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Communication via sex pheromones within and among *Arrenurus* spp. mites (Acari: Hydrachnida; Arrenuridae)

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Abstract. We present direct experimental evidence of pheromone use in six species of *Arrenurus* and indirect evidence for four species, including members of the subgenera *Megaluracarus*, *Truncaturus*, and *Arrenurus*. Water in which females were housed elicited arrestant behaviour in males, males oriented to the source, and at least some individuals in each species assumed the male readiness posture, a precursor to coupling. Most species responded to water treated with conspecific females, but there was also interspecific sex pheromone responsiveness. *Arrenurus manubriator* and *A. megalurus* demonstrated reciprocal pheromone cross-attractancy. Males of *A. major, A. marshallae*, and *A. birgei* responded to water from females of related species from within their subgenera. *Arrenurus apetiolatus* males failed to respond to conspecific female-treated water, but the same water elicited arrestant behaviour and orientation in *A. manubriator*. Heterospecific reactions to female-conditioned water were limited to cases involving members of the same species group and were not seen between species representing different species groups or different subgenera. The species for which cross-attractancy has been demonstrated commonly co-occur in nature, so apparently these pheromones are of limited value for species recognition. Shared reaction to sex pheromones provides additional evidence for inferring close phylogenetic relationship among species, and thus far, corresponds with morphological evidence based on adult males and larvae.