Exploring Mating Behaviours in an Invasive Fish: The Role of Alternative Reproductive Tactics

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The invasive round goby (Neogobius melanostomus) has alternative reproductive tactics (ARTs) with two male reproductive phenotypes: guarders and sneakers. Guarder males are larger, express secondary sexual characteristics, court females, and provide parental care. In contrast, sneaker males are smaller and obtain fertilizations by clandestinely entering the nest. We conducted an experiment to determine if and how reproductive behaviours of guarder males and females change in the presence of sneaker males. Guarder male aggression was 200% higher in the presence of a sneaker male, although no clear changes in parental care were observed immediately post-spawning. Female spawning was commonly disrupted by sneakers, leading to much shorter bouts of spawning, decreasing from 17 minutes long to only 3 minutes (82% reduction), although, the total spawning duration of individual females did not vary across treatments. Our findings suggest that guarder males and females detect and strongly respond to sneaker male threat either via increased aggression and/or altered spawning behaviours. Our study is the first to document round goby spawning behaviour in relation to sneaker behaviour and increases our understanding of how intrasexual competition influences aggression and reproduction in an ecologically relevant invasive species.