**Supporting Information**

**Figure S1** Observed and predicted field phenology of three *Epargyreus clarus* generations (columns) over 3 years (rows). Observed phenology is expressed using histograms, where bars indicate the frequency of development times of fourth instars feeding on high-quality (kudzu, dark grey) and low-quality (wisteria, light grey) hosts. Density plots have been overlaid to highlight peak values and distribution spread. Mean development time is indicated with a dashed line for each host (black for kudzu, grey for wisteria). Letters on the left correspond to the various models (see Table 4) and are horizontally aligned with their corresponding predictions, black circles for kudzu, white circles for wisteria, and stars for both hosts combined. All of these predictions were obtained using laboratory-calculated k values.



**Figure S2** Observed vs. predicted development times of *Epargyreus clarus* feeding on high-quality (kudzu) and low-quality (wisteria) hosts, using the generic base temperature t = 10 °C. The top panels include data from the first two generations (n = 10), whereas the bottom panels include data from all three generations (n = 14). Lines indicate statistically significant relationships.



