

### 7.3.15 *Sesamia calamistis* (Ong'amo et al.)

#### 1. Development Time

Stage: Eggs Model: logit Slope: 17.23	Stage: Larvae Model: logit Slope: 12.12	Stage: Pupae Model: cloglog Slope: 9.87	Stage: Female Model : probit Slope: 3.82	Stage: Male Model: logit Slope: 6.32
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#### 2. Development Rate

<p>Stage: Eggs Model 14: SharpeDeMichelle 14 Parameters: <math>p=0.156</math> <math>T_h=303.86</math> <math>H_a=17551.749</math> <math>H_h=131922.683</math> Formula: <math>y \sim (p * (x/298.16)) * e^{(H_a/1.987) * ((1/298.16) - (1/x))} / (1 + e^{(H_h/1.987) * ((1/T_h) - (1/x))})</math></p>
<p>Stage: Larvae Model 46: Janish 1 Parameters: <math>D_{min}=34.588</math> <math>T_{opt}=30.187</math> <math>K=0.12</math> Formula: <math>y \sim 2 / (D_{min} * (e^{K * (x - T_{opt})} + e^{(-K) * (x - T_{opt})}))</math></p>
<p>Stage: Pupae Model 46: Janish 1 Parameters: <math>D_{min}=9.637</math> <math>T_{opt}=29.486</math> <math>K=0.136</math> Formula: <math>y \sim 2 / (D_{min} * (e^{K * (x - T_{opt})} + e^{(-K) * (x - T_{opt})}))</math></p>

#### 3. Senescence

<p>Stage: Female Model 48: Tanigoshi Parameters: <math>a_0=0.421</math> <math>a_1=-0.033</math> <math>a_2=0.001</math> <math>a_3=-0</math> Formula: <math>y \sim a_0 + a_1 * x + a_2 * x^2 + a_3 * x^3</math></p>	<p>Stage: Male Model 25: Exponential Simple Parameters: <math>b_1=0.096</math> <math>b_2=0.014</math> Formula: <math>y \sim b_1 * e^{(b_2 * x)}</math></p>
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#### 4. Mortality

<p>Stage: Eggs Model 26: Wang 1 Parameters: <math>T_{opt}=24.744</math> <math>B=3.879</math> <math>H=0.128</math> Formula: <math>y \sim 1 - 1 / (e^{(1 + e^{-(x - T_{opt})/B})} * (1 + e^{-(T_{opt} - x)/B})^H)</math></p>
<p>Stage: Larvae Model 32: Wang 7 Parameters: <math>T_{opt}=30.192</math> <math>B_l=20.128</math> <math>B_h=2.45</math> <math>H=7.532</math> Formula: <math>y \sim 1 - 1 / (e^{(1 + e^{-(x - T_{opt})/B_l})} * (1 + e^{-(T_{opt} - x)/B_h})^H)</math></p>
<p>Stage: Pupae Model 26: Wang 1 Parameters: <math>T_{opt}=24.099</math> <math>B=2.52</math> <math>H=0.009</math> Formula: <math>y \sim 1 - 1 / (e^{(1 + e^{-(x - T_{opt})/B})} * (1 + e^{-(T_{opt} - x)/B})^H)</math></p>

#### 5. Total Oviposition

<p>Stage: Female Model 1: Quadratic Parameters: <math>a=-3.932</math> <math>b=182.085</math> <math>c=-1844.858</math> Formula: <math>y \sim a * x^2 + b * x + c</math></p>
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## 6. Relative Oviposition

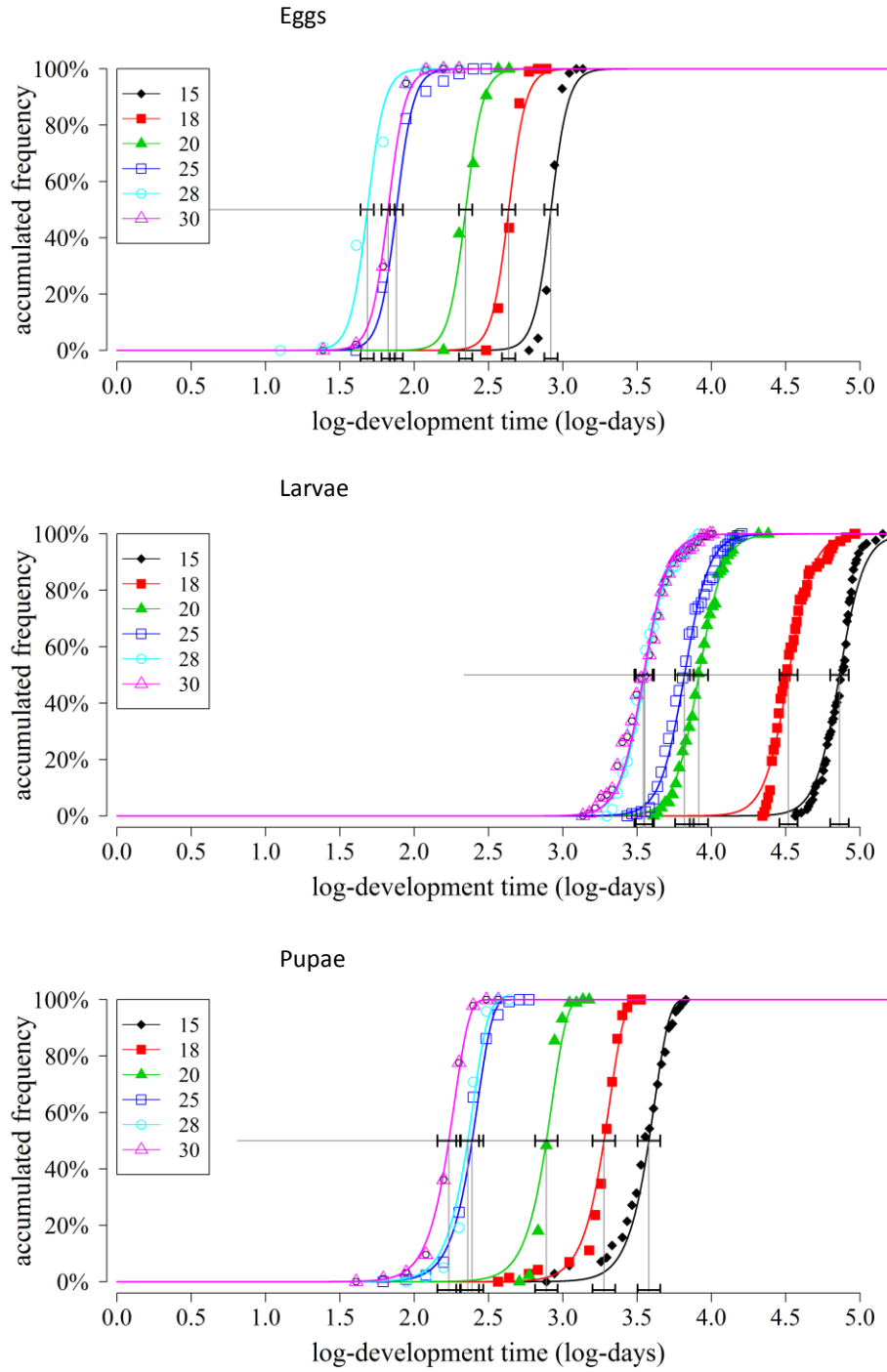
Stage: Female

Model 2: Gamma

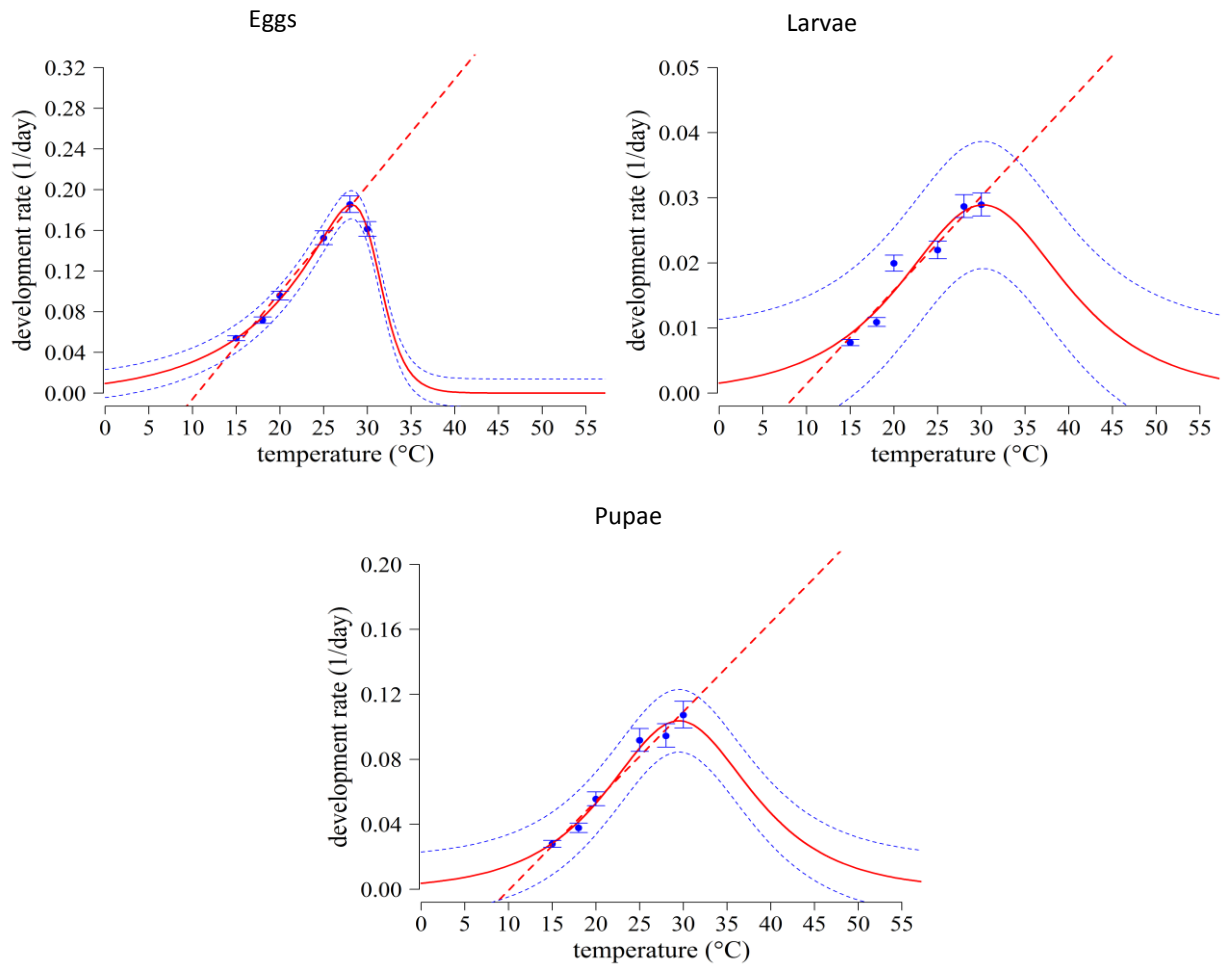
Parameters:  $a=7.345$   $b=20.463$

Formula:  $y \sim \text{pgamma}(x, a, b)$

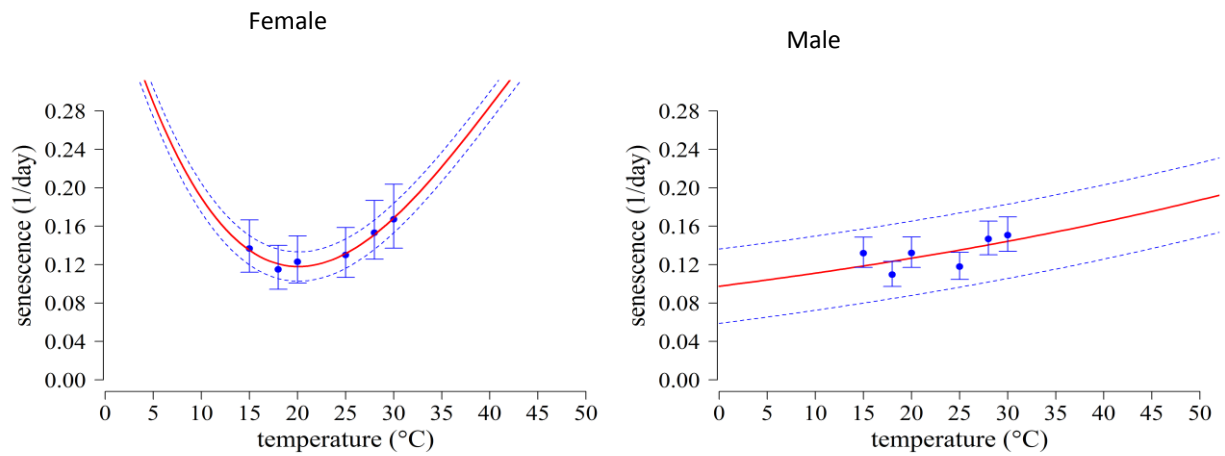
## 7. Development Time



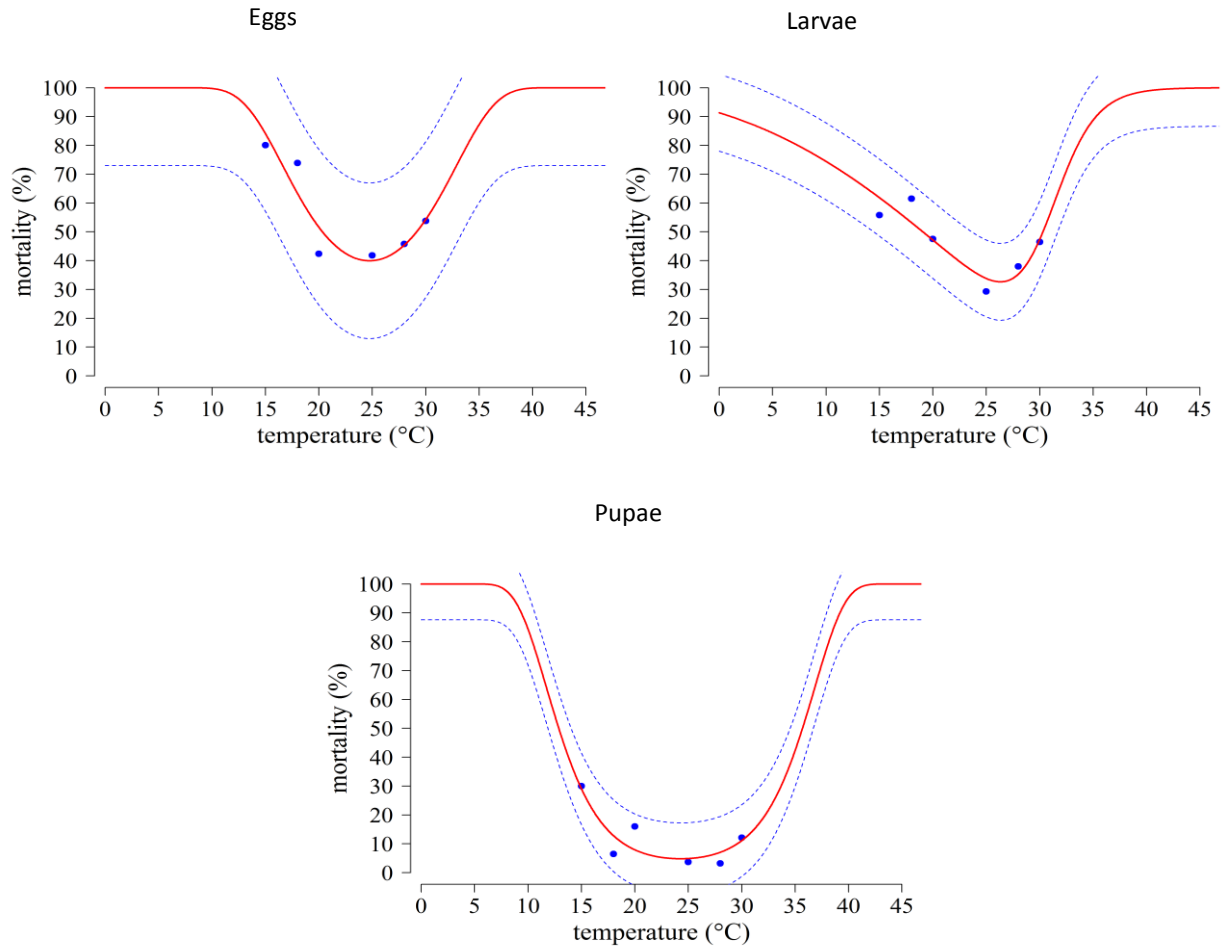
## 8. Development Rate



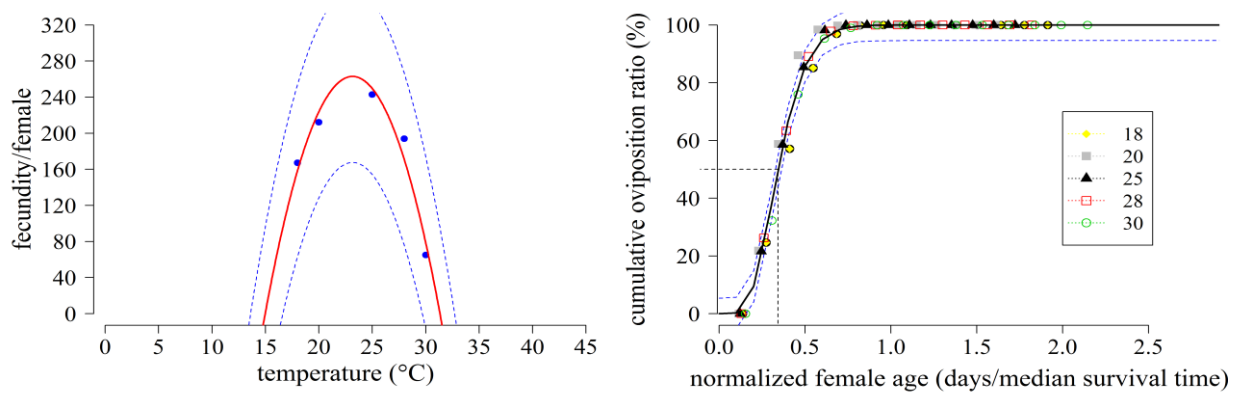
## 9. Senescence



## 10. Mortality



## 11. Total and Relative Oviposition



## 12. Estimated life table parameters using deterministic simulation

