Ecology and genetic variation of *Aedes japonicus,* an invasive mosquito in the Wooster, OH area

WRBU

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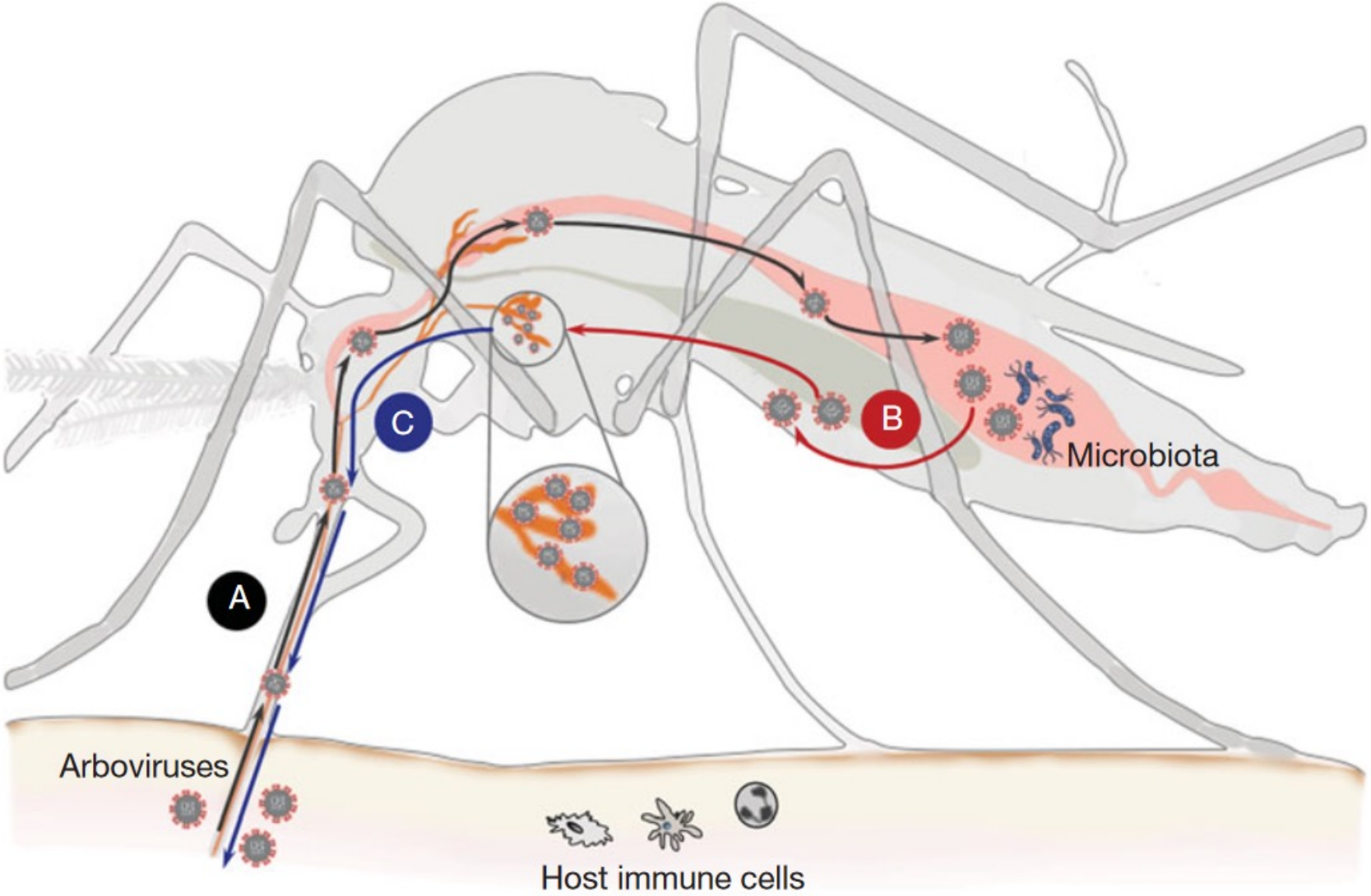
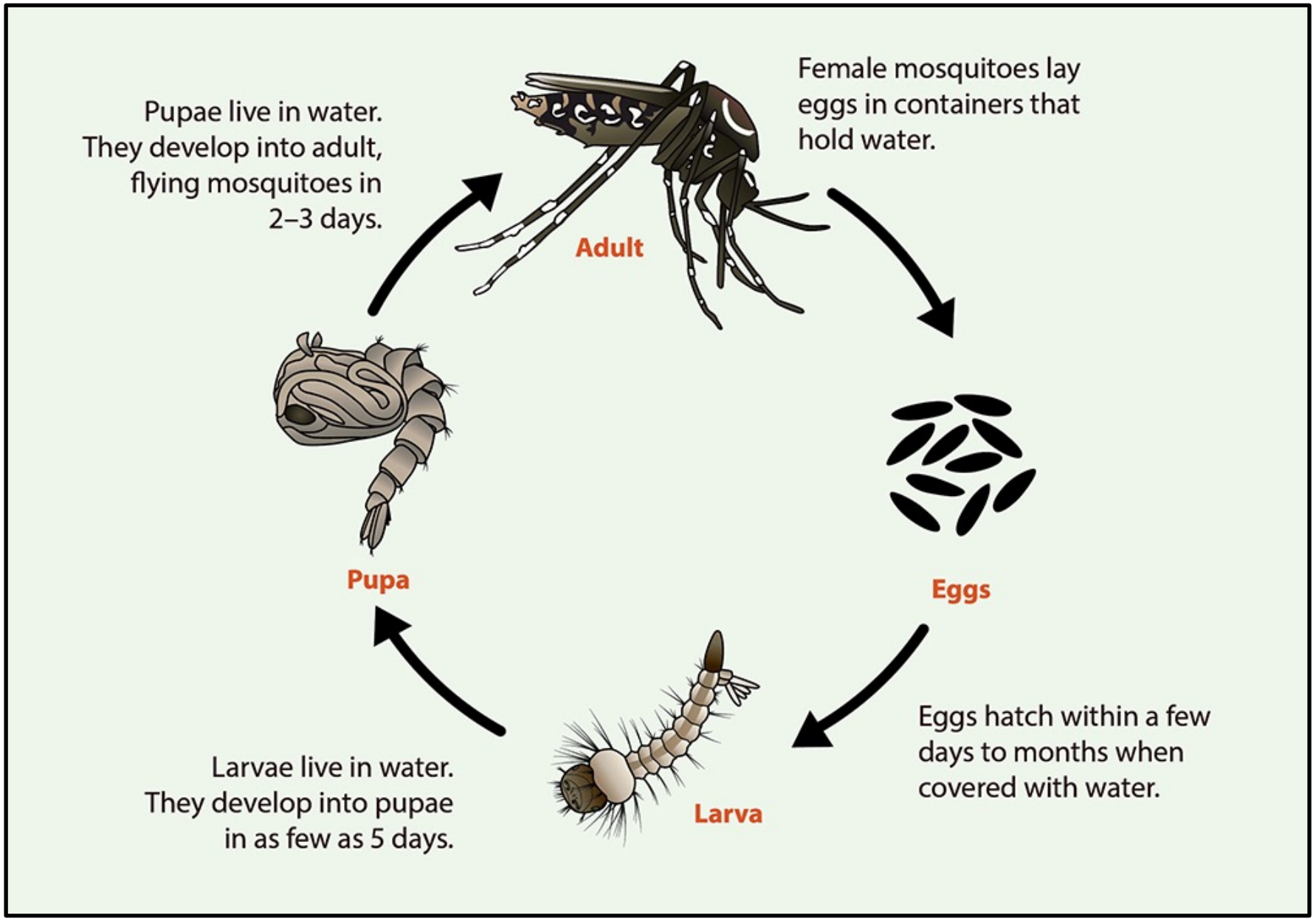
Arbovirus Acquisition



Wu et al., 2019

Life Cycle



CDC (2022)

Aedes japonicus

- Complex
  - *Ae. j. japonicus*
  - *Ae. j. shintiensis*
  - *Ae. j. yaeyamensis*
  - *Ae. j. amamiensis*

- Group
  - *Ae. koreicus*

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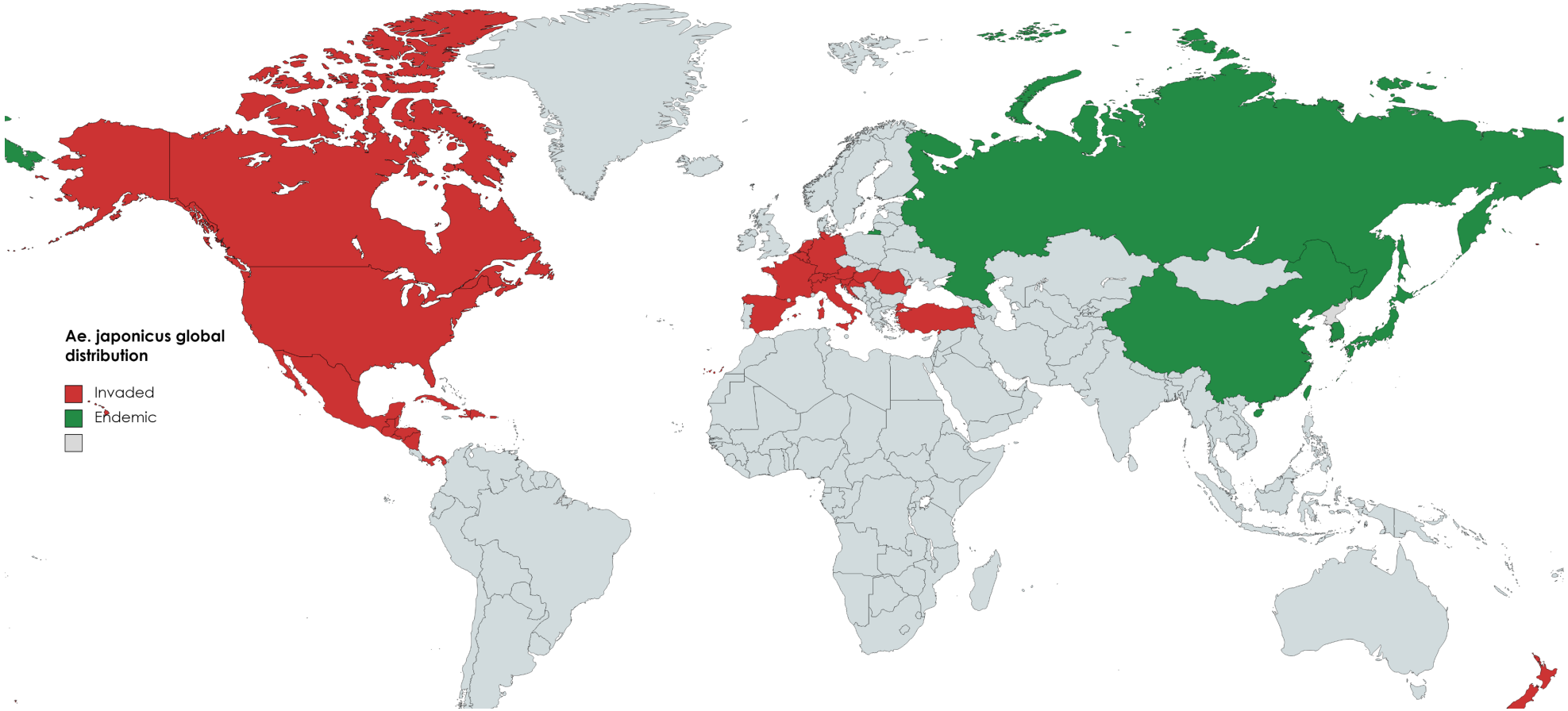
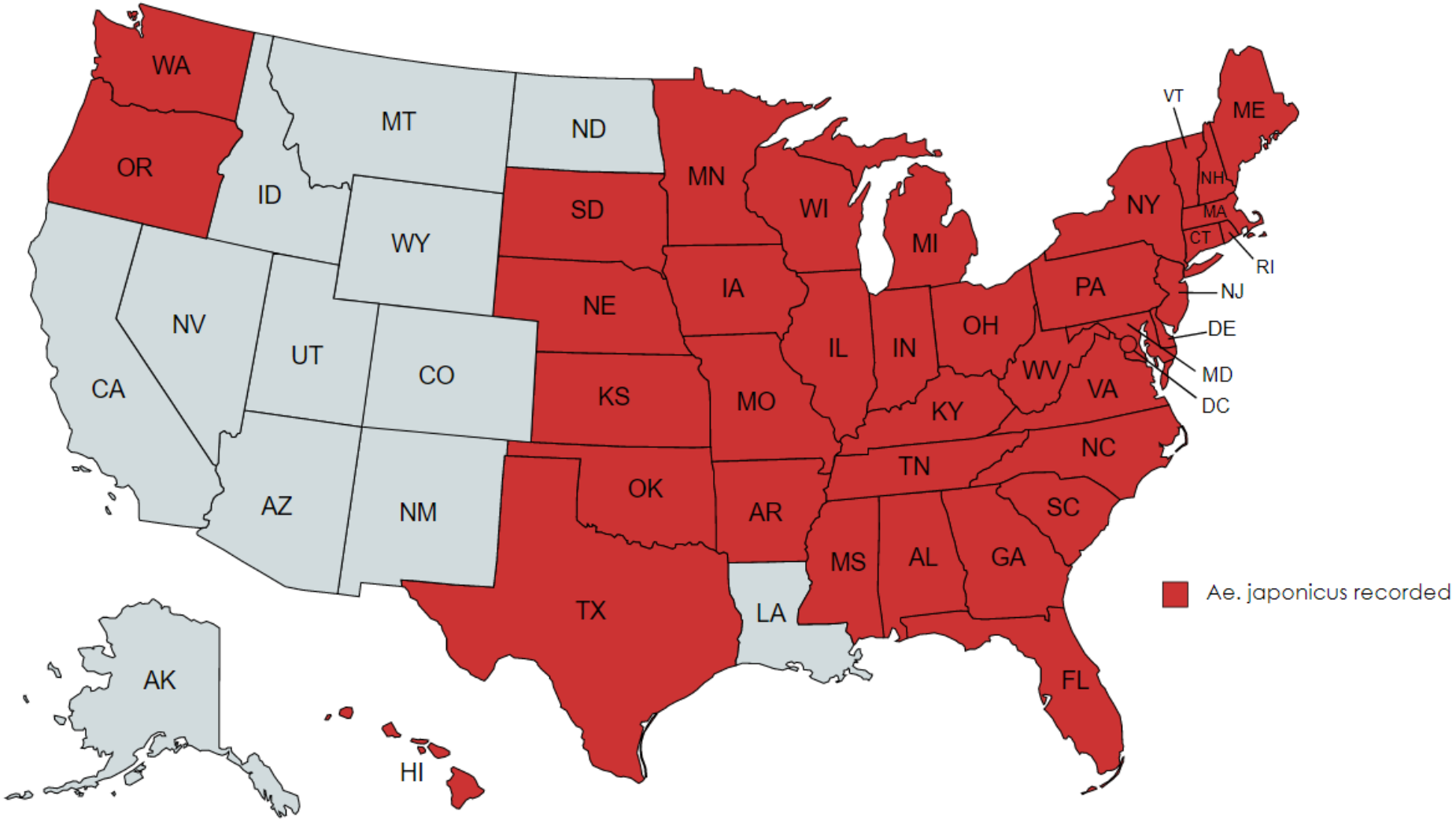
Distribution of *Ae. japonicus*



Ae. japonicus in the US - 1998

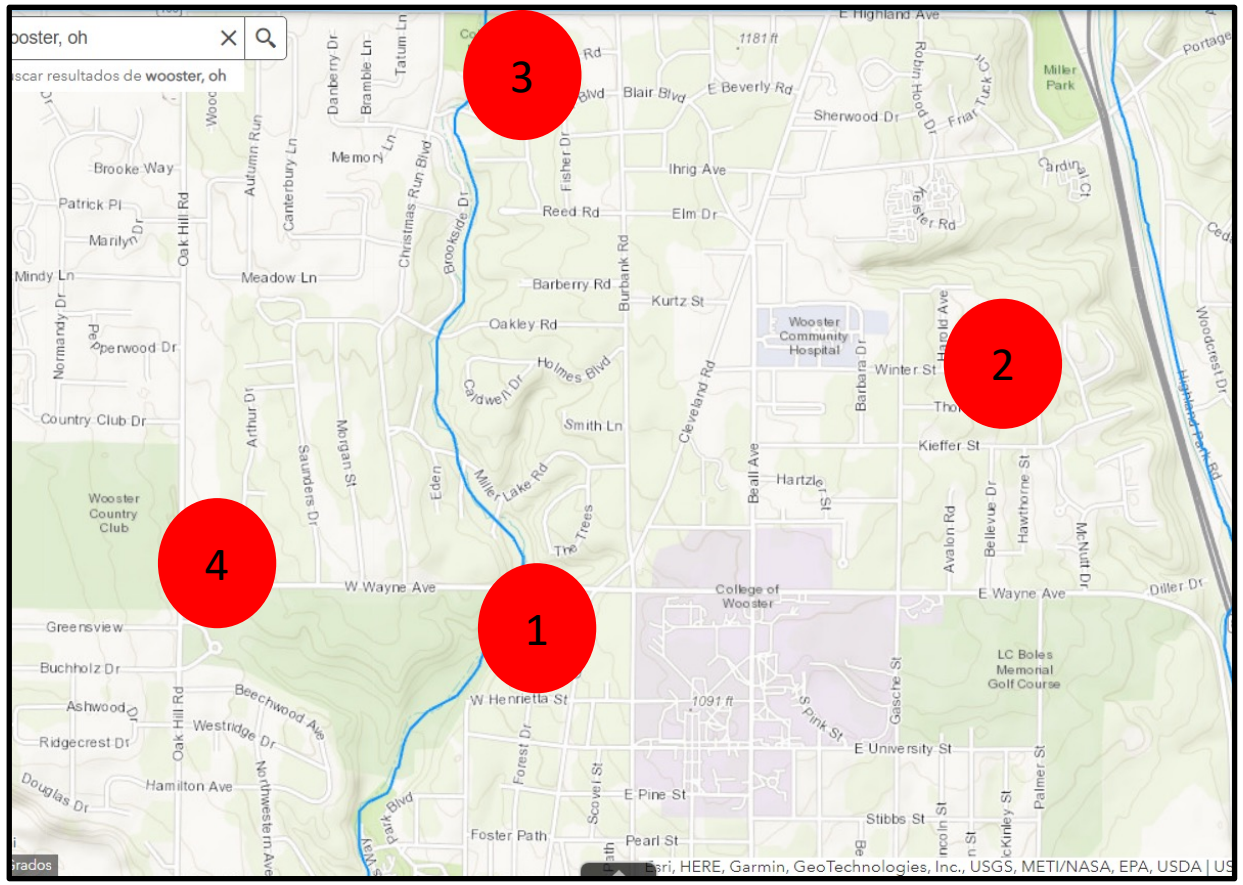


Objectives

1. Measure the density of *Ae. japonicus* in the Wooster area
2. Enderstand the ecology of *Ae. japonicus*
    - Interactions
    - Breeding sites
3. Understand the genetic variation in the local population of *Ae. japonicus* through DNA sequencing

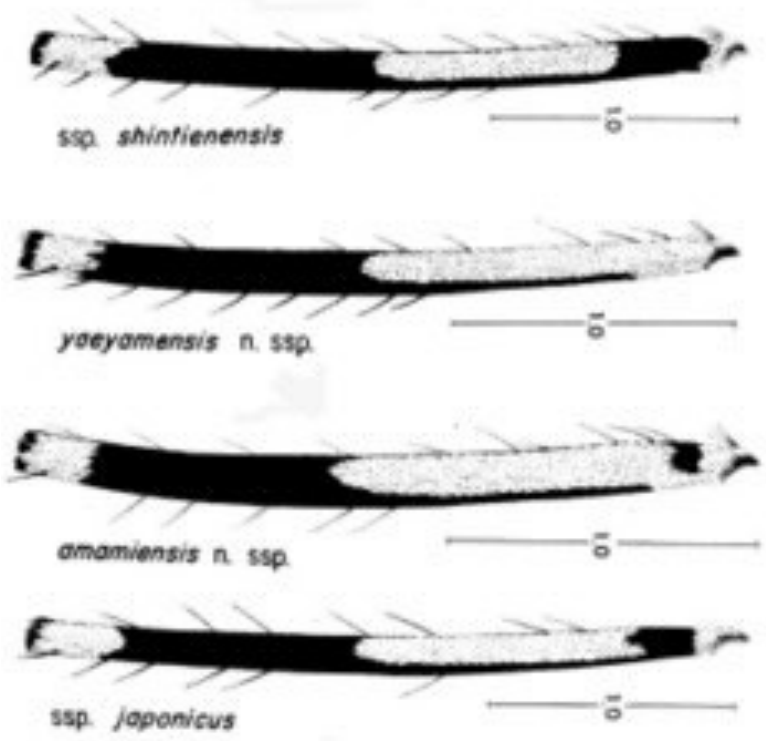
Methods

- Field Collection
  - Gravid traps
  - Light traps
  - Oviposition traps
- Sites

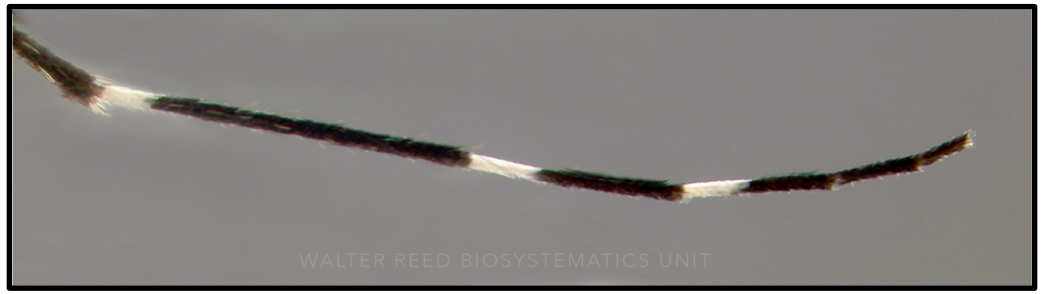


arcGIS

Methods - Identification



Cameron et al 2010



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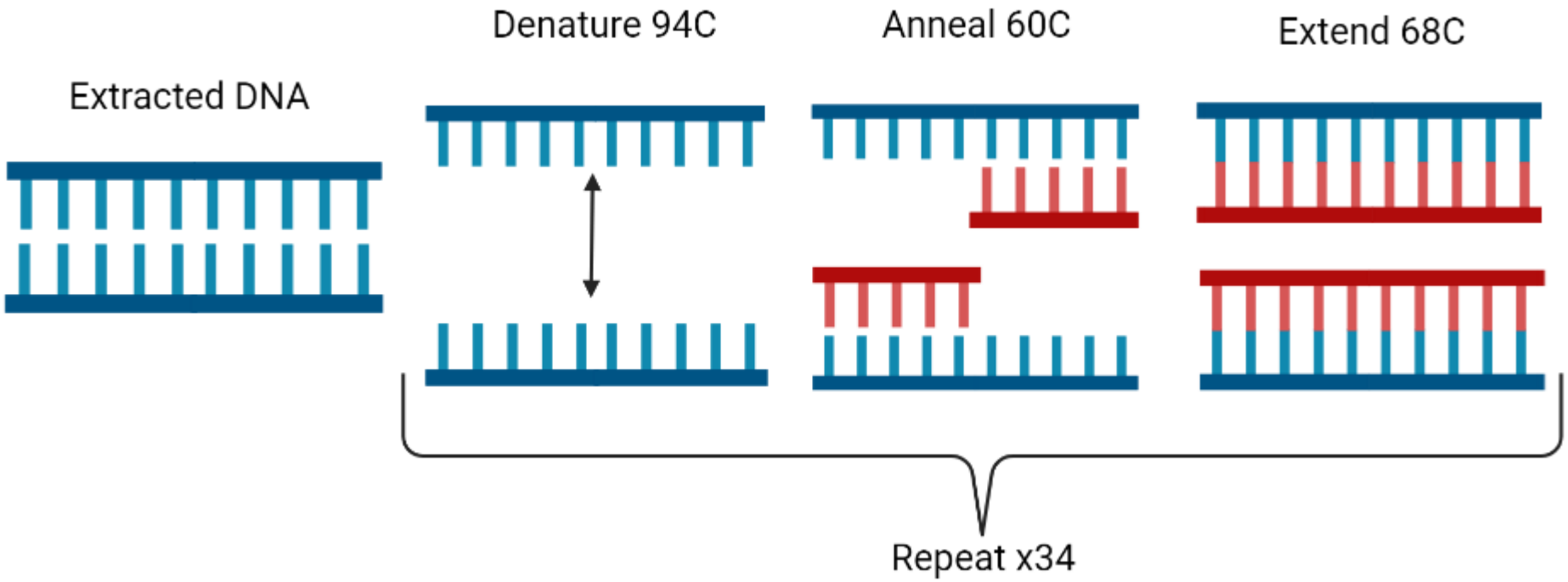
Molecular methods - PCR

Markers

- **COII**
- **NAD4**
- OJ85
- OJ338



Results - Density

- 19 trap nights
- 339 adults caught
  - 75 adults reared from larvae
- 499 total larvae found
- Highest density at sites 001 and 002

Krupa et al., 2021

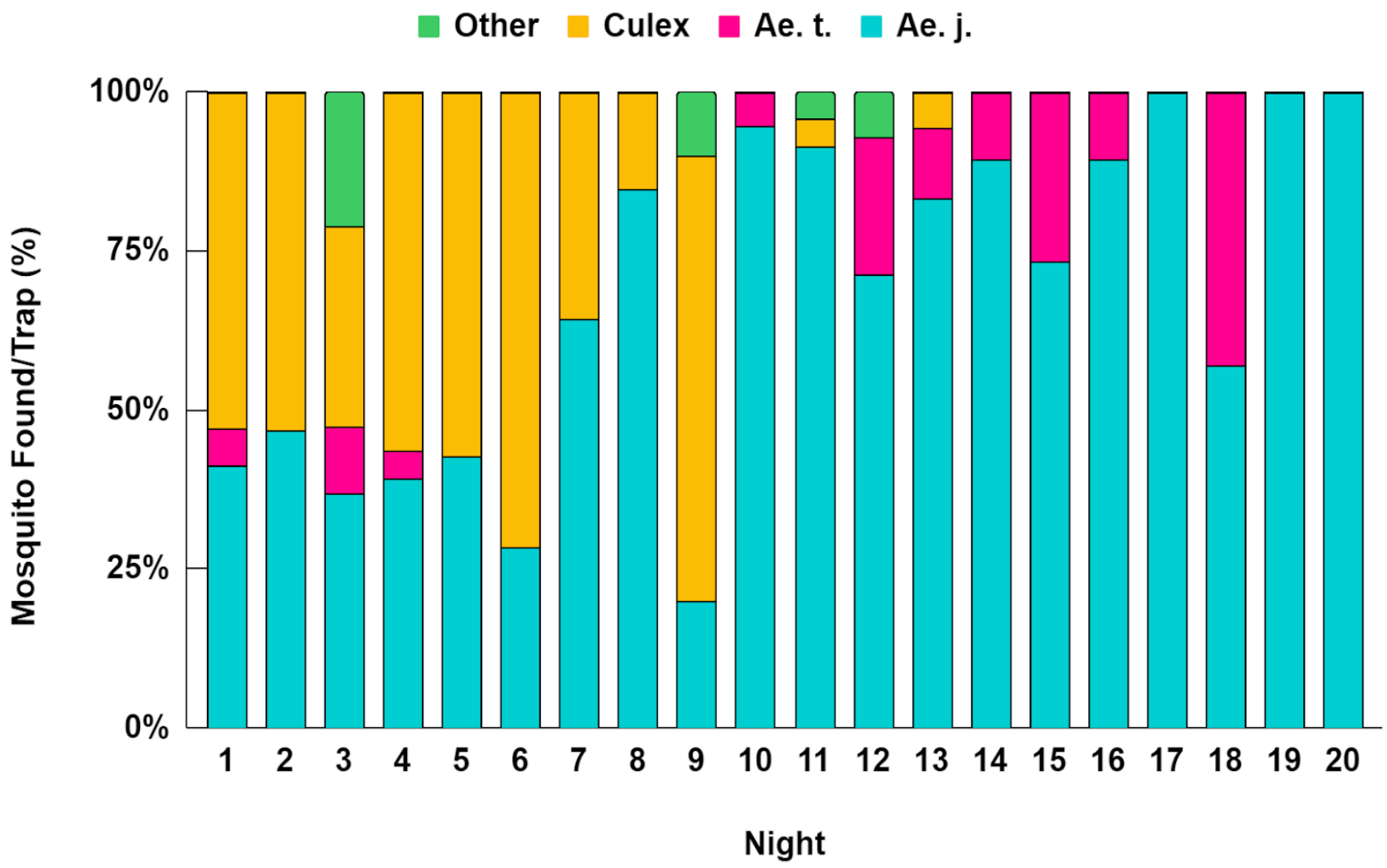
Results - Ecology

Species	Site 001 (%)	Site 002 (%)	Site 003 (%)	Site 004 (%)	Total (%)
Aedes japonicus	135 (39.8)	107 (31.6)	0	7 (2.1)	249 (73.5)
Aedes triseriatus	5 (1.5)	17 (5.0)	0	0	22 (6.5)
Aedes vexans	0	2 (0.6)	0	0	2 (0.6)
Aedes trivittatus	0	1 (0.3)	0	0	1 (0.3)
Culex sp.	4 (1.2)	11 (3.2)	40 (11.8)	7 (2.1)	62 (18.3)
Uranotaenia sapphirina	1 (0.3)	0	0	0	1 (0.3)
Anopheles quadrimaculatus	1 (0.3)	1 (0.3)	0	0	2 (0.6)

Kaufman et al., 2012

Rochlin et al., 2013

Results – Ecology (cont.)



Armistead et al., 2012,

Dussault et al., 2018, etc

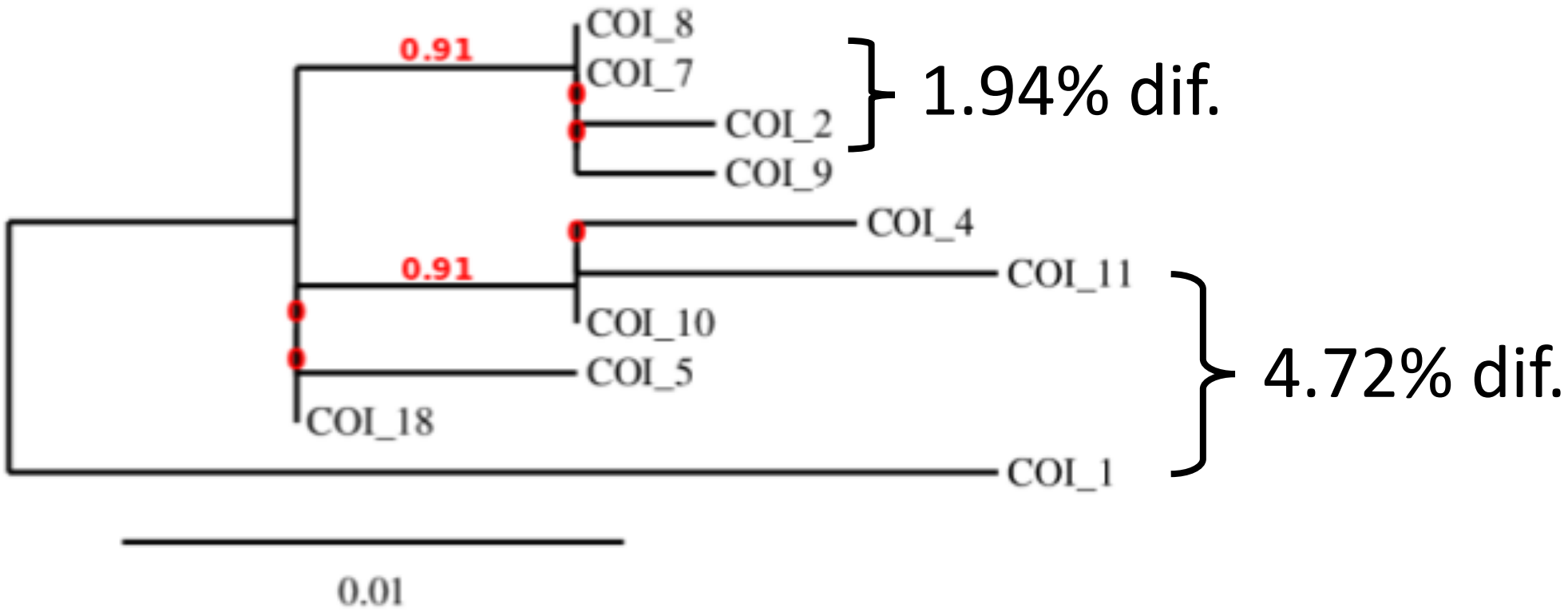
Results – Breeding Sites

Characteristics

- Rock pools
- Near moving water
- Sparse foliage

Montarsi et al. 2019

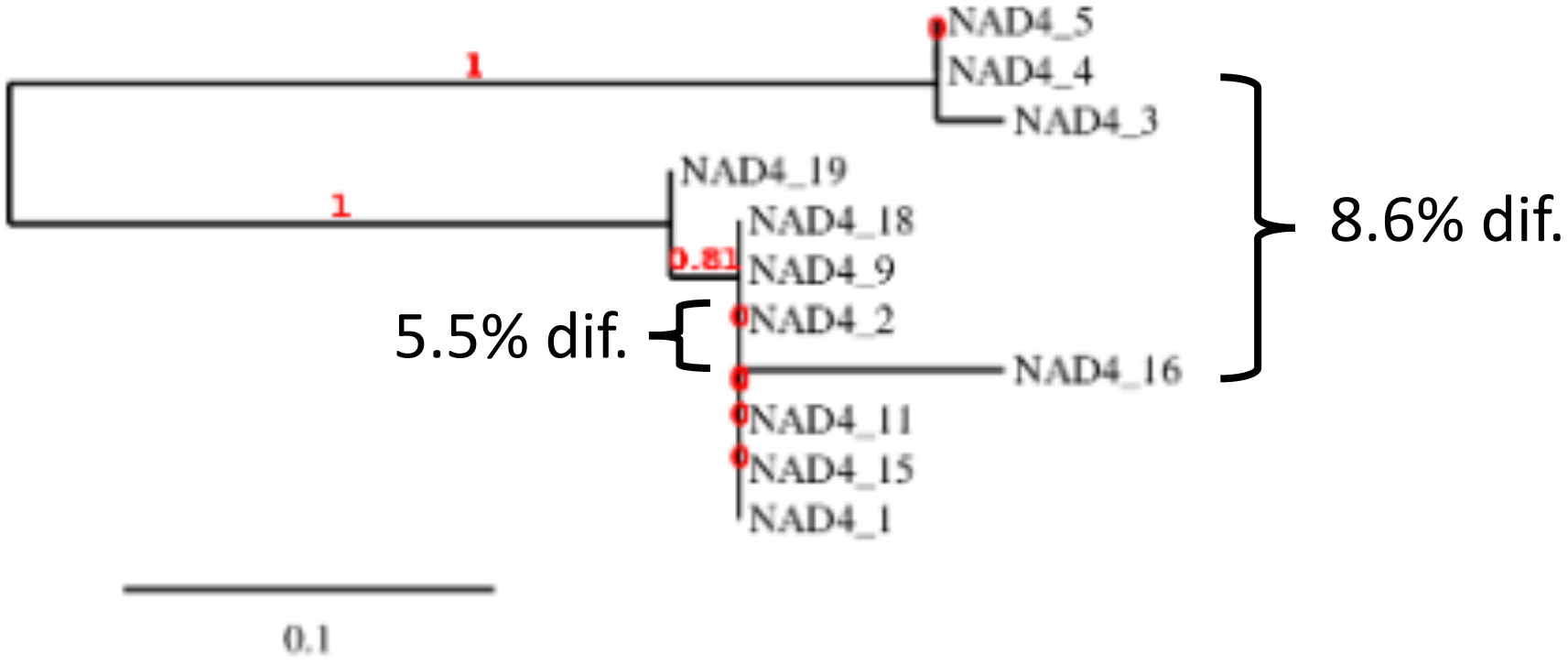
Results - Genetic variation: COI



0.42-2.87 % difference compared to samples from 2021

Nanfack-Minkeu et al. 2023

Genetic variation: NAD4



1.7-8.6% difference range

Fonseca et al., 2001

Future Steps

- Include more samples/sites
- More detailed genetic analysis
- Identification of phenotypic differences between variants
- Identify breeding sites

Thank you!