

# Forgetful Fish: Extended Mate Choice Copying in Female Guppies

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- ▶ Background
  - ▶ Courtship and mating activities frequently occur in the presence of other guppies<sup>1</sup>
  - ▶ Female guppies (*Poecilia reticulata*) will copy the mate-choice of a larger female<sup>1,3</sup>
  - ▶ Sailfin mollies (*Poecilia latipinna*): females remember and copy mate choice of another female more than a day<sup>4</sup>
  - ▶ Little is known about the length of time which guppies will exhibit mate choice copying after observing a larger female's choice



- ▶ How long do female guppies copy a larger female's mate choice?

# Experimental Design

- ▶ Tank marked with 3 territories
- ▶ Initial mate choice of focal female (F3-6) was measured → “Preferred male”
- ▶ Larger female (LF) was placed in jar with non-preferred male to simulate mate choice
- ▶ Measured proportion of time focal female spent with preferred male, non-preferred male, or in neutral territory
  - ▶ Before observing LF’s mate choice
  - ▶ 15 minutes after
  - ▶ 24 hours after

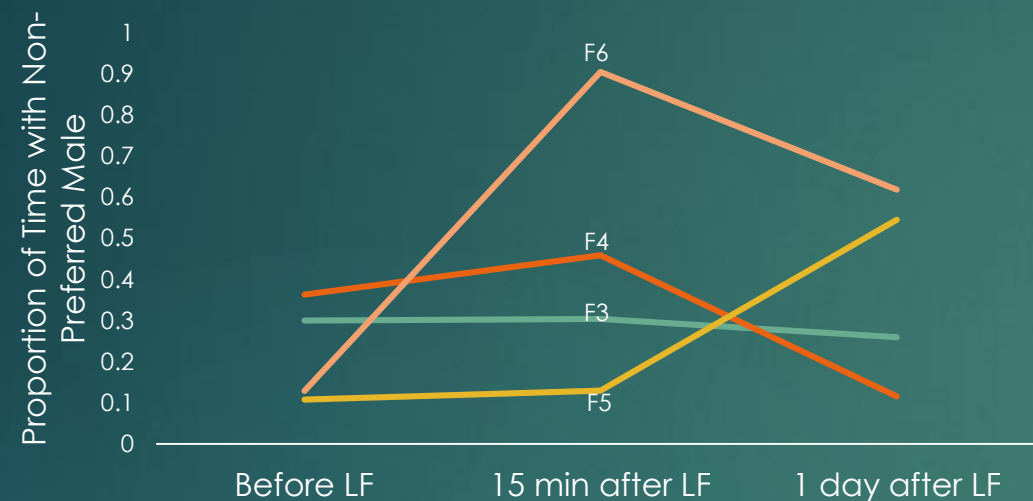


Day	Observation	Purpose
Day 1	O1	Control for tank side preference
	O2	Control for mate-choice memory → compared to O3
Day 2	O3	Experimental: Initial mate choice (and mate-choice memory)
	O4	Experimental: Measure copied mate choice (15 minutes after LF)
Day 3	O5	Experimental: Measure memory of copied mate choice

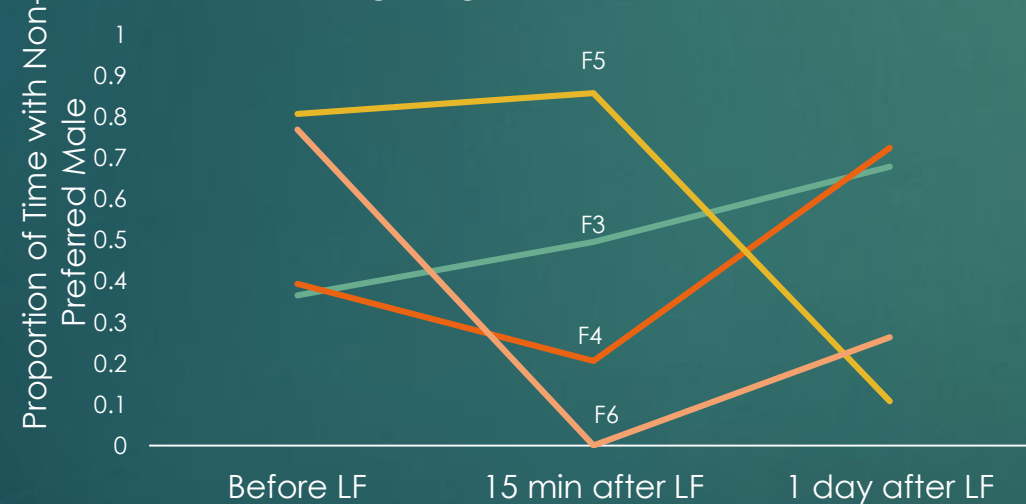
# Results



Time Spent with **Non-Preferred** Male Before and After Witnessing Larger Female's Mate Choice



Time Spent with **Preferred** Male Before and After Witnessing Larger Female's Mate Choice



## Discussion

- ▶ If mate choice copying had occurred, we would expect an increase in time spent with non-preferred male after focal female observed larger female's (LF) mate choice
  - ▶ All focal females spent the same or more time with the non-preferred male 15 minutes after LF
- ▶ If focal females remembered their copied mate choice 24 hours after, we would expect time spent with non-preferred males to still be higher than before LF
  - ▶ The change in proportion of time spent with non-preferred male after 1 day varied between focal females
  - ▶ Some continued to copy LF's mate choice, some did not

## Main Conclusion

- ▶ Our results do not show a clear trend in mate choice copying after the allotted 15 minute and 24 hour periods
- ▶ This may indicate that the range of variation for “remembering” a copied mate choice in female guppies is outside of the 15 minutes to 24 hours which we measured

## Future Directions

- ▶ This preliminary study was conducted as an attempt to determine the length of time which female guppies remember copied mate choice. Further research is necessary to expand the data set and narrow down this time frame.
- ▶ This time frame would allow for other questions to be asked about the behavior:
  - ▶ Is there a genetic basis to the length of time a female guppy continues to exhibit a copied mate choice?
  - ▶ Does the “attractiveness” of the male chosen by the larger female affect how long another female will continue to copy the larger female’s mate choice?
  - ▶ How does the length of time a female guppy continues to mate-choice copy affect her lifetime reproductive fitness?

### References

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2. Godin, J.-G. J., & Hair, K. P. E. (2009). Mate-choice copying in free-ranging Trinidadian guppies (*Poecilia reticulata*). *Behaviour*, 146, 1443-1461. doi:10.1163/156853909x441014
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