Acoustic species recognition and temporal patterning in a coral reef fish, *Dascyllus trimaculatus*

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Playback experiments are crucial for understanding how animals use sounds for communication and recognition. However, they remain rare in studies of vocal fishes, where the informational role of acoustic features remains poorly understood. Damselfish species are studied worldwide. Their courtship behavior is particularly well known and involves both visual and acoustic cues. Additionally, it can be triggered by neighboring male displays. The courtship sounds of *Dascyllus* species are fast-pulsed train sounds, consisting of a series of 2 to 14 pulses. This study investigates, for the first time by playback experiment, whether wild male *Dascyllus trimaculatus* can distinguish between conspecific and heterospecific courtship sounds and which temporal acoustic feature triggers courtship displays in this damselfish species. Here, we demonstrate that playback of courtship sounds enhances male courtship behavior. However, males did not discriminate between conspecific and heterospecific *Dascyllus* sounds. Among the manipulated temporal features, only sound duration significantly affected responses, with longer sounds eliciting stronger reactions. Our findings show that simple pulsed sounds can trigger courtship but are insufficient alone for species discrimination in *D. trimaculatus.* These results contrast with earlier damselfish work demonstrating species recognition through pulse number and pulse period. Our study suggests that species-specific recognition may rely on multimodal cues, such as visual signals, and that recognition strategies differ among genera. The effect of sound duration is consistent with broader evidence that call length reflects motivation or condition across multiple animal groups. Conducted in the field, this study provides rare experimental evidence of how sounds influence behavior in reef fishes. It highlights both the importance and the limitations of acoustic signals in social interactions. Future research should investigate the combination of multiple sensory modalities to deepen the understanding of species recognition and mate choice in fishes.