

Banded Bees (*Amegilla* species)

Banded bees are insects just like honey bees but do not make honey that people can harvest. They are native bees and important as pollinators for crops and for other plants. Individuals live independently of others (i.e. they are solitary). Banded bees are not aggressive but do have a mild sting. A sting by one banded bee may not attract attention by other banded bees. In contrast, many a times a single sting by one honey bee can attract other honey bee individuals to attack. The band colours may be blue or white.

Common Name (Language)

Banded bee (English), blue-banded bee (English)

Scientific Classification

Class: Insecta
Order: Hymenoptera
Family: Anthophoridae
Subfamily: Anthophorinae
Tribe: Anthophorini
Genus: *Amegilla* Friese, 1897



Species in the Genus

About 252 species belonging to the Genus *Amegilla* have so far been recorded in different parts of the world (ITIS 2010).

Species in East Africa

Twenty four *Amegilla* species have been reported in East Africa (Martins 2004; 2008; Ascher 2010, Eardley and Urban 2010). However, only a few are known from the three focus countries: *Amegilla acraensis*, *A. caerulea*, *A. fallax*, *A. mimadvena* (Kenya, Tanzania, and Uganda). Two species, *A. calens* and *A. capensis* occur only in Kenya and Tanzania while *A. bothai* is reported only in Kenya and Uganda. Also *A. albocaudata* has only been reported in Uganda and Tanzania. Those species reported in one country only include *A. eritrina*, *A. griseotecta*, *A. kaimosica*, *A. simbana* (Kenya), *A. africana*, *A. atrocincta*, *A. grandiceps*, *A. nigritarsis*, *A. nubica*, *A. sierra*, *A. sjoestedti* (Tanzania), and, *A. arcana*, *A. caelestina*, *A. cincta*, *A. madecassa*, *A. vivida* (Uganda). There is need to survey the *Amegilla* in East Africa and revise their taxonomy. Such research will give the actual number of species in East Africa and their distributions.

Description

Banded bees are about 10-12mm in length with a golden brown head, and the abdomen is striped black and pale blue. Males rest overnight by clinging to plant stems. The female of each species can sting but are not aggressive. Stinging may occur particularly if they are caught between cloth or with hand. However, these bees are not aggressive and will not attack. Bands may differ with the sex, males having more bands (usually 5) than females (usually 4). These bees are solitary, without colonies in contrast to honey bees.

Economic / Ecological importance

Banded bees are important in advancement of human wellbeing. Economically, they aid in pollination of different crops, ensuring fertilization of these crops and hence yields. More yields imply farmers have more

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money in their pocket after trading of the commodities, and, they are food secure. In addition, presence of these bees in the environment indicates that we are living in a health ecosystem. Their reduction in numbers implies that even humans are affected by those factors reducing their numbers. Therefore, these bees can be used as an indicator of the health of where we live, particularly in rural agriculture.

Similar Taxa/Possible Causes of Confusion

These bees can be confused with honey bees as they are similar in size though the blue banded species don't look like honey bees. All species of banded bee can be easily distinguished by observing their behaviour. Banded bees do not make honey that people can harvest and do not live in colonies as honey bees do. Furthermore, banded bees carry their pollen between hairs on the hind legs, whereas in honey bees the hind leg has a smooth spoon-shaped area onto which the pollen is glued. Some species of banded bee resemble some *Xylocopa* species (carpenter bees) but they differ in size with carpenter bees being larger than banded bees.

Documented Distribution in Kenya, Tanzania, Uganda

Banded bees are found in most Districts / Regions of Kenya, Tanzania and Uganda. However, survey need to be done in representative ecologies to collect bees and confirm what East Africa has in terms of diversity.

Habitats

Banded bees can be found in various habitats (land-uses) in East Africa from lowlands and coastal lands to the highlands. They are found in forest lands, shrub lands, rangelands, farm lands, marshlands, plains and plateaus. Banded bees are common in farmlands, particularly those with some set-aside lands and those close to natural habitats that can provide shelter and nesting sites.

Nesting Sites

Banded bees nest in burrows in the soil. Different species nest in different soil types, which enables them to occur in most ecosystems in East Africa. soft sandstone, old mortar or even mud bricks. They are solitary in their behaviour, with only female taking care of the young ones at the earliest stages.

Crops Visited

Banded bees often like blue coloured flowers. They are able to perform buzz pollination, which is very important for crops such as tomatoes, kiwi fruit, eggplants and chillies whose pollen is held firmly by the anthers (Dollin 2001; Bell et al. 2006). This makes them ideal candidates for greenhouse pollination of these crops, which is becoming an important enterprise in East Africa. Species that perform buzz pollination or sonication are able to grab onto the flower and move their wing muscles very fast (making a loud buzz sound). This shakes the pollen free of the anthers and onto the bee's body. Many other bees including honey bees rarely perform buzz pollination and will be less able to get the pollen of buzz pollinated plants on to their bodies, and thus cross pollinate. About 8% of the world's flower plants are mainly pollinated using buzz pollination.

Other Plants Visited

The African violet, *Saintpaulia teitensis* (Gesneriaceae) is only visited by banded bee species in some parts of the country. These bees also like other flowers such as those of bottle-brush (family Myrtaceae), grass tree (family Xanthorrhoeaceae) and the saw-edged grass tree (family Xanthorrhoeaceae), all of which are common in East Africa.

Threats

In East Africa, banded bees and most other bee taxa are threatened by factors such as habitat degradation, agricultural intensification (tilling the soil, over stocking and removal of food plants) and the overuse of pesticides. In addition, these bees are vulnerable to pests and diseases. Farmers should be keen to know the cause of sudden deaths of these bees in their landscape.

Conservation and Management Practices

In the past little information on the usefulness of these bees to the lives of the people in East Africa has been gathered and there have been no scientific or farmer efforts to conserve them. However, information is now being sought and best practices for conservation and management of these bees in will be developed and utilised for improving crop productivity. Theoretically, bee conservation and management is inexpensive and adopted activities can also improve the aesthetic value of the landscape. Such practices involve setting land aside (e.g. a 1-metre strip) in the farmland to host all year round food resources for the bees, as well as safer sites for nesting, mating, resting and hiding from natural enemies. During flowering, farmers should manage pesticide usage carefully to avoid poisoning flower-visiting bees. Farmers should also minimise pesticide drift from the field to adjacent areas. Trampling by people and livestock and tilling should be managed to conserve the nesting sites of soil-nesting species such as banded bees. KARI (the Kenya Agricultural Research Institute) is developing protocols for mass rearing of different species of solitary bees. Any successful results from this research will be freely communicated to the public. In addition, the institution is collaborating with other stakeholders to ensure insitu conservation and management of bees for pollination purposes.

Legislation (National and International)

There is not yet any legislation in East Africa that explicitly addresses pollinators. However, there is scattered legislation for the protection of biodiversity particularly that covering environmental protection, protection of wildlife and heritage sites, protection of forests and natural resources such as water catchments. Such legislation, together with developments such as the Good Agricultural Practices (GAPs) codes, standards and regulations may help to protect bees albeit incidentally. Farmers should lobby their governments to develop Integrated Pest Management policies that would protect bees and other useful insects of importance in agriculture.

Sources of Further Information and Links

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