted by Ana Llandres)

4.4, \{147\}, -3 In (4.50) the term $l_T/g$ must be replaced by $l_{TE}/g$, and (4.50) only applies if $k = 1$ (error spotted by Jaap van der Meer)

4.8.3, \{164\}, 1 Figure 4.22 should have looked as

4.5.1, \{152\}, -4 In (4.60) the term $\frac{n_{NE}}{n_{NN}}$ of the right term must be replaced by $\frac{n_{CV}}{n_{NN}}$ (error spotted by Ana Llandres)

4.10, \{169\}, 11 In (4.89) the term $(1 - \kappa) f^2$ must be replaced by $(1 - \kappa) f^3$ (error spotted by Dina Lika)

4.11.2, \{176\}, 6 In legends for Fig. 4.28, $k$ must be $\delta_l$ (error spotted by Starrlight Augustine)

5.2.2, \{195\}, 5 $j_{VM_i} \leq j_{VM}$ must be $j_{VM_i} \leq j_{VM_i}$ (error spotted by Dina Lika)
5.2.6, \{200\}, -8 'Treating ammonia and nitrogen' must be 'Treating ammonia and nitrate' (error spotted by Mike Kearney)

5.2.6, \{201\}, 8 \ud{8.2.1} \{8.2.1\} \{7.9.2\} \{8.2.1\} \{8.2.2\}, \{7.2.5\} must be \ud{8.2.1} \{8.2.2\} \{7.2.4\} (error spotted by Dina Lika)

5.3.1, \{203\}, 4 In lower-left panel of Fig. 5.8 'hheart' must be 'heart' (error spotted by Starrlight Augustine)

5.3.3, \{210\}, 11 \ud{8.2.2} must be \ud{8.2.2} (error spotted by Mike Kearney)

6.4.2, \{231\}, -1 Eq (6.13): \( \frac{\nu^{<M_Q>_{\omega(t_R)}}}{\nu^{<M_Q>_{\omega(t_R)}}} \) must be \( \frac{\nu^{<M_Q>_{\omega(t_R)}}}{\nu^{<M_Q>_{\omega(t_R)}}} \)

7.2.3, \{263\}, 14 Eq (7.45): \( \frac{d\theta_{EX}}{dt} \) must be \( \frac{d\theta}{dt} \)

7.2.4, \{264\}, -1 'Trost' must be 'Troost' (error spotted by Jaap van der Meer)

7.2.5, \{266\}, -7 \( \dot{X} \) must be \( \dot{X} \) (error spotted by Dina Lika)

7.8.2, \{288\}, 14 Above Eq (7.84): \( L_T \) must be replace by \( L_T^* \) in the expression for \( \dot{r} \) with \( L_T^* = L_T M(V) \) (error spotted by Starrlight Augustine)

7.8.2, \{288\}, 15 Eq (7.84): \( \frac{d}{dt} L = \frac{\dot{r}}{3} \) must be \( \frac{d}{dt} L = \frac{\dot{r}}{3} \)

7.8.2, \{288\}, 16 Under Eq (7.84): \( g \) does not depend on changes in surface area-volume relationships, so \( g^* \) in (7.84) should be replaced by \( g \) (error spotted by Elke Zimmer), see comments.

7.9.2, \{290\}, -21 'energy density' must be 'reserve density'

8.1.2, \{297\}, 13 \{\dot{J}_{Xm}/\dot{p}_{Am}\} should be \{\dot{J}_{XAm}/\dot{p}_{Am}\} (error spotted by Nina Marn)

8.2.1, \{300\}, -5 \{\dot{p}_{Am}\}_1 must be \{\dot{p}_{Am}\}_1 (error spotted by Jaap van der Meer)

8.2.1, \{300\}, -5 \[ E_G^1 \] \[ E_G^2 \] must be \[ E_G^1 \] \[ E_G^1 \] (error spotted by Elke Zimmer)

8.2.2, \{302\}, -6 It best to avoid adding C-moles of different types on dimensional grounds and work with weights: \( \theta_V = \frac{w_V}{w_V + w_E} = \frac{w_V M_V}{w_V M_V + w_E M_E} \)

\[ \frac{1}{1 + w_V M_V} = \frac{1}{1 + w_V M_V} \]

8.2.2, \{302\}, -6 Eq (8.3) \( z^{-3/4} \) must be \( z^{1/4} \) (error spotted by James Maino)

8.2.2, \{320\}, 10 Table 8.3 The reference for Tyto must be 'De Groot, R.S., 1983. Origin, status and ecology of the owls in the Galapagos. Ardea, 71, 167-182' (error spotted by Carlos Teixeira)

8.2.2, \{323\}, -3 'energy density' must be 'reserve density'

8.2.2, \{324\}, 3 '3/4, but 1' must be '1/4, but 1/3' (error spotted by James Maino)
9.2.1, \{350\}, -14 and further $X_K$ must be $K$ (error spotted by Jaap van der Meer)

9.2.1, \{351\}, -11 Eq (9.12) and further: $J_{Xm}$ must be $J_{XAm}$ (error spotted by Jaap van der Meer)

9.2.2, \{360\}, 9 ‘with body size’ must be ‘with food density’ (error spotted by Clément Aldebert)

9.2.3, \{368\}, 2 ‘energy density’ must be ‘reserve density’

10.4, \{407\}, -12 ‘Triurdaceae’ must be ‘Triuridaceae’

notation, \{499\}, 6 ‘energy density’ must be ‘reserve energy density’ (2 times)

notation, \{502\}, -1 $V^{1/3}/L$ must be $L/L_w$ (error spotted by Tjalling Jager)
These talking gouramis, *Trichopsis vittatus*, come from the same brood and therefore are the same age. They also grew up in the same aquarium. The size difference resulted from competition for a limited amount of food chunks, which amplified tiny initial size differences. This illustrates that age cannot serve as a satisfactory basis for the description of growth and food intake should be included explicitly.

**Dynamic Energy Budget (DEB) theory** is a formal theory for the uptake and use of substrates (food, nutrients, light) by organisms and their use for maintenance, growth, maturation and propagation; it applies to all organisms (microorganisms, animals, plants). The document gives background, explanation and extension for the third edition of the DEB book.