Life history diversity in terrestrial animals is associated with metabolic response to seasonally fluctuating resources

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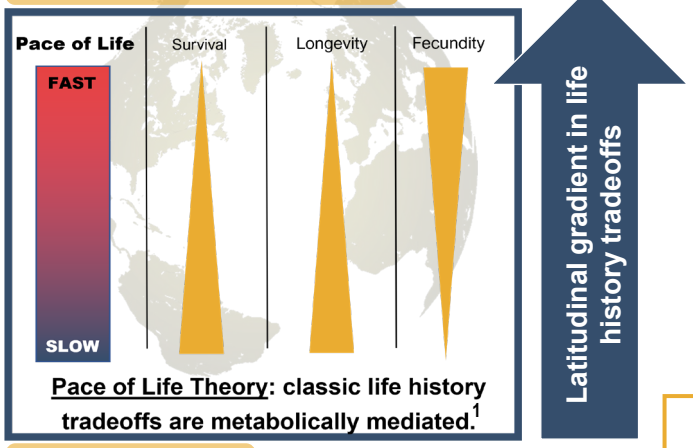
Q: Can seasonal metabolism explain global patterns in life history?

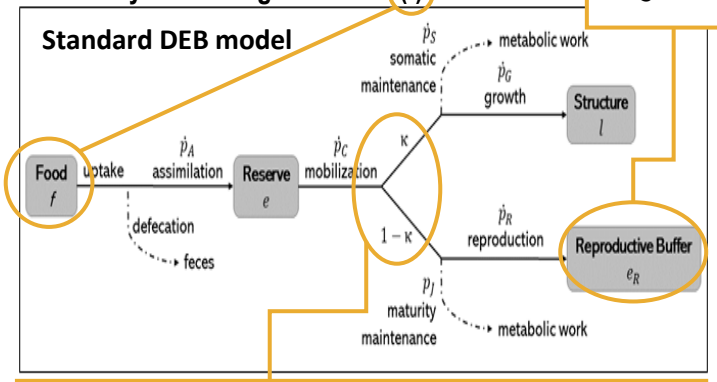
Current Paradigm:



Pace of Life Theory: classic life history tradeoffs are metabolically mediated.[1]

Approach:

Dynamic Energy Budget (DEB)[2] model with seasonally fluctuating resources (*f*).



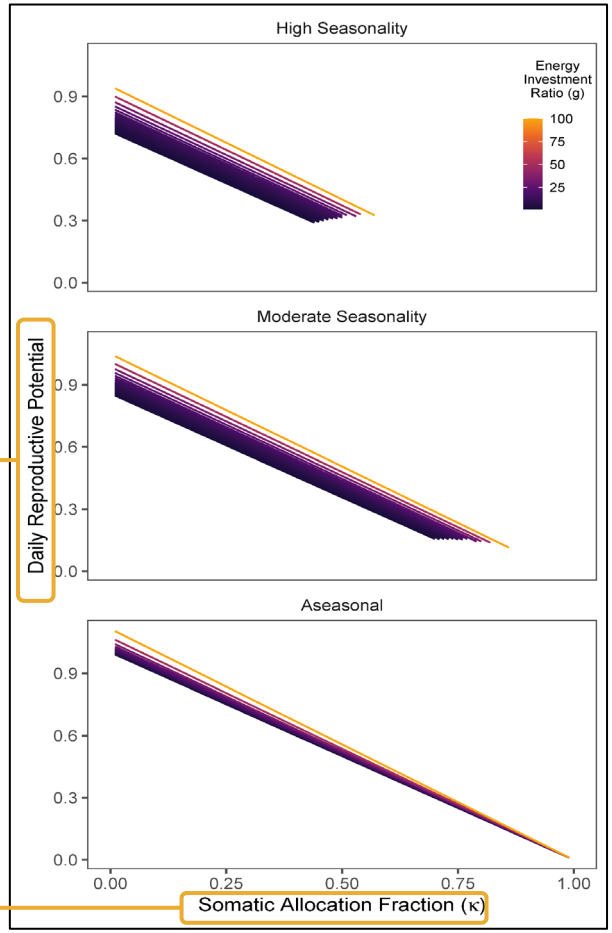
Energy allocated to gametes

Somatic Allocation (κ) Measures Pace of Life (POL)

↑ κ = Slow POL ↓ κ = Fast POL

Theoretical Findings:

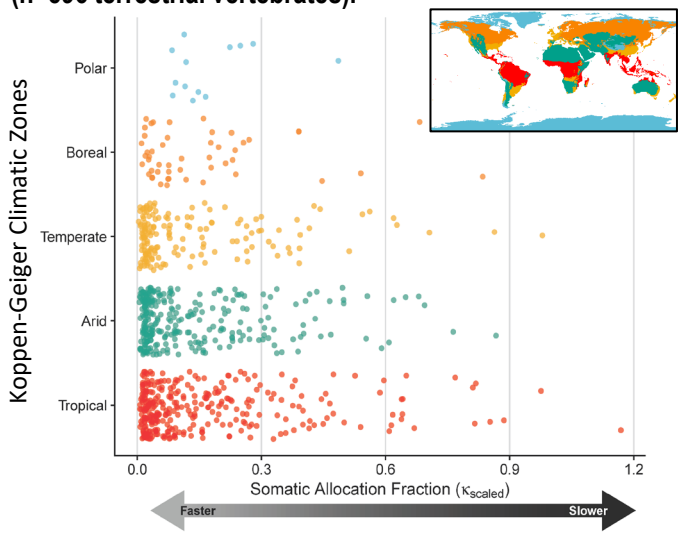
Slow POL only viable in aseasonal environments.



Lines represent all viable DEB strategies (survived and reproduced). Energy Investment ratio (g) measures cost of new growth; higher values correspond to fast POL.

Empirical Support:

Empirical estimates of κ from Add-my-Pet database[3] (n=596 terrestrial vertebrates).



A New Paradigm:

POL diversity negatively covaries with amplitude of seasonality

References & More:

https://tinyurl.com/mryhwjfh

Image: https://favpng.com/