

INSECT SOUNDS

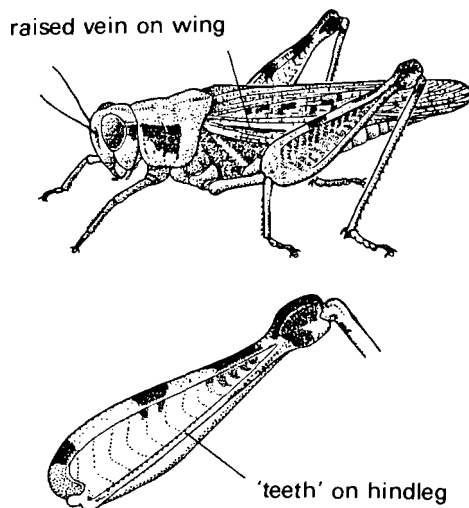
S. Louw

Most people know how irritating the continuous 'song' of a cricket inside a house or a cicada in a tree can be. However, many do not know that these 'songs' and the numerous other sounds emitted by insects are not vocal, but are produced by means of special body structures. This is scientifically known as acoustical behaviour.

Sound production by insects usually forms part of the courtship ritual, be it to attract and stimulate the opposite sex or to warn competitors during sexual behaviour. Sounds are also emitted in cases of distress, to maintain colony structure by causing the congregation of large numbers of individuals, and for protection. A good example of the latter is a certain moth that emits ultrasonic vibrations which are believed to 'jam' the echolocation used by bats in tracking prey.

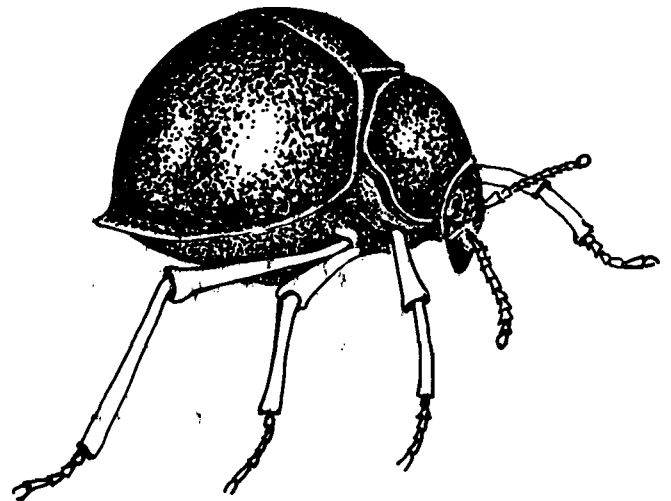
There are six principal ways of sound production in insects, *viz.*

1. Rubbing one part of the body against another (known as *stridulation*). Generally this is found amongst grasshoppers, beetles and bugs. In the grasshopper the stridulating organs usually consists of a row of 'teeth' on the inner side of each hind leg which are rubbed against a hardened outside portion of each wing. In crickets both a file-like vein and



Stridulation as found in certain grasshoppers.

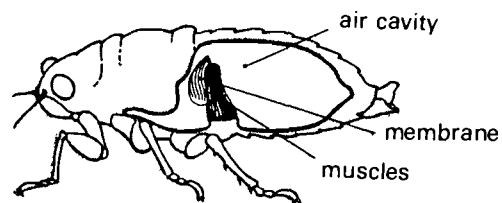
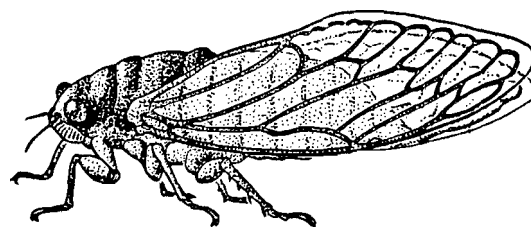
a scraper are found on the wings and sound is produced by rubbing the wings against each other. In beetles a file-like area is rubbed by an adjacent part of the body, emitting a particular sound. The loudest stridulators amongst the beetles are probably the sub-social Passalidae, presumably in order to keep the members of colony together. The well-known velvet ants of the family Mutillidae also have stridulating organs on the abdomen.



The 'tok-tokkie' taps its abdomen in a rapid rhythm on the substrate to attract its mate.

2. Striking some part of the body against the substrate. Examples of this type of sound production occur in the woodboring 'Death-watch' beetles which tap their heads against the walls of their burrow; the ground-living darkling beetle or 'tok-tokkie' which taps its abdomen on the substrate; certain grasshoppers which strike the substrate with their feet; cockroaches which bang the tip of the abdomen on the substrate; and certain termites which hammer their heads against their nests.
3. Letting a part of the body vibrate in the air. Wing vibration is mostly responsible for this kind of sound production, for example the humming and buzzing sound of flies and bees etc. during flight.

4. Vibrating certain internal organs. A sound producing organ of this type is found in the cicada. In a basal abdominal cavity special muscles cause a pair of tightly stretched membranes to vibrate. The cavity acts as a resonator emitting a shrill, almost deafening noise at close quarters. The same acoustic organs, but more weakly developed, are found in many other Homopteran bugs, and in certain grasshoppers.



The internal sound producing organs in the cicada.

5. The forcible ejection of air or fluid. Sound produced by forcing air through the spiracles is used by certain short-horned grasshoppers, while fluid squirted through the anal opening, emitting a particular sound, is found in Paussidae beetles and bombardier beetles of the Carabidae.

6. Using foreign objects as sound resonators. This is actually only stridulation taken a step further. This is found in tree-crickets which chew a circle in a large leaf and position their bodies in such a way inside this circle that the leaf acts as an amplifier for the stridulating sounds that are produced. ©

REFERENCES

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VANMELEWE SE WOEST RIJDEN IN BLOEMFONTEIN

J. Haasbroek

Feitlik daaglik vind daar in ons stede en dorpe motorbotsings plaas en kom een of ander ongeluk voor waarin voetgangers betrokke is. Menigeen verlang dan onverwyld terug na die 'goeie ou dae' van die ossewa, die spaaider, die verewaentjie en die kapkar. Dié dae toe 'n mens ongesteurd jou slentergang deur die strate kon gaan en dit onnodig was om jou telkemale te haas om te verhoed dat 'n verbyflitsende voertuig jou trap. Maar was die strate van vervloë dae so veilig dat 'n mens se handel en wandel kommerloos kon geskied en was die waens en rytuie sulke veilige vervoermiddels dat 'n ongeluk daarmee ondenkbaar was?

Ongetwyfeld nie!

Koerantartikels met opskrifte soos *Furious and Careless Riding*, *Furious Driving*, *Gevaar voor Kinderen*, *Woest Rijden* en *Carriage Accidents* skilder 'n sombere prentjie van die

