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NTNU News (2011/03/28) In the past, scientists discovered that many species of bats produce high-pitched sounds to locate prey and navigate their way. Chung-Hsin WU, chairman of Bat Association of Taiwan and Professor of the Department of Life Science of National Taiwan Normal University, who has been studying bats for 10 years, recently found that bats know how to capture ultrasound waves emitted by themselves, so that they can fly and catch prey without colliding with other bats.

In order to understand bats' echolocation behavior, Professor WU used special ultrasound detectors to record bats' sounds and used computers to analyze the sounds. He also put Taiwan bats through an MRI machine to better understand their physical structure. According to Professor WU, most of the insect-eating bats can emit ultrasounds that are inaudible to humans. The sound waves bounce back off of obstacles and are collected by bats' ears, determining where prey or obstacles are. While in flight, bats use their throat muscles in rapid contractions to produce high-pitched sound waves, which are then emitted from their noses and mouths. The waves would bounce back from objects in front of them to bats' ears. Through echolocation, bats are able to determine locations and characteristics of objects ahead.

One thing about echolocation used to perplex scientists: while flying at high speed, how does a bat tell its reflected sound waves from those sent by other bats? Professor WU reckons that bats, like humans, make presumptions about things. And bats' brains can distinguish sound waves. When a bat produces a long sound through its nose, it expects the reflected sound to be a long sound. Thus each bat will search for a particular type of sound wave, thereby avoiding interfering or colliding with one another while going after prey.

Besides, Professor WU points out, the reason why young bats cannot catch as many insects as adult bats do is that young bats' echolocation ability still need to be sharpened through practice. Only by accumulating experiences can young bats improve their insect hunting success rates.

Further Information:
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National Science Council International Cooperation Sci-Tech Newsbrief
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