

Essay about the DEB theory

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The course of DEB theory was for me not just a course but also a new experience in learning and communication. What I get from it can be summarized in some point:

1. I have learned some new concepts through the theory:

- The standard DEB model assumes isomorphy and has a single reserve and a single structure, which is appropriate for many aspects of the metabolic performance of animals.
- The strong and weak homeostasis are used in deb theory.
- I know now how the individual organism assimilates and utilises energy for maintenance, growth and reproduction.

The figure 2.1 page 24, gives us a lot of information about the standard DEB and more specific about the κ -rule and reserve partitioning: An organism ingests food at a rate dependent of its size and the food availability. Food is converted into reserve and reserve is mobilized at a rate that depends on the state variables only to fuel all other metabolic processes. A fraction κ of the mobilized reserve flux is used for somatic maintenance plus growth, the rest which is $1 - \kappa$ for maturity maintenance plus maturation (in juveniles) or reproduction (in adults).

- In this theory also we suppose that the embryos do not feed but use its initial reserves for growth.
- In the case of starvation, first of all the reserve is no longer sufficient to cover somatic maintenance costs, Kappa rule is affected and reproduction could stop. If starvation continuous, the individual can dead but dormancy can be a solution.
- We have study three basic energy fluxes (powers): assimilation, dissipation and growth. Dissipating heat can also be written as weighted sums of the three basic powers, which means that dissipating heat is a also weighted sum of three mineral fluxes (carbon dioxide, dioxygen and nitrogenous waste).

2. The documents available to us starting with the different versions of the book (DEB theory), the summary, the videos of Mr. Roger Nisbet and answers to our questions through the blackboard gives us a lot of information and facilitates the understanding.
3. Presentations and reports were an efficient way to improve our communication and understanding.