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Diapause induction in eastern North American populations of *Propylea quatuordecimpunctata* and *Hippodamia variegata* (Coleoptera: Coccinellidae)

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Recommended Citation

Jones, A.G., J. J. Obrycki, A. Sethuraman, and D. W. Weisrock. 2024. Shared patterns of population genomic variation and phenotypic response across rapid range expansions in two invasive lady beetle species. *Biol. Control* (accepted, pending revisions).

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This *Propylea quatuordecimpunctata* (P14) -data-readme.txt file was generated on 2024-04-05 by John J. Obrycki.

GENERAL INFORMATION

1. Title of Dataset:

Diapause induction in eastern North American populations of *Propylea quatuordecimpunctata* and *Hippodamia variegata* (Coleoptera: Coccinellidae)

2. Description of Dataset:

Experiments examined the effect of photoperiod on the expression of adult diapause in North American populations of two Palearctic ladybird beetle species, *Propylea quatuordecimpunctata* and *Hippodamia variegata*. Comparative data for the reproductive responses to different photoperiod conditions for *H. variegata* were taken from Obrycki (2018). Additionally, comparisons of responses to the four photoperiods between *P. quatuordecimpunctata* from Jefferson County, NY, USA to *P. quatuordecimpunctata* from Montreal, Quebec, Canada were also conducted. Data for the Montreal, Quebec, Canada population are from Obrycki et al., (1993).

Two Data sets are included:

(1) Pre-oviposition period (days) as a measure of induction and duration of adult diapause in *P. quatuordecimpunctata* and *H. variegata*. (Data for Supplemental Table S8 in Jones et al 2024)

(2) Pre-oviposition period (days) as a measure of induction and duration of adult diapause in *P. quatuordecimpunctata* from Jefferson County, New York, USA and *P. quatuordecimpunctata* from Montreal, Quebec, Canada. (Data for Supplemental Table S9 in Jones et al 2024)

3. Author Information

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4. Date of data collection

Hippodamia variegata were collected in August 2015.

Propylea quatuordecimpunctata were collected in August 2019.

The Canadian population of *Propylea quatuordecimpunctata* was collected in summer 1989.

5. Geographic location of data collection:

Adult *Hippodamia variegata* and *Propylea quatuordecimpunctata* collected from Jefferson County, New York, USA (43.98°N, 75.91°W).

Adult *Propylea quatuordecimpunctata* were collected from Montreal, Quebec, Canada (45.50°N, 73.57°W)

6. Information about funding sources that supported the collection of the data:

SHARING/ACCESS INFORMATION

1. Licenses/restrictions placed on the data:

This dataset is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided that the dataset creators and publication source are credited and that changes (if any) are clearly indicated.

2. Links to publications that cite or use the data:

Jones, A.G., J. J. Obrycki, A. Sethuraman, and D. W. Weisrock. 2024. Shared patterns of population genomic variation and phenotypic response across rapid range expansions in two invasive lady beetle species. *Biol. Control* (accepted, pending revisions).

Obrycki, J. (2018). Reproductive Diapause in North American Populations of the Introduced Lady Beetle *Hippodamia variegata* (Coleoptera: Coccinellidae). *Environmental Entomology*, 47(5), 1337-1343. <https://doi.org/10.1093/ee/nvy118> (data set at <https://doi.org/10.13023/K2PH25>)

Obrycki, J., Orr, D., Orr, C., Wallendorf, M., & Flanders, R. (1993). Comparative developmental and reproductive biology of three populations of *Propylea quatuordecimpunctata* (Coleoptera: Coccinellidae). *Biological Control*, 3(1), 27-33.

3. Links to other publicly accessible locations of the data: NA

4. Links/relationships to ancillary data sets: NA

5. Was data derived from another source? No

6. Recommended citation for this dataset:

Jones, A.G., J. J. Obrycki, A. Sethuraman, and D. W. Weisrock. 2024. Shared patterns of population genomic variation and phenotypic response

across rapid range expansions in two invasive lady beetle species. Biol. Control (accepted, pending revisions).

DATA & FILE OVERVIEW

1. File List:

File 1 Days to first oviposition by *Propylea quatuordecimpunctata* and *Hippodamia variegata* females at constant photoperiods

File 2 Days to first first oviposition by *Propylea quatuordecimpunctata* females from Jefferson County, NY, USA and Montreal, Quebec, Canada at constant photoperiods

2. Relationship between files, if important:

3. Additional related data collected that was not included in the current data package: N/A

4. Are there multiple versions of the dataset? No

METHODOLOGICAL INFORMATION

1. Description of methods used for collection/generation of data:

Text from:

Jones, A.G., J. J. Obrycki, A. Sethuraman, and D. W. Weisrock. 2024. Shared patterns of population genomic variation and phenotypic response across rapid range expansions in two invasive lady beetle species. Biol. Control (accepted, pending revisions).

Briefly, adult *H. variegata*, collected in Jefferson County, New York, USA (43.98°N, 75.91°W) were placed in LD 16:8, 22°C and fed daily. Eggs were collected from 4-6 females and placed systematically into one of four constant photoperiod treatments (LD 16:8, 14:10, 12:12, or 10:14 at 22°C). Larvae were reared individually and F1 adults were paired and maintained at the same photoperiod. The date of first oviposition was recorded for each female (Obrycki 2018). Data on the length of the preoviposition period (days) and the percentage of females ovipositing at each photoperiod from the *H. variegata* experiment (Obrycki 2018) were compared with data collected for *P. quatuordecimpunctata* collected from the same location in the present study.

Data for *P. quatuordecimpunctata* were generated using adults collected from Jefferson County, New York, USA (43.98°N, 75.91°W). Individual females or mating pairs were placed in 0.24 L (8 oz.) paper containers maintained at a photoperiod of L:D 16:8 (light:dark), a temperature of 22 ± 1°C, and provided water, a Wheat-honey mixture, and a daily supply of pea aphids, *Acyrtosiphon pisum* (Harris) (Homoptera: Aphididae). Eggs were collected daily from 4 to 6 females and placed in L:D 16:8, 14:10, 12:12, 10:14, at 22°C ± 1.0°C. F1 offspring were individually reared in glass vials at each photoperiod on *A. pisum* and

Ephestia kuehniella (Zeller) (Lepidoptera: Pyralidae) eggs (Beneficial Insectary, Redding, CA).

2. Methods for processing the data:

Dataset 1 The date of first oviposition of each female was recorded. We calculated the percentage of females ovipositing at each photoperiod and the mean and median number of days for the preoviposition period under each photoperiod.

Dataset 2 The date of first oviposition of each female was recorded. We calculated the percentage of females ovipositing at each photoperiod and the mean and median number of days for the preoviposition period under each photoperiod.

3. Instrument- or software-specific information needed to interpret the data:

University of Kentucky site license for JMP 14.0.0

4. Standards and calibration information, if appropriate: NA

5. Environmental/experimental conditions: see Jones et al 2024 Biological Control and Obrycki 2018 Environ. Entomol.

6. Describe any quality-assurance procedures performed on the data: NA

7. People involved with sample collection, processing, analysis and/or submission:

DATA-SPECIFIC INFORMATION FOR: [FILENAME]

<repeat this section for each dataset, folder or file, as appropriate>

Dataset 1

1. Number of variables: Four columns: Species ((*Propylea quatuordecimpunctata* (P14) and *Hippodamia variegata* (Hvar)), L:D = photoperiodic condition, Preovip Days = preoviposition period (days) for each female, censor value =1 female died or did not oviposit within the length of the experiment (80-90 days)

2. Number of cases/rows: 121

Dataset 2

1. Number of variables: Four columns: *Propylea quatuordecimpunctata* population (P14 from Jefferson County NY, USA and P14CAN from Montreal, Quebec, Canada), L:D = photoperiodic condition, Preovip Days = preoviposition period (days) for each female, censor value =1 female died or did not oviposit within the length of the experiment (90 days)

2. Number of cases/rows: 99