

# Parental care augments maternally-vectorred parasites in *Ammophila* wasps



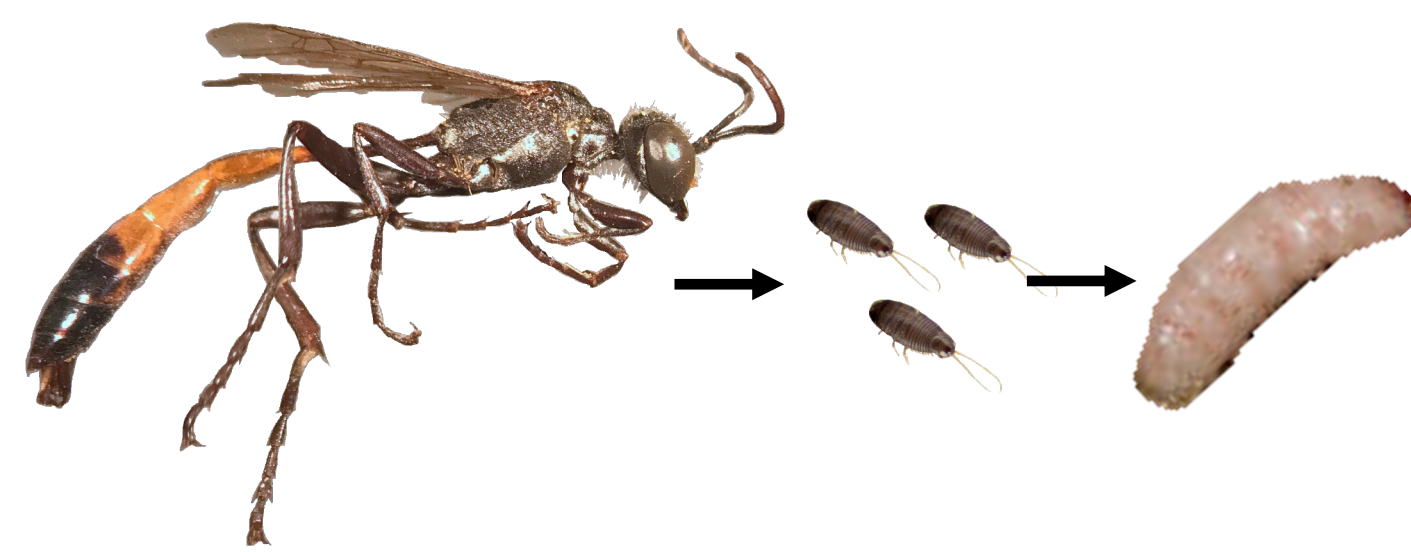
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## BACKGROUND:

- **Extended maternal care:** favored evolutionary due to enhanced ability to protect offspring
- Seen in the nesting and provisioning behavior of *Ammophila* wasps
- **Vertical transmission:** parent transmits parasite/pathogen to child
- *Ammophila* spp. mothers can vector endoparasite *Paraxenos lugubris* to their offspring

## RELEVANT HOST-PARASITE BIOLOGY:

*P. lugubris* larvae are vectored to wasp's larvae by mother wasp



*P. lugubris* develop in wasp offspring as endoparasites



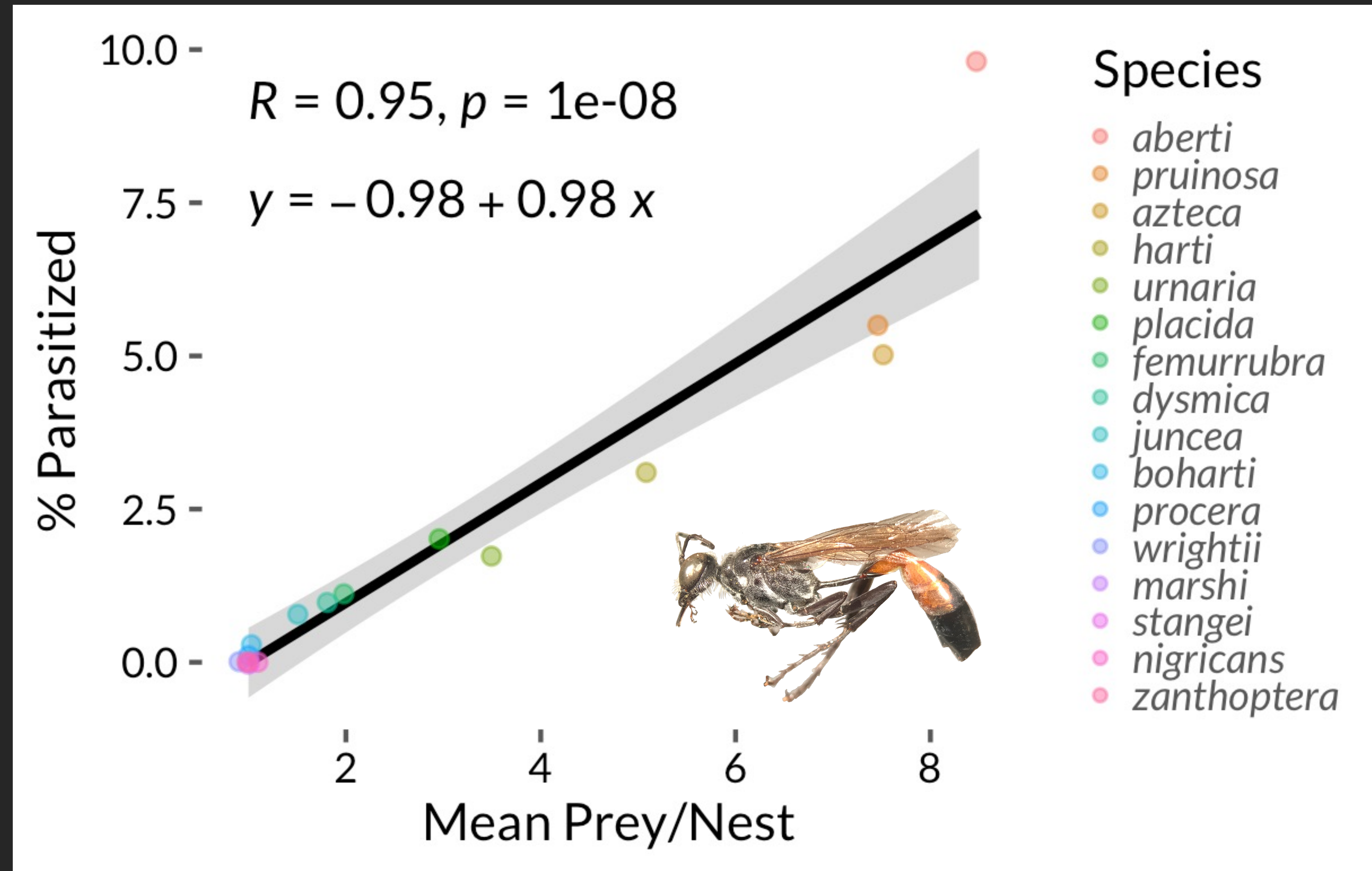
As *P. lugubris* develop, the host wasp remains alive



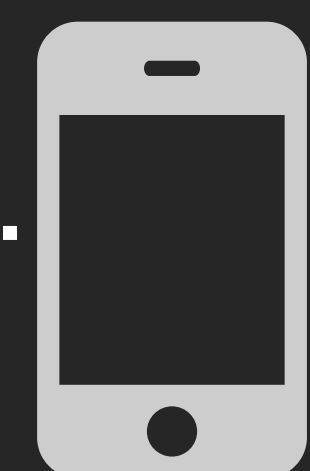
External protrusion of Strepsiptera at maturity enables mating, offspring dispersal, and this study



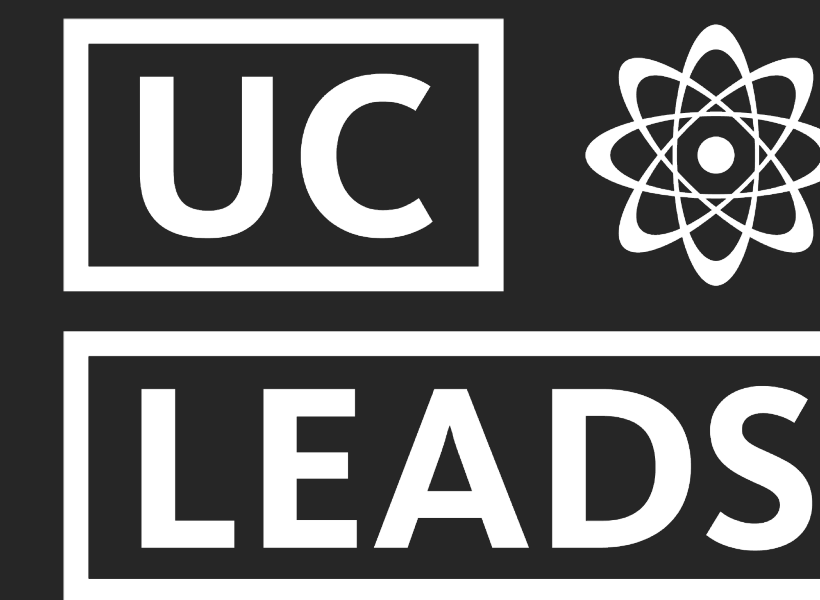
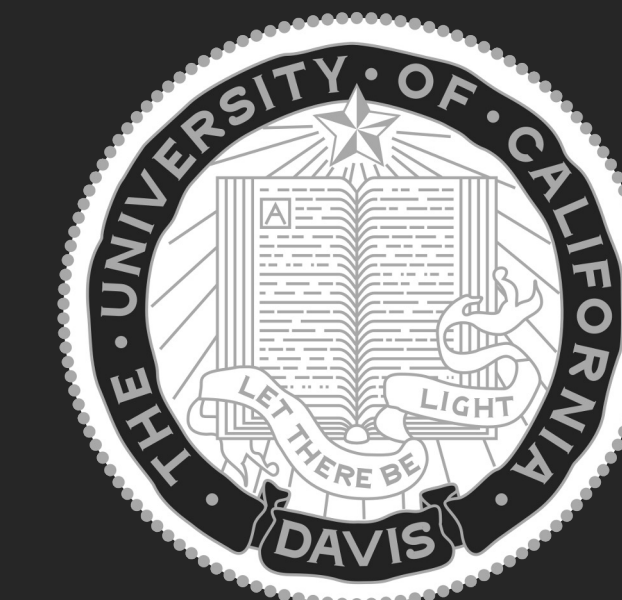
# Parental care in *Ammophila* spp. wasps explains >90% of the variation in the rates of their parasitism by *Paraxenos lugubris*.



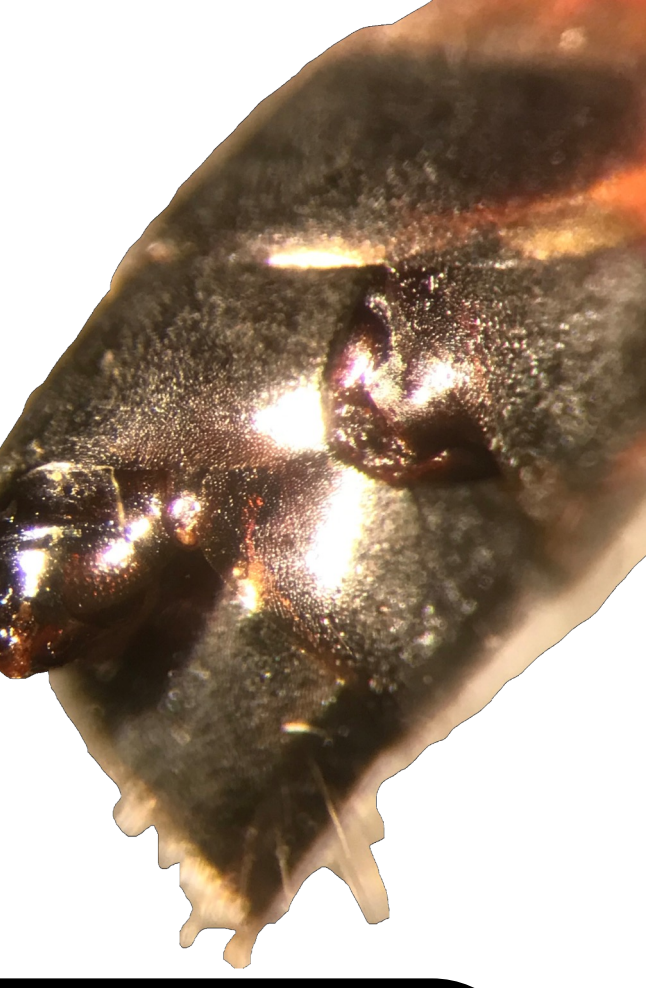
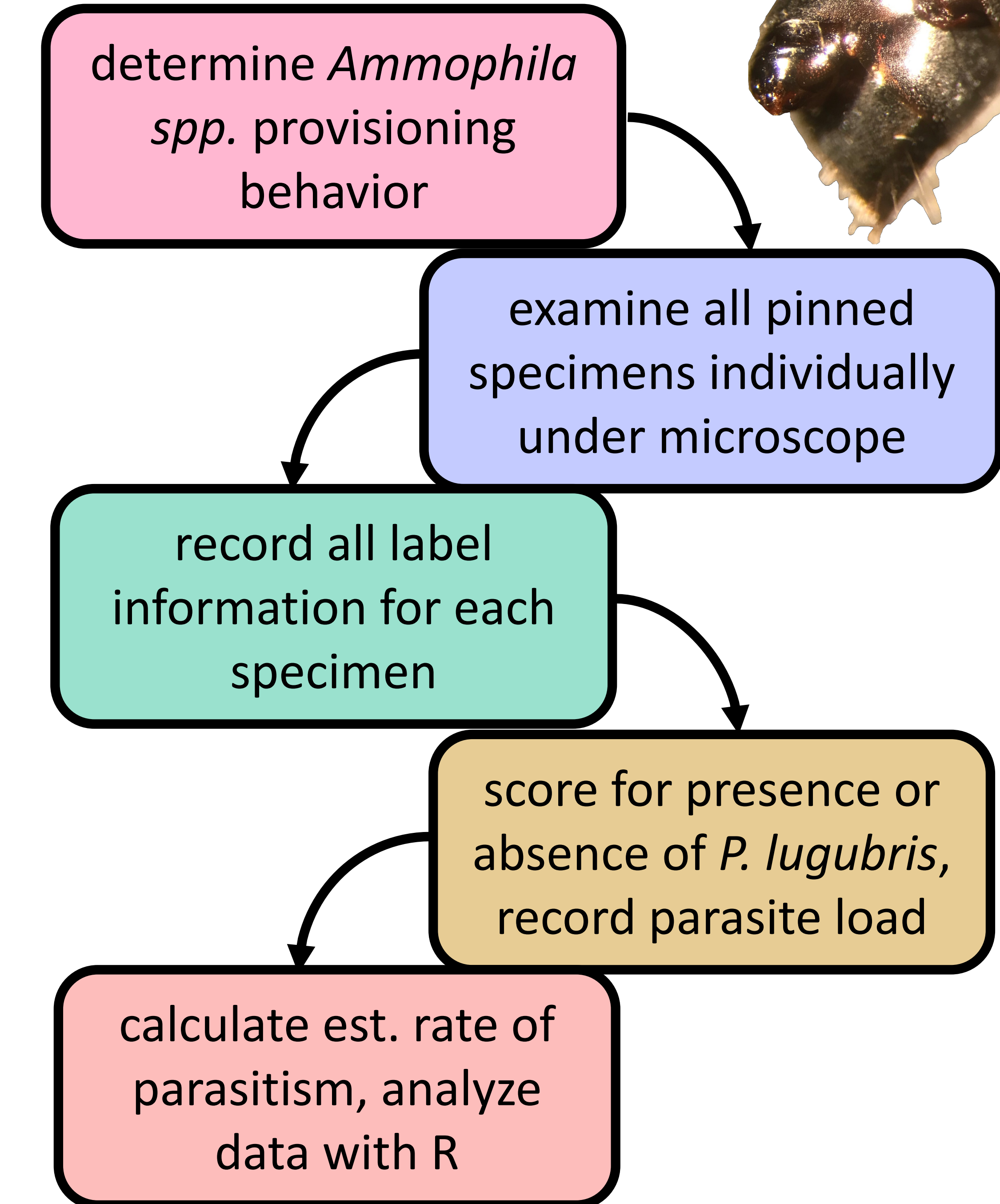
Data on parasitism by *P. lugubris* for 16 North American *Ammophila* species, 13 of which were previously unknown hosts. Each datapoint represents ~200 to ~2400 specimens.



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## METHODS:



## DISCUSSION:

- Generalized linear model (GLMM)
  - effect for provision number:  $0.442 \pm 0.0434$  (SE),  $z = 9.8$ ,  $P < 0.0001$
- Phylogeny for North American *Ammophila* roots this study in an evolutionary context
- Novel museum specimen approach to quantifying parasitism for Strepsiptera



Rebecca Jean A. Millena, Jay A. Rosenheim  
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- Evans HE. Observations on the Nesting Behavior of Digger Wasps of the Genus *Ammophila*. *Am Midl Nat.* 1959.
- Field J, Ohl M, Kennedy M. A molecular phylogeny for digger wasps in the tribe Ammophilini (Hymenoptera, Apoidea, Sphecidae) Vol. 36, *Systematic Entomology*. 2011.
- Rosenheim, J. Field notes.
- Figures captured or created by RJ Millena, 2019-2021.