

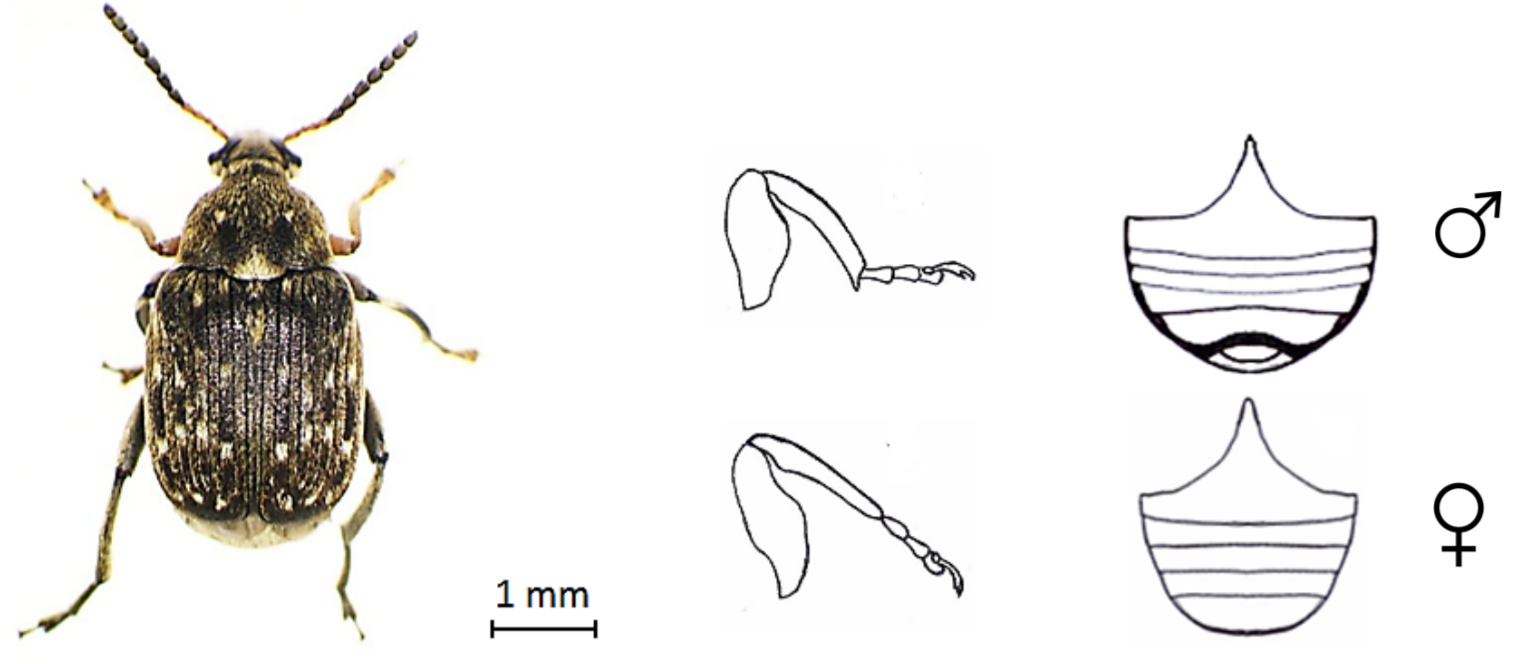
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Bruchus rufimanus, an inconspicuous pest with severe consequences for faba bean (*Vicia faba* L.) seed quality:

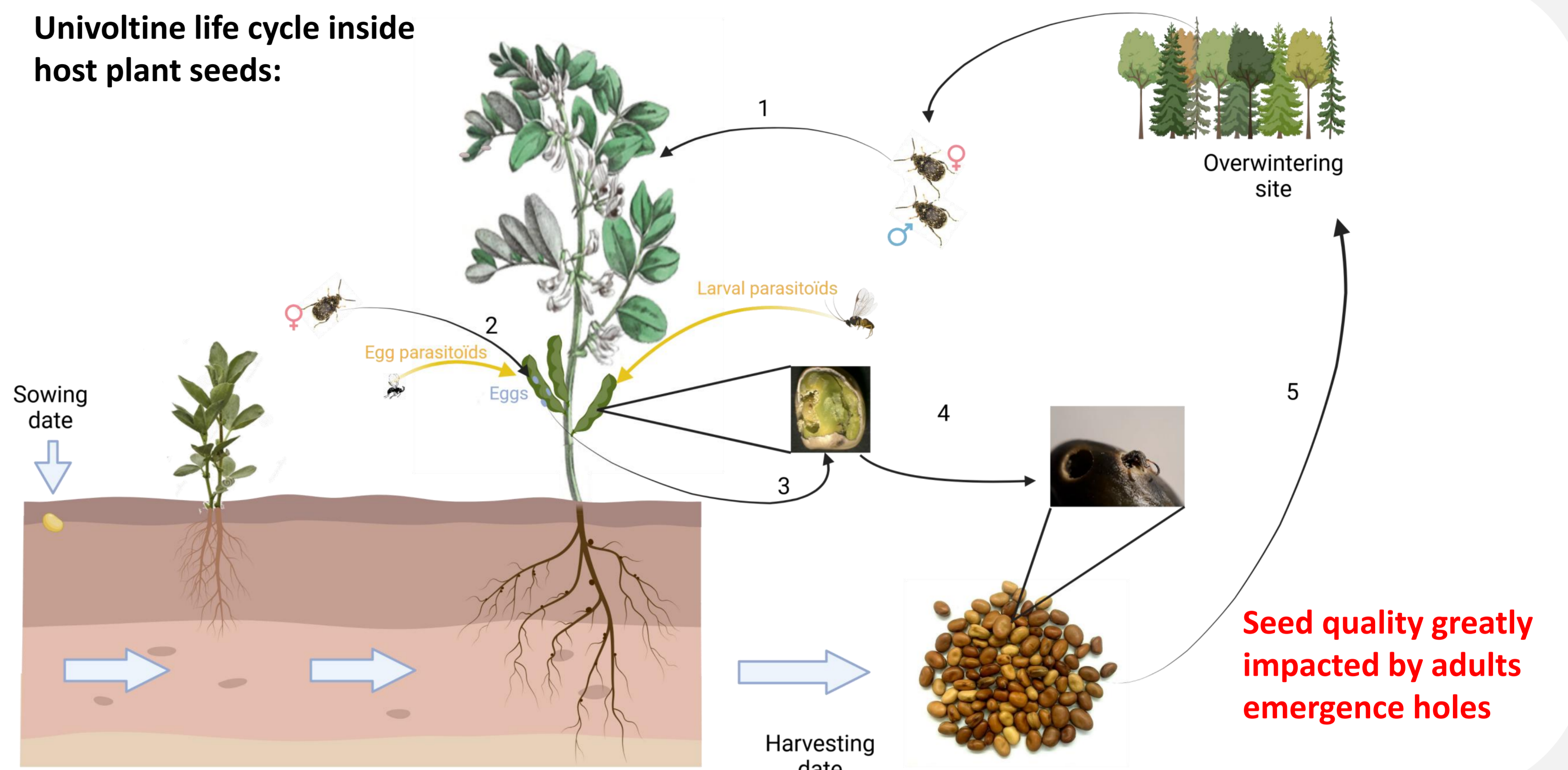
Bruchus rufimanus Boheman 1833
(COLEOPTERA : Chrysomelidae)



Life cycle steps:

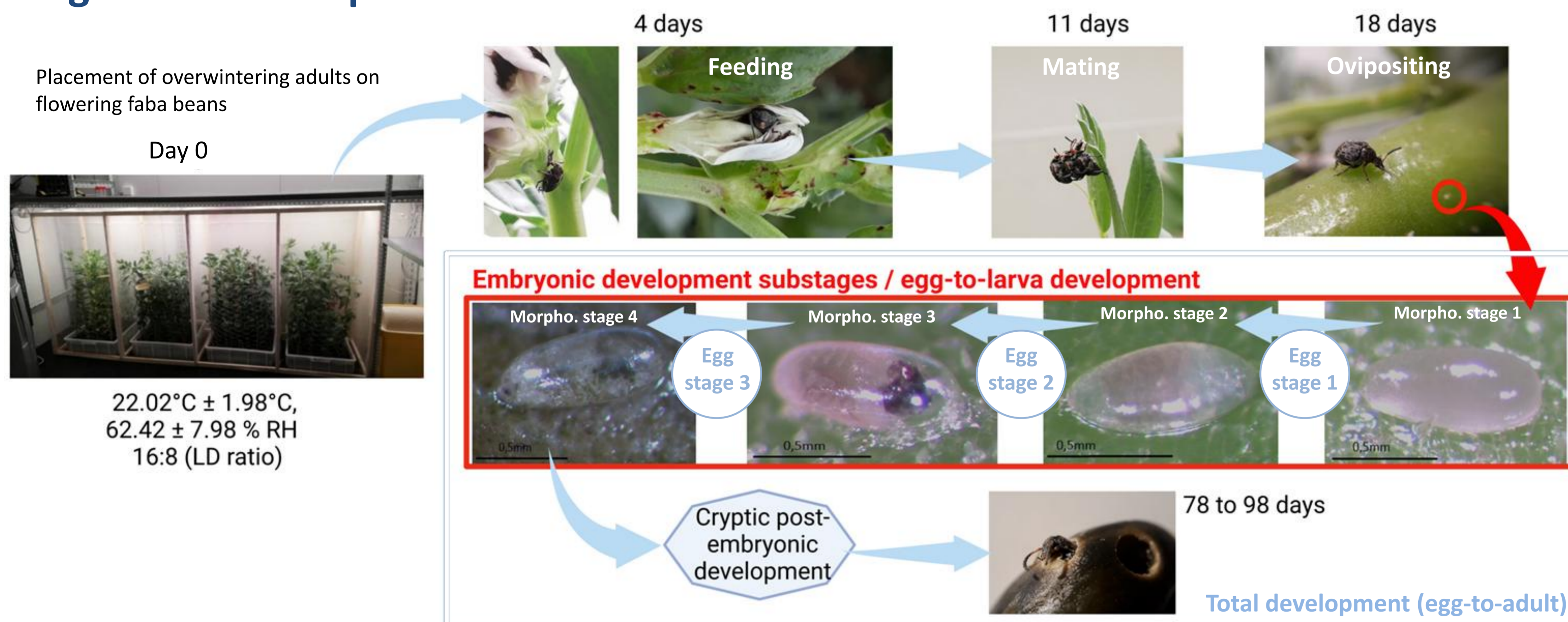
1. Spring colonization of flowering faba bean crops;
2. Oviposition on green forming pods;
3. Eggs hatching = seed infestation !
4. Larval/pupal development inside maturing seeds
5. Adults emergence from harvested seeds and overwintering in wooded sites

Univoltine life cycle inside host plant seeds:



- Biological descriptions of egg incubation are essential for (i) understanding pest biology, and (ii) developing potential management methods based on ovidal elements, such as egg parasitoids.
- Recent researches presented rearing methodologies highlighting **four embryonic morphological stages** as well as **egg incubation times** across eight constant temperatures ranging from **12°C to 40°C**.
- **What about differential representations within each embryonic developmental stages under these different temperatures?**

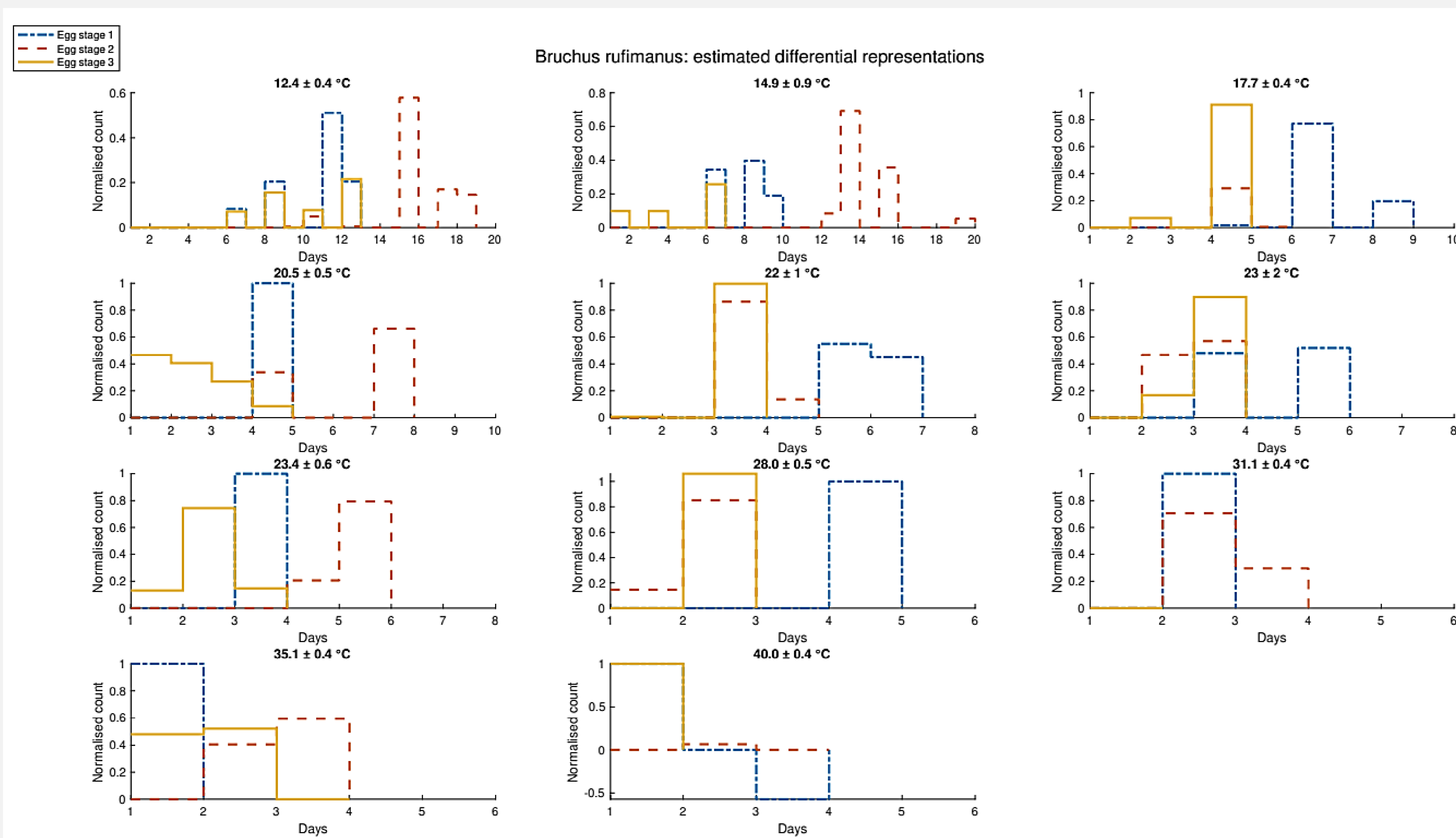
Rearings and data acquisition:



- Placement of eggs cohorts at eight constant temperatures (12.4 ± 0.4 °C; 14.9 ± 0.9 °C; 17.7 ± 0.7 °C; 20.5 ± 0.6 °C; 22 ± 1 °C; 23 ± 2 °C; 23.4 ± 0.6 °C; 31.1 ± 0.4 °C; 35.0 ± 0.4 °C; 40.0 ± 0.4 °C)
- Life history of each cohort is daily observed within four morphological egg stages

Conversion of dataset from integral to differential representation (i.e., transitions between morphological stages)

Results and discussion:



- First characterization of egg development in *B. rufimanus* using differential representation.
- Mean development times were obtained from the cohort dataset
- Differential representations across temperatures display interesting tendencies:
 - Stage 2 takes more time at lower temperatures
 - At 22 °C, the durations of egg stage 1 and 2 are similar
- These representations provide baseline biological descriptions to assess potential preferences for egg parasitoids at different stages of egg development.