

Author's Accepted Manuscript

A critical review of the use and performance of different function types for modeling temperature-dependent development of arthropod larvae

Brady K. Quinn



www.elsevier.com/locate/jtherbio

PII: S0306-4565(16)30126-7
DOI: <http://dx.doi.org/10.1016/j.jtherbio.2016.11.013>
Reference: TB1849

To appear in: *Journal of Thermal Biology*

Received date: 1 May 2016
Accepted date: 19 November 2016

Cite this article as: Brady K. Quinn, A critical review of the use and performance of different function types for modeling temperature-dependent development of arthropod larvae, *Journal of Thermal Biology* <http://dx.doi.org/10.1016/j.jtherbio.2016.11.013>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

**A critical review of the use and performance of different function types for modeling
temperature-dependent development of arthropod larvae**

Brady K. Quinn*

Department of Biological Sciences, University of New Brunswick, 100 Tucker Park Road, Saint
John, NB, Canada E2L 4L5

*Corresponding author: bk.quinn@unb.ca, 1-506-343-7676

ABSTRACT

Temperature-dependent development influences production rates of arthropods, including crustaceans important to fisheries and agricultural pests. Numerous candidate equation types (development functions) exist to describe the effect of temperature on development time, yet most studies use only a single type of equation and there is no consensus as to which, if any model predicts development rates better than the others, nor what the consequences of selecting a potentially incorrect model equation are on predicted development times. In this study, a literature search was performed of studies fitting development functions to development of arthropod larvae (99 species). The published data of most (79) of these species were then fit with 33 commonly-used development functions. Overall performance of each function type and consequences of using a function other than the best one to model data were assessed. Performance was also related to taxonomy and the range of temperatures examined. The majority (91.1 %) of studies were found to not use the best function out of those tested. Using the incorrect model lead to significantly less accurate (e.g., mean difference \pm SE 85.9 ± 27.4 %,

Download English Version:

<https://daneshyari.com/en/article/5593535>

Download Persian Version:

<https://daneshyari.com/article/5593535>

[Daneshyari.com](https://daneshyari.com)