# ORDER - ORTHOPTERA FAMILY – ACRIDIDAE

## ORTHOPTERA

**Synonyms:** Saltatoria, Saltatoptera

**Etymology:** Ortno - straight; ptera-wings.

**Common names:** Grasshoppers, Locust, Katydid, Cricket, Mole cricket

### Characters

- ✓ They are medium to large sized insects.
- ✓ Antenna is filiform.
- ✓ Mouthparts are mandibulate.
- ✓ Prothorax is large. Pronotum is curved, ventrally covering the pleural region.
- ✓ Hindlegs are saltatorial
- ✓ Forewings are leathery, thickened and known as tegmina.
- ✓ They are capable of bending without breaking.
- ✓ Hindwings are membranous with large anal area. They are folded by longitudinal pleats between veins and kept beneath the tegmina.
- ✓ Cerci are short and unsegmented.
- ✓ Ovipositor is well developed in female.
- ✓ Metamorphosis is gradual. In many Orthopterans the newly hatched frist instar nymphs are covered by loose cuticle and are called pronymphs. Wing pads of nymphs undergo reversal during development.
- ✓ Specialized stridulatory (sound-producing) and auditory (hearing) organs are present.

### Classification

This order is sub divided into two suborders, viz., **Caelifera** and **Ensifera**.

| | Caelifera | Ensifera |
|---|---|---|
| 1. | Antenna is short with less than 30 segments. | Antenna is long with more than 30 segments. |
| 2. | Tympanum is found on the lateral side of first abdominal segment. | Tympanum is fund on the the foretibia. |
| 3. | Vision and hearing acute | Tactile respones is well developed. |
| 4. | Mandibles are specialized for consum monocot foliage. | Feed on dicot plants |
| 5. | Diurnal | Nocturnal |
| 6. | Rely on jumping to escape from predators | Rely on crypsis |
| 7. | Eggs are laid in groups in soil inside shal burrows. | Eggs are singly inserted into plant tissue or soil |

**I. Sub order: Caelifera**

**1. Acrididae: (Locusts, Grasshoppers)**

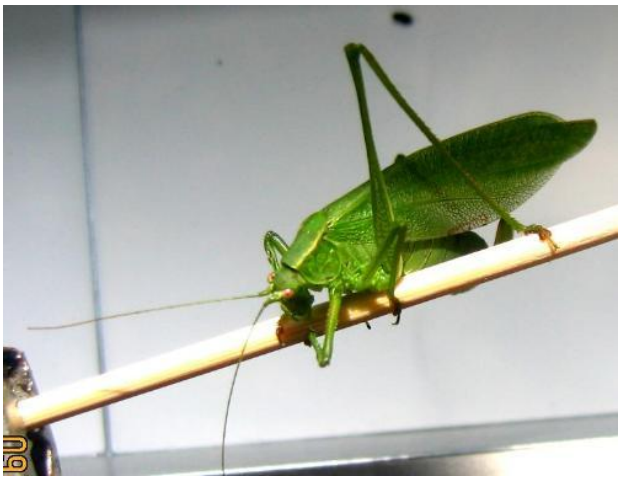
- ✓ Antenna is short
- ✓ Tarsus is three segmented
- ✓ Ovipositor is short and horny
- ✓ Tympanum is located one on either side of the first abdominal segment.
- ✓ Sound is produced by **femoro-alary** mechanism. A row of **peg** like projections found on the innerside of each hindfemur is rubbed against the hard **radial vein** of the closed tegmen.
- ✓ Locusts are a serious threat to tropical agriculture. They swarm under favourable conditions and mainly feed on grasses, cereals etc.

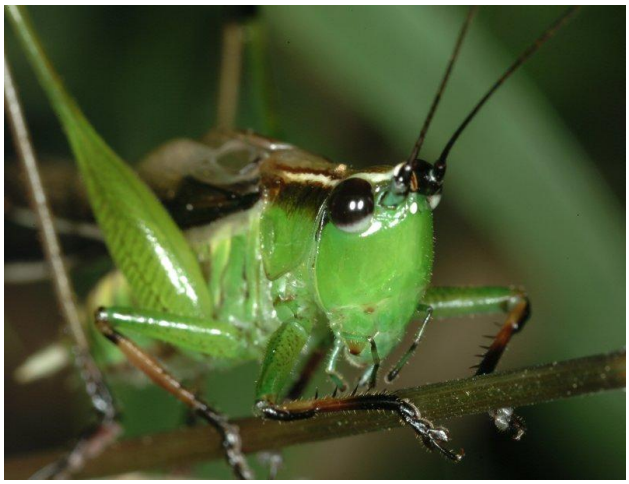
**II. Sub order : Ensifera**

**1.Tettigonidae : (Katydids, Long horned grasshoppers)**

- ✓ Antenna is long, slender as long as or longer than the body.
- ✓ Tarsus is four segmented.
- ✓ Ovipositor is sword like.
- ✓ Auditory organs are found in foretibiae. In each foretibia a pair of tympanum is present. The outer tympanum is larger than the inner.

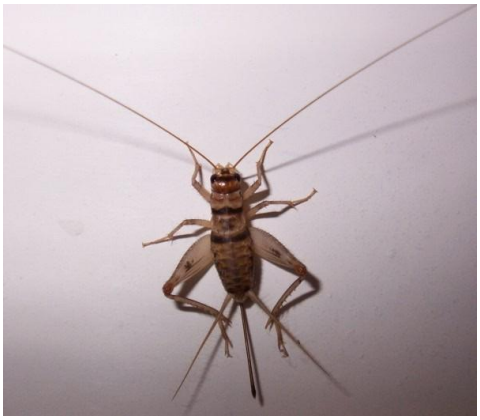
Sound production is **alary type**. A thick region on the hind margin of the forewing (**scraper**) is rubbed against a row of teeth on the stridulatory vein (**file**) present on the ventral side of another forewing which throws the resonant area on the wing (**mirrors**) into vibrations to produce sound.





**2. Gryllidae (Cricket)**

- ✓ Antenna is long.
- ✓ Tarsus is four segmented.
- ✓ Ovipositor is slender and needle like.
- ✓ Forewings are abruptly bent down to cover the sides of the body
- ✓ Hindwings are acuminate. They are produced into a pair of long processes which project beyond the abdomen.
- ✓ Cerci are long and unsegmented
- ✓ Auditory organs and stridulatory organs are similar to long horned grasshopper. Males stridulate during night. They produce a shrill chirping noise.
- ✓ *Gryllus sp*. It is household pest.
- ✓



**3. Gryllotalpidae : (Mole crickets)**

- ✓ They are brown coloured insects found inside the burrows. Eyes are reduced.
- ✓ Pronotum is elongate, ovate and rounded posteriorly.
- ✓ Forelegs are fossorial. Tibiae are expanded and digitate.
- ✓ Hindwings are extended beyond the tegima as a pair of processes
- ✓ Special stridilatory structures are absent. A humming sound is produced by rubbing the forewings.

- ✓ A pair of tympanum is found on the order surface of the tibiae.
- ✓ Ovipositor is vestigeal.
- ✓ Mole crickets burrow into the soil and feed on tender roots of growing plants. *Gryllotalpa africana* is a pest on stored potatoes.

**MOLE CRICKET**