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*A context-dependent alarm signal in the ant *Temnothorax rugatulus**

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Because collective cognition emerges from local communication among group members, deciphering communication systems is critical to understanding underlying mechanisms. Alarm signals are widespread in the social insects and can elicit a variety of behavioral responses to danger, but the functional plasticity of these signals has not been well studied. Here, we report an alarm pheromone in the ant *Temnothorax rugatulus* that elicits two different behaviors depending on context. When an ant was tethered inside an unfamiliar nest site and unable to move freely, she released a pheromone from her mandibular gland that signaled other ants to reject this nest as a potential new home, presumably to avoid potential danger. Interestingly, when the same pheromone was presented near the ant's home nest, ants were attracted to it, presumably to respond to a threat to the colony. We used coupled gas chromatography-mass spectrometry to identify candidate compounds from the mandibular gland and tested each one in a nest choice bioassay. We found that 2,5-dimethylpyrazine was sufficient to induce rejection of a marked new nest and also to attract ants when released at the home nest. This is the first detailed investigation of chemical communication in the leptothoracine ants. We discuss the possibility that this pheromone's repellent function can improve an emigrating colony's nest site selection performance.