

Cicadas - our Summer Singers

Fact Sheet



Birrima varians. Image: QM, Jeff Wright.



Tamasa tristigma. Image: QM, Jeff Wright.

Introduction

Cicadas are familiar insects to many Australians because of their large size, their conspicuous songs in summer and the empty nymphal shells they leave discarded on tree trunks. In Sydney, many large species are very common in suburban areas and childhood folklore surrounds them, many being known by quaint common names. Generations have grown up catching and swapping Green Grocers, Yellow Mondays, Floury Bakers, Black Princes and Cherry Noses.

In Queensland these attractive, harmless insects have never reached such popularity, even though there are many common species in Brisbane.

Cicadas belong to a order of sucking insects called the Hemiptera and within this group, they have their own family, the Cicadidae. They have a hollow proboscis beneath their head and with it they pierce the bark of plants and suck the sap as food. Much of the liquid part of this fluid is surplus to the cicada's dietary requirements and is passed out the rear end in regular squirts. Beneath trees occupied by many cicadas this 'cicada rain' of droplets may be quite copious.

There are more than 240 different species of Australian cicadas, varying in size from a wingspan of 20 mm to 140mm. Most are only active in the summer months and different species are found in all sorts of vegetation from lush rainforest to eucalypt woodlands, grasslands, deserts and mangroves.

Some Common Brisbane Cicadas

More than 50 species of cicadas occur in south-east Queensland. In the Brisbane area the larger cicadas can be seen on Mt Coot-tha and along the Mt Nebo road where tall eucalypts grow. Many smaller species occur in suburban gardens. Some of the common, conspicuous local cicadas are:

DOUBLE DRUMMER *Thopha saccata*

This is Australia's largest and loudest cicada with a wing length of 55-65 mm. Its body is reddish brown with a pattern of dark marks on the thorax. Its head is as wide as the thorax. Males have very large, swollen tymbal covers on each side of the abdomen. This species favours large eucalypts.

RAZOR GRINDER *Henicopsaltria eydouxii*

This is a large, dark brown species with wing length of 50-55 mm, a pale stripe along the centre of its thorax, and a dark zig-zag pattern on the veins of the forewing. The head is narrower than the thorax. It sings in large, noisy groups on tall eucalypts, especially Spotted Gums.

MANGROVE CICADA *Arunta interclusa*

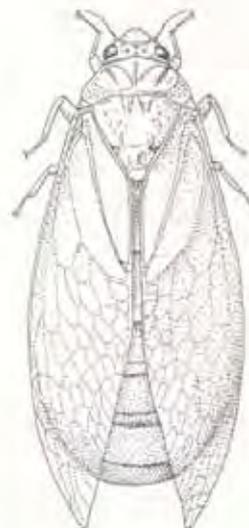
This is a medium-sized species (wing length 35-45 mm) with large silvery-white tymbal covers on each side of the male's abdomen. The head is much narrower than the thorax. As its common name suggests, it is virtually restricted to mangroves, especially the Grey Mangrove (*Avicennia marina*). It may be seen commonly at Redland Bay, Hay's Inlet, and along the Brisbane River where this mangrove grows.

CHERRY NOSE *Macrotristria angularis*

This is a large dark species (wing length 50-60 mm) with yellow marks on head and thorax and a swelling at the front of the head that is normally bright red, giving this cicada its common name. It is mainly a species found in tall trees.

BLADDER CICADA *Cystosoma saundersii*

This species cannot be confused with any other. Its wings (40-50 mm long) are green, opaque and leaf-like in appearance. The abdomen of the male is enormously swollen and hollow, acting as a sound-resonating chamber when it sings. It favours foliage of shrubs where it blends superbly among the leaves.



Bladder Cicada. Illustration: QM, Geoff Thompson.

BOTTLE CICADA *Glauropsaltria viridis*

Males of this bright green cicada also have a swollen abdomen like those of the Bladder Cicada, but this is much smaller (wing length 27-30 mm) and its wings are transparent. It also frequents concealed sites among foliage and is difficult to locate.

BROWN BUNYIP *Tamasa tristigma*

This long narrow species is coloured pale yellowish-brown with a narrow black stripe across the tip of the abdomen. Wing length is 26- 29 mm. The apex of each wing has three brown spots. It frequents Casuarinas and Acacias and is often found on Jacarandas in Brisbane.

Why Cicadas Sing

Certainly the most conspicuous feature about cicadas is their ability to sing. Some can produce noise levels up to 120 decibels, which approaches the pain threshold of the human ear. This means that when many are singing together they produce a volume of sound that can become quite distressing to humans. It is interesting to note that one of the functions of this intense sound level is thought to be to drive birds away from the vicinity, thus reducing bird attacks on the cicadas.

However, the main function of cicada song is to lure females to calling males. For this reason each species has its own distinctive call so only females of the same species are attracted. Some also have a repertoire of other calls including 'distress calls' given when the individual is disturbed, and 'courtship calls' given when the female has arrived in the vicinity of the male.

Different species have very different calling habits. Scientists record and analyse the songs of cicadas as one method of distinguishing the different species. Some of the larger cicadas like the Razor Grinder and the Double Drummer form calling aggregations on tree trunks and sing synchronously, greatly magnifying the effect of their song. Others such as the Bladder Cicada and the Bottle Cicada sing mostly at dusk and have low frequency songs that will carry better through the shrubbery they favour. Some, like the Black Treeticker (*Birrima varians*) can often be heard calling while they are flying. Most of the small grass-feeding species have clicking calls.

How Cicadas Sing

Only males call. They produce their sound from organs called tymbals, situated one on each side of the base of the abdomen. Each tymbal consists of a ribbed membrane, to the centre of which is attached an internal muscle. When the muscle is contracted the membrane is buckled inwards, popping back into position when the muscle is relaxed. This causes the membrane to emit sound in the same way a tin can produces sound when it is pushed in and out. Rapid contraction and relaxation of the muscle can produce sounds from the tymbal membrane at such high frequency that a continuous note is heard by the ear.

Different species have different ways of enhancing, modifying and amplifying the note produced. Some have air chambers in the abdomen to cause the sound to reverberate. The Bladder Cicada's throaty rumble is an extreme example. Others flex the abdomen into different positions to change the note produced. Some clap their wings while calling to produce song variations. Many cicadas have the tymbals covered by enlarged plates called tymbal covers. These are particularly well developed in the Double Drummer and the Mangrove Cicada.

Naturally song production is useless as a mate-attracting method unless the insects have a method of hearing sound too. This is achieved in cicadas by a pair of delicate, thin membranes called tympana situated one below each tymbal on the sides of the abdomen. These receive sound waves in the same way as the eardrum in the human ear.

Life History

All adult cicadas originate from subterranean immature stages

(the nymphs) that feed on the sap of plant roots beneath the ground. These are curious-looking, stout creatures with strongly hooked fore-legs. When ready to hatch into the adult they emerge from the soil and climb up the nearest vertical surface, usually a tree trunk.

After finding a suitable position on the trunk the nymph attaches itself tightly by gripping with its legs. Then its outer skin splits down the back and the cicada emerges, expands its wings and flies off when its body has hardened sufficiently. The empty nymphal skins remain behind on the tree trunks as summertime reminders of the abundance of cicadas in the tree tops above.

After mating the female cicadas lay batches of eggs into slits they cut into twigs using their sharp, piercing ovipositors. When the eggs hatch the tiny nymphs drop to the ground and burrow under the soil in search of living roots for food. Once the nymph finds a suitable feeding position it moves comparatively infrequently during its long life. In North America a famous cicada spends 17 years as the subterranean nymph. Little is known of the nymphal period of Australian species, but it appears that the Green Grocer (*Cyclochila australasiae*) remains underground for about 6-7 years.



Subterranean nymph. Illustration: QM, Geoff Thompson.

Further Information

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