

Supplementary Materials

Table S1. Overview on explanatory variables included in the final generalized binomial regression models (glm) for the investigated rates at 25 °C.

Explanatory variables	Response variables					
	Feeding rate	Survival rate	Infection rate	Dissemination rate	Transmission rate	Transmission efficiency
Species	x	x	x	x	x	x
Days post infection	/	x	x	x	x	/
Interaction term: Species: days post infection	/	/	x	/	x	/

Table S2. Overview on explanatory variables included in the final generalized binomial regression models (glm) for *Culex pipiens* biotype *pipiens* (G) at three different temperature regimes for the investigated rates.

Explanatory variables	Response variables			
	Infection rate	Dissemination rate	Transmission rate	Transmission efficiency
Temperature	x	x	x	x
Days post infection	/	/	/	/
Interaction term: Temperature: days post infection	/	/	/	/

Table S3. *p*-values of the fixed effects in the least-square means analysis when comparing the rates between all species at 25 °C in the final generalized binomial regression models specified in Supplementary Materials Table S1. *p*-value adjustment was performed using the Tukey method.

Fixed effects:							
		Feeding rate	Survival rate	Infection rate*	Dissemination rate	Transmission rate*	Transmission efficiency
	contrast	<i>p</i> -value	<i>p</i> -value	<i>p</i> -value	<i>p</i> -value	<i>p</i> -value	<i>p</i> -value
Species	AA_J - CPM_N	9.01 × 10 ⁻¹	7.88 × 10 ^{-3*}	4.66 × 10 ^{-3*}	6.50 × 10 ⁻¹	1.00	9.84 × 10 ⁻¹
	AA_J - CPM_W	9.85 × 10 ⁻¹	4.05 × 10 ^{-4*}	1.00	9.98 × 10 ⁻¹	1.00	8.02 × 10 ⁻¹
	AA_J - CPP_G	5.12 × 10 ^{-10*}	2.39 × 10 ^{-8*}	3.09 × 10 ^{-7*}	9.67 × 10 ⁻¹	1.00	3.04 × 10 ^{-4*}
	AA_J - CPP_S	3.22 × 10 ^{-3*}	1.57 × 10 ^{-6*}	1.00	8.74 × 10 ⁻¹	1.00	4.83 × 10 ^{-5*}
	CPM_N - CPM_W	1.00	8.79 × 10 ⁻²	1.00	8.69 × 10 ⁻¹	1.00	9.54 × 10 ⁻¹
	CPM_N - CPP_G	7.29 × 10 ^{-7*}	2.36 × 10 ^{-4*}	4.62 × 10 ^{-2*}	6.57 × 10 ⁻¹	1.24 × 10 ⁻¹	4.39 × 10 ^{-4*}
	CPM_N - CPP_S	7.97 × 10 ^{-4*}	3.90 × 10 ^{-3*}	1.00	5.14 × 10 ⁻²	8.14 × 10 ⁻¹	5.98 × 10 ^{-5*}
	CPM_W - CPP_G	1.91 × 10 ^{-2*}	8.20 × 10 ⁻¹	1.00	9.99 × 10 ⁻¹	1.00	1.45 × 10 ⁻¹
	CPM_W - CPP_S	6.77 × 10 ^{-3*}	9.75 × 10 ⁻¹	1.00	7.23 × 10 ⁻¹	1.00	5.35 × 10 ⁻²
	CPP_G - CPP_S	3.67 × 10 ^{-9*}	9.88 × 10 ⁻¹	1.00	2.90 × 10 ⁻¹	3.83 × 10 ⁻¹	9.53 × 10 ⁻¹
Days post							
infection	14/15 – 20/21	NA	9.80 × 10 ⁻²	9.90 × 10 ⁻¹	2.13 × 10 ⁻¹	9.97 × 10 ⁻¹	NA

**p* < 0.05. *Results for fixed effects may be misleading due to involvement in interactions (Supplementary Materials Table S4). CPP_G: *Culex pipiens* biotype *pipiens* from “Groß Kreuz”, Brandenburg, Germany. CPP_S: *Cx. pipiens* biotype *pipiens* from “Schöneiche” and “Rehfelde”, Brandenburg, Germany. CPM_W: *Cx. pipiens* biotype *molestus* from “Wendland”, Lower Saxony, Germany. CPM_N: *Cx. pipiens* biotype *molestus* from Novi Sad, Republic of Serbia. AA_J: *Aedes albopictus* from Jena, Thuringia, Germany.

Table S4. *p*-values of the interaction term in the least-square means analysis for the infection and transmission rate at 25 °C.

Interactions:			
		Infection rate	Transmission rate
Species:days			
post infection	contrast	<i>p</i> -value	<i>p</i> -value
	AA_J,14/15 - CPM_N,14/15	5.35 × 10 ^{-4*}	1.00
	AA_J,14/15 - CPM_W,14/15	1.00	1.00
	AA_J,14/15 - CPP_G,14/15	2.22 × 10 ^{-3*}	1.00
	AA_J,14/15 - CPP_S,14/15	1.00	1.00
	AA_J,14/15 - AA_J,20/21	9.79 × 10 ⁻¹	1.00
	AA_J,14/15 - CPM_N,20/21	7.62 × 10 ⁻¹	1.00
	AA_J,14/15 - CPM_W,20/21	1.00	1.00
	AA_J,14/15 - CPP_G,20/21	4.66 × 10 ^{-5*}	1.00
	AA_J,14/15 - CPP_S,20/21	6.63 × 10 ^{-4*}	1.00
	CPM_N,14/15 - CPM_W,14/15	1.00	1.00

CPM_N,14/15 - CPP_G,14/15	1.00	2.48 × 10 ⁻¹
CPM_N,14/15 - CPP_S,14/15	1.00	8.33 × 10 ⁻¹
CPM_N,14/15 - AA_J,20/21	4.85 × 10 ^{-2*}	1.00
CPM_N,14/15 - CPM_N,20/21	3.96 × 10 ^{-2*}	9.95 × 10 ⁻¹
CPM_N,14/15 - CPM_W,20/21	9.48 × 10 ⁻²	1.00
CPM_N,14/15 - CPP_G,20/21	9.92 × 10 ⁻¹	1.77 × 10 ⁻¹
CPM_N,14/15 - CPP_S,20/21	6.12 × 10 ⁻¹	7.60 × 10 ⁻¹
CPM_W,14/15 - CPP_G,14/15	1.00	7.52 × 10 ⁻¹
CPM_W,14/15 - CPP_S,14/15	1.00	9.98 × 10 ⁻¹
CPM_W,14/15 - AA_J,20/21	1.00	1.00
CPM_W,14/15 - CPM_N,20/21	1.00	1.00
CPM_W,14/15 - CPM_W,20/21	1.00	1.00
CPM_W,14/15 - CPP_G,20/21	1.00	7.84 × 10 ⁻¹
CPM_W,14/15 - CPP_S,20/21	1.00	9.95 × 10 ⁻¹
CPP_G,14/15 - CPP_S,14/15	1.00	9.27 × 10 ⁻¹
CPP_G,14/15 - AA_J,20/21	9.84 × 10 ⁻²	1.00
CPP_G,14/15 - CPM_N,20/21	1.08 × 10 ⁻¹	9.86 × 10 ⁻¹
CPP_G,14/15 - CPM_W,20/21	1.15 × 10 ⁻¹	1.00
CPP_G,14/15 - CPP_G,20/21	9.97 × 10 ⁻¹	1.00
CPP_G,14/15 - CPP_S,20/21	6.68 × 10 ⁻¹	9.71 × 10 ⁻¹
CPP_S,14/15 - AA_J,20/21	1.00	1.00
CPP_S,14/15 - CPM_N,20/21	1.00	1.00
CPP_S,14/15 - CPM_W,20/21	1.00	1.00
CPP_S,14/15 - CPP_G,20/21	1.00	9.43 × 10 ⁻¹
CPP_S,14/15 - CPP_S,20/21	1.00	1.00
AA_J,20/21 - CPM_N,20/21	1.00	1.00
AA_J,20/21 - CPM_W,20/21	9.86 × 10 ⁻¹	1.00
AA_J,20/21 - CPP_G,20/21	5.81 × 10 ^{-3*}	1.00
AA_J,20/21 - CPP_S,20/21	1.06 × 10 ^{-2*}	1.00
CPM_N,20/21 - CPM_W,20/21	9.27 × 10 ⁻¹	1.00
CPM_N,20/21 - CPP_G,20/21	3.94 × 10 ^{-3*}	9.95 × 10 ⁻¹
CPM_N,20/21 - CPP_S,20/21	1.46 × 10 ^{-2*}	1.00
CPM_W,20/21 - CPP_G,20/21	2.47 × 10 ^{-2*}	1.00
CPM_W,20/21 - CPP_S,20/21	8.07 × 10 ^{-3*}	1.00
CPP_G,20/21 - CPP_S,20/21	9.32 × 10 ⁻¹	9.84 × 10 ⁻¹

* $p < 0.05$. CPP_G: *Culex pipiens* biotype *pipiens* from "Groß Kreuz", Brandenburg, Germany. CPP_S: *Cx. pipiens* biotype *pipiens* from "Schöneiche" and "Rehfelde" Brandenburg, Germany. CPM_W: *Cx. pipiens* biotype *molestus* from "Wendland" Lower Saxony, Germany. CPM_N: *Cx. pipiens* biotype *molestus* from "Novi Sad", Republic of Serbia. AA_J: *Aedes albopictus* from Jena, Germany.

Table S5. *p*-values of the fixed effect temperature in the least-square means analysis when comparing the rates at temperatures of 18 °C, 25 °C, and 28 °C in the final generalized binomial regression models specified in Supplemental Table 2. *p*-value adjustment was performed using the Tukey method.

Fixed effect:						
		Survival	Infection	Dissemination	Transmission	Transmission
		rate	rate	rate	rate	efficiency
	contrast	<i>p</i>-value	<i>p</i>-value	<i>p</i>-value	<i>p</i>-value	<i>p</i>-value
Temperature (°C)	18 - 25	6.46 × 10 ⁻¹	4.04 × 10 ⁻¹	6.95 × 10 ^{-5*}	3.66 × 10 ^{-2*}	8.14 × 10 ^{-4*}
	18 - 28	7.74 × 10 ^{-3*}	3.37 × 10 ⁻¹	5.01 × 10 ^{-3*}	2.87 × 10 ⁻¹	1.02 × 10 ^{-2*}
	25 - 28	3.78 × 10 ^{-2*}	9.16 × 10 ⁻¹	6.01 × 10 ⁻¹	6.87 × 10 ⁻¹	9.40 × 10 ⁻¹

**p* < 0.05.