

Fig wasps and sex ratio evolution

Why is the sex ratio usual about equal?

## Sex ratio evolution

In species where most individuals either produce sperm or eggs (but not both), why are there roughly equal numbers of sperm and egg producers?

## Logic of 50:50 sex ratio

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6. Therefore, a 50:50 sex ratio is maintained with both sexes having equal fitness

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## Logic of 50:50 sex ratio not dependent on 2 sexes

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The Fungi (pp. 99-139). [\[Link\]](#)

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## Logic of 50:50 sex ratio not dependent on 2 sexes

- ▶ Note, this logic applies to any number of sexes or 'mating types' or strategies
- ▶ Fungi can have multiple mating types (Diaphoromixis)
- ▶ Rare type has the advantage because it can mate with more other individuals

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## Exceptions to 50:50 sex ratios

- ▶ When should sex ratios not be equal?
- ▶ Perspective of a foundress fig wasp
- ▶ Females leave the syconia, males do not



## Exceptions to 50:50 sex ratios

- ▶ How does a foundress maximise her fitness?
- ▶ What strategy would produce the most grand-offspring?



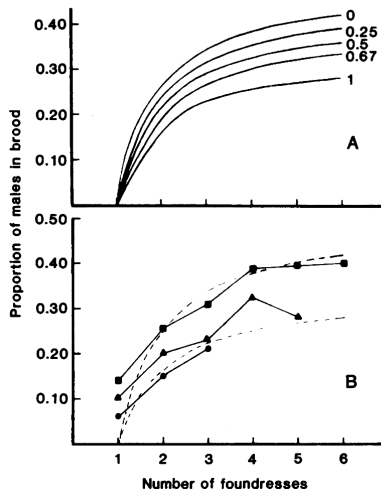
## Exceptions to 50:50 sex ratios

- ▶ What about the second foundress that arrives in the syconia?
- ▶ What about the third foundress?



## Exceptions to 50:50 sex ratios

- ▶ Mathematical predictions of proportion of males given foundress numbers and levels of inbreeding
- ▶ Proportions of males observed from 3 different species of fig wasps

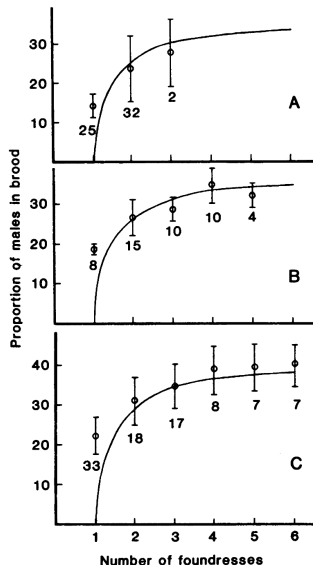


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## Exceptions to 50:50 sex ratios

- ▶ Comparison of mathematical predictions and actual male proportions in 3 fig wasp species
  - ▶ (A) *Ficus insipida*
  - ▶ (B) *Ficus popenoei*
  - ▶ (C) *Ficus citrifolia*



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## Exceptions to 50:50 sex ratios

- ▶ Female-biased sex ratios can occur in fig wasps, flies, beetles, weevils, moths, grasses, and many other species<sup>1</sup>
- ▶ Exceptions to the rare sex advantage

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