

California State University, Fresno
Department of Biology presents

Factors Influencing Mating Behavior in Poeciliid Fishes



Dr. Gita Kolluru
California Polytechnic
State University

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Males of some poeciliid fishes court females prior to copulation, whereas others perform sneak copulations only. Based on prior studies, the following predictions emerge: 1) in courting species, males should reduce conspicuous behavior including courtship, under risky conditions; 2) males in courting species should possess relatively short gonopodia to minimize costs and because selection favoring longer gonopodia is reduced; 3) species with courtship should be sexually dichromatic, and the coloration should be sexually selected. Our work focuses on the guppy (*Poecilia reticulata*), an extremely well studied, sexually dichromatic, courting species with short gonopodia, and *Girardinus metallicus*, a species about which little is known. We tested prediction 1) by examining guppy behavior in low and high light conditions. Courtship displays were reduced under risky high light conditions, but the equally conspicuous aggressive behavior was not influenced. Females were less responsive to courtship under high light, suggesting that behavioral flexibility is driven by the reactions of females, such that low light conditions represent high payoff for males, rather than just low risk. We tested predictions 2) and 3) by examining a morph of *G. metallicus* that had not been previously studied. We found that males possess long gonopodia, but are sexually dichromatic and exhibit courtship display, contradicting prediction 2). This may be because the gonopodium itself is part of the display in this morph. Consistent with prediction 3), the prominent ventral black coloration in these males appears to be sexually selected, via male-male competition, female preference, or some combination of the two. Previous studies of poeciliids have afforded detailed information about a few species such as the guppy; however, understanding the breadth of diversity and phylogenetic patterns of trait evolution in poeciliids requires studies of lesser-known species.

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