The effects of relatedness on offspring sex ratio in pollinating fig wasps

Hao-Yuan Hu\textsuperscript{1,2}, Guang-Chang Ma\textsuperscript{2}, Li-Ming Niu\textsuperscript{1,3}, Yue-Guan Fu\textsuperscript{3}, Zheng-Qiang Peng\textsuperscript{3} and Da-Wei Huang\textsuperscript{1,4}

\textsuperscript{1}Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, Beijing, \textsuperscript{2}Key Laboratory of Biotic Environment and Ecological Safety in Anhui Province, College of Life Sciences, Anhui Normal University, Wuhu, Anhui, \textsuperscript{3}Key Laboratory of Monitoring and Control of Tropical Agricultural and Forest Invasive Alien Pests, Ministry of Agriculture, Environment and Plant Protection Institute, Chinese Academy of Tropical Agricultural Sciences, Danzhou, Hainan and \textsuperscript{4}Plant Protection College, Shandong Agricultural University, Tai'an, Shandong, China

ABSTRACT

Background: Sex ratio theory predicts a more female-biased sex ratio if the haplodiploid foundresses of pollinating fig wasps are siblings when those foundresses oviposit in a local patch.

Question: Do pollinating fig wasps adjust their offspring sex ratio in response to their relatedness to other nearby ovipositing fig wasps?

Organisms: \textit{Ceratosolen solmsi} Mayr, an obligate pollinator of the functionally dioecious fig tree, \textit{Ficus hispida} Linn.

Methods: From May to October 2007, we reared pollinators from a single foundress through five generations. We collected male syconia before they matured and placed them in a fine-mesh bag. We used female pollinators that emerged. Our protocol ensured that females were sibs at each stage. We counted female and male wasps, galls, bladders (inflated, hollow ovules), and total female flowers in 25\% of each syconium. More than 10 syconia were obtained in each generation. For comparison, we ran a non-sibling foundress treatment in July and August 2007. We analysed the data using a generalized linear model

Results: Offspring sex ratio was similar among the five sibling mating generations in our experiments, and the offspring sex ratio in the local mate competition models with sibling foundresses and non-sibling foundresses was also similar. The offspring sex ratio increased in the presence of more foundresses.

Conclusion: \textit{Ceratosolen solmsi} does not adjust its offspring sex ratio according to sibling relatedness.

Keywords: behaviour, co-evolution, inbreeding, pollinating fig wasp, relatedness, sex ratio, sibling.

Correspondence: D.W. Huang, Institute of Zoology, Chinese Academy of Sciences, Datunlu, Chaoyang, Beijing 100101, People’s Republic of China. e-mail: huangdw@ioz.ac.cn

Consult the copyright statement on the inside front cover for non-commercial copying policies.

© 2010 Da W. Huang
Evolutionary Ecology Research is delighted that you wish to consult one of its articles.

You may if your library or laboratory subscribes.

Ask your librarian or library committee why your place does not already subscribe to the low-cost journal that is publishing splendid science in a socially responsible manner. EER’s low prices have helped librarians to rein in the indefensible cost increases that have reduced our access to science all over the world! Just ask our partners at SPARC — the Scholarly Publishing & Academic Resources Coalition of the Association of Research Libraries.

Or maybe you should just remind the folks who order your journals to contact us and subscribe! You need — and they should support — the journal that:

- Invented the instant publication of reviewed, revised and accepted e-editions.
- Vests the copyrights of all articles in their authors while preserving the rights of educational and research groups to use its material in classes, seminars, etc. at no additional cost.
- Maintains a unified data-base of articles, thus doing away with your need to worry about issue numbers, author order, and other such impediments to easy access.
- Provides Webglimpse so that you can search any word, place, species, variable, phrase or author in any article EER has ever published.
- Pioneered e-only subscriptions while maintaining, at the same time, a traditional print edition, too.

Some 10,000 readers per week have it right. EER is the place to go for great science, responsible publication policies and easy access!

Click here for the Table of Contents of the most recent issue of Evolutionary Ecology Research

Click here for full access to a sample issue of Evolutionary Ecology Research

Click here for SUBSCRIPTION INFORMATION