HEARING IN THE NEW ZEALAND MANTIS
(Ortherdera ministralis)

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Several orders of insects have evolved tympanal organs for the detection of sound (1). For example, cicadas and many orthopterans rely on song for intra specific communication. Less conspicuous, but no less interesting, are certain nocturnal flying insects which have developed specialized systems for protection against bat predation. Among the lacewings (2), crickets (3) and moths (3,4,5) there are species which can detect the ultrasonic echolocating cries of bats, responding with evasive flight manoevres. Recently, experiments by Yager and Hoy (7,8) have shown that some species of praying mantis are also capable of hearing. The mediterranean species Mantis religiosa and the south- east Asian species Creobroter gemmatus are sensitive to ultrasound (25-45 kHz). The latter species responds to pulsed ultrasound only when in flight, abruptly dropping and changing direction, suggesting that this is a bat avoidance mechanism. The hearing organ consists of a pair of tympana located in the ventral groove between the metrathoracic coxae. C. gemmatus can also detect sound in the 2-4 kHz range using a serially homologous ear located between the mesothoracic coxae.

During my brief visit to New Zealand in February, I attempted to repeat some of these experiments on the NZ manatis, Orthodera ministralis. The results, although preliminary and achieved using crude equipment, provide evidence that this species can also hear.

The purpose of this note is to describe these experiments and results for reference, and to stimulate further work on this fascinating animal. I also hope to show that interesting research in insect neuroethology can be done by the amateur at home without access to sophisticated laboratory facilities.