

ABSTRACT

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Effects of vibratory performance during courtship of male spiders (*Pisaura mirabilis*)

Biotremology is the study of production, dispersion and reception of mechanical vibrations by organisms, and their effect on behavior. Arthropods have been shown to use vibratory signals for various reasons such as mate localization, species and sex recognition, predator and prey detection, and social interactions. Despite the extensive use of vibrational signals by animals, research on this topic is still underrepresented and many aspects of this communication mode remain unexplored.

Spiders are great models to study biotremology in the context of courtship and mating. Male courtship can serve various purposes such as species recognition, mate localization, indication of individual quality or mating status. In the cursorial spider *Pisaura mirabilis*, where males present a nuptial gift to females, courtship includes visual, chemical, and vibrational stimuli. Courtship vibrations consist of repeated tremulation pulses. Spiders are also known for sexual cannibalism; therefore, we can expect that male traits that reduce the risk of being cannibalized are selectively advantageous.

This talk will explore the functional role of vibratory communication within the framework of *P. mirabilis* reproduction. I will show how the feeding-condition of a male significantly affects vibratory courtship signals and subsequently mating success. Females are probably able to use the information encoded in the vibrational signals for mate choice. Moreover, I will focus on the variability within and between signaling males of a natural population of spiders and explore whether male vibratory courtship signals delay female predatory response.



Figure 1. Male *P. mirabilis* carrying a prey item wrapped in silk to present it to the female as a nuptial gift. Vibrogram of courtship pulses shown below. Photo by G. Uhl.