

Wherever bees are spoken of in East Africa, most people are referring to the honey bees. Honey bees are managed for both honey production and other hive products, such as wax and royal jelly. In most developing countries, honey bees are highly valued for pollination of high value crops. This importance is slowly creeping in East Africa with large growers keeping the honey bees for pollination provision. Crop pollination by honey bee is currently responsible for many billions of shillings of pollination services every year.

Common Name (Language)

African honey bee, honey bee, bees (English), nyuki (Kiswahili), abeilles (French),

Scientific Classification

Class: Insecta
Order: Hymenoptera
Family: Apidae
Subfamily: Apinae
Tribe: Apini
Genus: *Apis* Linnaeus (1758)



Species in the Genus

Worldwide, three subgenera have been recorded. These include:

Subgenus *Micrapis*: *Apis andreniformis*, *Apis florea*, Subgenus *Megapis*: *Apis breviligula*, *Apis dorsata*,
 Subgenus *Apis*: *Apis cerana*, *Apis indica*, *Apis koschevnikovi*, *Apis mellifera*, *Apis nigrocincta*.

Among these, only *Apis mellifera* occurs in East Africa.

Species in East Africa

The species *Apis mellifera* is the only representative of *Apis* in East Africa where several sub-species occur (Raina & Kimbu 2005, Anon 1984; Meixner et al. 1989), including *Apis mellifera scutellata* (Kenya, Tanzania, Uganda), *Apis mellifera nubica* (Kenya), *Apis mellifera litorea* (Kenya), *Apis mellifera monticola* (Kenya, Tanzania), *Apis mellifera adansonii* (Uganda, Tanzania).

Description

The honey bee varies in colour depending on sub-species but they are generally amber to brown with alternating black stripes on the abdomen, while some sub-species are mostly black. They have short hairs and are generally gentle unless the hive is threatened. They are about 1.3 cm long. The honey bee is described by local people according to the subspecies characteristics, mainly using the colour (amber, brown, black), the size (e.g. small, big) and nesting sites used (e.g. nesting in the ground, in tree holes, hives, etc).

Economic / Ecological importance

Honey bee is currently the most priced pollinator of high value crops worldwide, particularly among the managed pollinators. A recent study estimated that honey bees annually pollinate more than KES 1 trillion worth of seeds and crops in the United States (Morse and Calderone 2000). Some crops are almost entirely dependent on the honey bee for pollination. However, not all crops or wild plants are effectively pollinated by

the honey bee and other species are essential for the pollination of a wide range of crops grown in the Region as well as for the conservation of wild species.

Potential Confusion with similar taxa

Some insect species look like the honey bee. These include the bee genera *Amegilla* (banded bees), *Anthophora*, *Tetralonia*, *Tetraloniella* (long horned bees) and *Luthurgus* (stone bees). These other bees do not have colonies like the honey bees. While visiting crops, honey bee is known to only visit multiple flowers of same plant before going back to the nest. These other bees may not have this kind of behaviour. However, this needs to be confirmed scientifically. Some hoverflies (*Syrphys* species) also look like honey bees. Hoverflies can be distinguished from honey bees as they have only two wings while bees have four. In addition, their eyes are larger compared with honey bee while body shape tapers towards the end of abdomen.

Documented Distribution in Kenya, Tanzania, Uganda

The honey bee is found in most districts / regions of Kenya, Tanzania and Uganda (Eardley et al. 2009; Gikungu, 2006; Munyuli, 2010; Kajobe, 2008; and Kasina, 2007).

Habitats

The honey bee can be found in various habitats in East Africa such as grasslands, forests, marshlands, protected areas, farmlands, and rangelands, woodlands, riparian areas and coastal areas (Eardley et al. 2009; Gikungu 2006; Munyuli, 2010; Kajobe 2008; Kasina 2007).

Nesting Sites

While the domesticated honey bee is commonly found in traditional and modern hives, wild colonies are found in cavities of stumps, dead wood, living trees and underground. These different nesting sites can be found in any of the aforementioned habitats.

Crops Visited

The honey bee is known to collect nectar and pollen from most flowering crop species belonging to many different plant families, which are all grown in East Africa. It is an efficient pollinator of plants such as cucurbits (that includes crops like cucumbers, pumpkins and melons) and sunflower. Others include apples, almonds, onions and carrots. Though honey bees will visit most crop flowers, they may not efficiently pollinate or even effect any pollination. Examples of these crops include passion fruits, solanaceous crops (capsicum, tomatoes, eggplant), legumes (beans, cowpeas, alfalfa, grams), nut trees (macadamia, cashewnuts) and fruit trees (mango, avocado, citrus) among others. However, studies are urgently required to provide evidence of the contribution of honey bee pollination to the wide range of crops that are grown in East Africa.

Other Plants Visited

In the wild the honey bee visits a large variety of plant species (trees, shrubs, herbs, weeds, lianas) found in different habitats (Eardley et al. 2009; Gikungu 2006; Munyuli 2010; Kajobe 2008; Kasina 2007).

Threats

In East Africa, the honey bee and most other bee taxa are threatened by factors such as habitat degradation, agricultural intensification, the overuse of pesticides, and pests and diseases. The current severity of global colony collapse disorder (CCD) has captured the attention of many scientists and governments world over. *Varroa* mites which feed off the body fluids of honey bees and have been implicated in CCD are now recorded in East Africa (Kajobe et al. 2010; Lossini personal observation) but there have been no reports on the possible negative effects on honey bee colonies.

Conservation and Management Practices

Farming practices that will help to enhance the effectiveness of honey bee pollination include the following:

- Management of pesticide sprays to avoid bee poisoning. The main cause of bee poisoning is when insecticides are sprayed while the crop is in flower. But bees can also be affected by pesticides drifting from the field to adjacent areas, insecticidal dust which can be brought back to the hive with worker bees, and pesticide-contaminated water, pollen or nectar. Farmers can reduce bee poisoning by adopting the following practices: not using insecticides that are toxic to bees on flowering crop; using chemicals only late in the evening or early in the morning when bees are not foraging; using sprays rather than dusts; trying to minimise spray drift (e.g. by not spraying on windy days); removing colonies from an area before applying pesticides; and by adopting an integrated pest management (IPM) approach to farming that helps to minimise the unnecessary use of agrochemicals.
- Forage management to ensure the bees have nectar and pollen all year round. This includes sustaining diversity of different plants to ensure the presence of flowers all year round particularly when crops are not flowering. Areas with such plants could provide sites for resting and nesting of these bees.
- Water provision.
- Management of bee pests and diseases.
- Provision of good nesting sites.
- Awareness-raising among local people to increase their understanding of the value of conserving the honey bee. This will include understanding which crops they pollinate and ensuring these crops are well pollinated by the honey bee. In addition it is important to increase awareness of the value of honey bees as a source of hive products.

Note that these management options would also favour existence of other kinds of bees that are pollinating crop flowers.

Legislation (National and International)

Tanzania has a national policy on utilization of the honey bee for hive products while Kenya is in the process of developing a national policy. There is no known policy on utilisation of the honey bee for crop pollination in East Africa. Other laws and policies that may play important role in conservation of honey bees are the national environmental management policies as well as those governing protected areas. These policy frameworks do not capture issues related to the conservation of the honey bee. Special issues exist around moving subspecies into areas occupied by other subspecies, as this may result in hybridization of subspecies and the loss of their unique qualities for the environment they inhabit.

Sources of Further Information and Links

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Acknowledgements

We recognise the support from the Kenya Agricultural Research Institute (KARI), Tropical Pesticides Research Institute (TPRI) – Tanzania and Busitema University (Faculty of Natural Resources and Environmental Sciences) Eastern Uganda. This activity was undertaken as part of the BioNET-EAFRINET UVIMA Project (Taxonomy for Development in East Africa).

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