

Which Fish? This Fish. Red Fish, or Blue Fish?

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Do you ever wonder if people and animals choose mates because they look like them?
We question whether animals choose mates of similar phenotypes



Image 1: Red male guppy

Fancy Guppies

males are vibrantly colored, females are duller version of the same colors
have been selectively bred for dramatic features⁽¹⁾.

popular beginner aquarium species
reproduce rapidly



Image 2: Blue female

How do females choose their mates?

Do females prefer males of the same color?

Experimental Design and Results:

Hypothesis: Females will choose a mate that is the same color as she is. Red females should prefer red males and blue females should prefer blue males

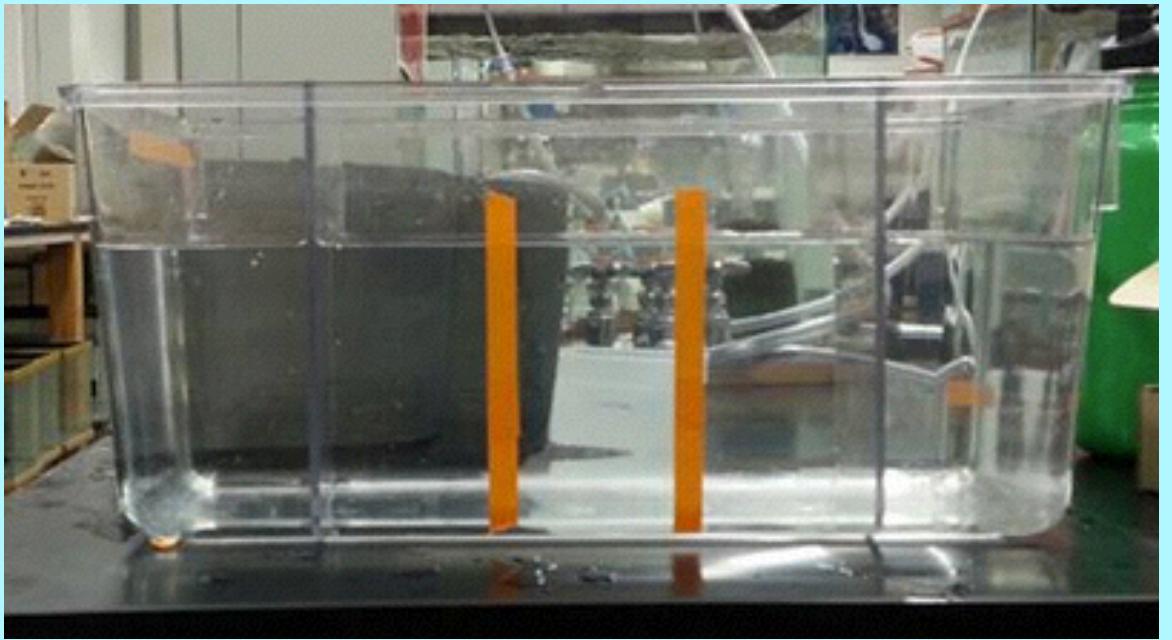


Figure 1: Testing tank. Clear plastic dividers sectioned the tank into three while tape was used to mark off right, middle, and left



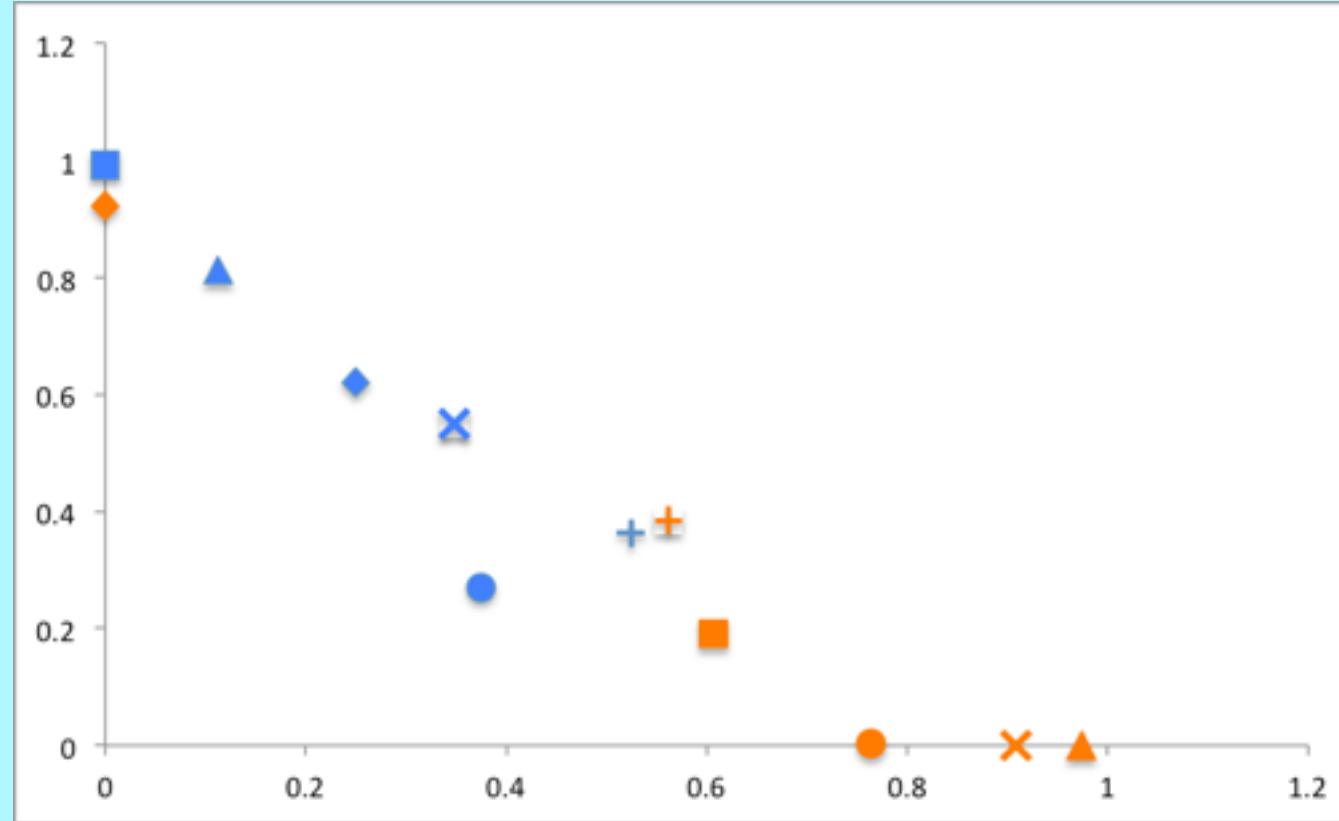
A blue male and female encounter each other at a divider. This behavior was recorded.

Testing our hypothesis...

- n=24: 6 blue and 6 red of each sex
- Each testing group = 1 male and 1 female of each color (total 4)
- Each female had a single trial with her assigned male pair
- Female was placed in middle section of tank, with a blue and red male in either side section
- 6 minute continuous focal sampling to record time spent in each section (R,M,L) using Jwatcher₍₂₎
- Control before each trial was 6 minutes with no males

Red females prefer the red males while blue females are less choosey but also prefer red males

Proportion of time spent on different side



Proportion of time spent on same side

- 1
 - + 2
 - ▲ 3
 - ◆ 4
 - 5
 - × 6
- Shape corresponding to the test number (the female and male pair)

- Blue female
- Red female

Figure 2: the proportion of time the females spent on the side of the tank of the same color male vs. the proportion of time they spent on the side with the different colored male.

Overall females do not show a preference for mates of their own color ($p=0.895$, matched pairs test).

BUT...

We did find that Red and blue females choose their mates differently...

Red females are more likely to choose a mate of their own color (p value 0.0477)

Blue females are more likely to choose a mate of a different color (p value 0.0868)

We Conclude that:

Red and blue females choose differently

Future Directions:

- Is the preference for red males in both red and blue females based on the vibrancy of the color?
- Is the preference because red and blue females base their preference on different things?
- Is female mate choice based on the males effort to get the females attention?
- Is there a size or hormonal difference between red and blue males that affects female mate choice?

References:

- (1) http://mynewhar.com/?page_id=21
- (2) <http://www.jwatcher.ucla.edu/>

Images:

1 and 2 http://www.aquariumfish.net/catalog_pages/livebearer_guppies/guppies_table.html

All other images and figures were taken or created by Annelise Hill and Yasemin Lopez

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