ELECTRONIC APPENDIX

This is the Electronic Appendix to the article

Social networks in the guppy (*Poeciliareticulata*)

by

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Electronic appendices are refereed with the text; however, no attempt is made to impose a uniform editorial style on the electronic appendices.

EVIDENCE FOR ACTIVE CHOICE OF FAMILIAR CONSPECIFICS

To investigate the importance of active preference / avoidance in generating the observed pair-wise associations we conducted a laboratory experiment. Ten groups of fish were generated for each sex, consisting of ten size matched (±2mm) individuals from the Arima River (one group of males was lost due to a fungal infection). All fish were given individual identity marks using VIE. After marking each group was held for 12 days (the time taken for familiarity to develop (Griffiths 2003)) in a 10 L tank and subsequently released into an experimental arena (diameter=160cm, water depth=20cm). After a 15min period, we started recording once per minute (over 50min) which individuals occurred in the same shoal (defined as two or more fish within approximately four body lengths of each other (see Croft et al. 2003b)). We then constructed an association matrix for each group recording the number of times that pairs of fish had been found together. Based on this matrix we conducted a binary choice test on day 13 to determine if the observed associations were based on active preference / avoidance. Test fish were given a choice between two stimulus fish, one they were frequently observed with and one they were rarely seen with on day 12. Stimulus fish were presented to the test fish in two transparent cylinders (diameter: 7cm) positioned 12cm from either end of the experimental aquarium (70cm x 30cm x 30cm, water depth=10cm). The stimulus cylinders were perforated to allow both visual and olfactory cues to be exchanged. The allocation of stimulus fish to the cylinders was randomised to control for side preferences by test fish. Test fish were released into the centre of the test tank and we recorded the total time the test fish spent associated (within 8cm) with each stimulus fish over a 10min period. The distance used to define the association zone represented 4 body lengths, and is within the inter-individual distance of fish within the same shoal (see Croft et al. 2003b).

Female test fish spent significantly more time shoaling with conspecifics which they were frequently seen with over those they were rarely seen with on day 12 (one-sample t-test, t_{35}=4.02, p<0.001), however, male fish showed no such preference (one-sample t-test, t_{31}=0.12, p=0.85).