A METHOD TO SIMPLIFY MODELING OF TEMPERATURE DEPENDENT MATURATION DELAYS, AND ITS APPLICATION TO A HOST-PARASITOID MODEL

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Maturation delays are an important factor in the life of many organisms. These delays can depend strongly on environmental conditions, as for instance the temperature for ectotherms. Non-constant environmental conditions consequently result in non-constant time delays. To implement this in models for population dynamics, delay differential equations with variable delays can be used [1]. However numerical methods for such problems are not always easily accessible. In contrary numerical methods for differential equations with constant delays are more developed. Therefore we present a time rescale argument which can transform some problems with variable delays to problems with constant delays. To illustrate the technique, we apply it for modeling a system of the fruit fly *Drosophila suzukii* and its parasitoid *Pachycrepoideus vindemiae* in a seasonally changing environment, where maturation delays of some stages can vary by a factor of 10 depending on the temperature [2].

References

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