Afranthidium bees are insects like honey bees. They do not make honey but are likely to be important crop pollinators. They have not been domesticated but this is possible to ensure sufficient numbers during crop flowering period and enhance pollination of given crops. They are not known as bees by local people in East Africa who often think bees are synonymous to honey bees only. This factsheet thus intends to provide information about these bees to aid farmers in understanding them, protecting them and ensuring their crops get the best pollinator at times of flowering period.

Scientific Classification

Kingdom: Animal
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Megachilidae
Subfamily: Megachilinae
Tribe: Anthidiini
Genus: *Afranthidium* Michener

Female African Carder Bee (Afranthidium repetitum) near Toowoomba, Queensland, Australia. Photographed on 13 December 2010,

Species in the Genus

The genus *Afranthidium* is a group of solitary bees with about 60 known species in southern Europe and Africa.

Representative Species in East Africa

Eardley & Urban (2010) list two species found in Tanzania but their presence in Kenya and Uganda need to be ascertained. Due to similar ecologies in east Africa, presence of these bees in Kenya and Uganda may be expected but not assured. A comprehensive list of *Afranthidium* species for the Region has not yet been produced but is important.

Description

Afranthidium bees have long tongues and can feed on both deep and shallow flowers. Most *Afranthidium* bees in East Africa are pollen-collecting bees. They visit domesticated plant flowers but mainly they visit wild flowering plants. Their importance as effective pollinators in agriculture has yet to be established. However, they may be effective pollinators of wild plant species; hence the need to protect them.

Economic / Ecological importance

All *Megachile* bees in East Africa are pollen-collectors. They thus are important pollinators of crops and plants where they effect pollination while collecting their food resources. In so doing, they enhance productivity of crops, which in turns provides farmers with more income from commodity sales. In addition, farmers have enough to eat, both quantity and quality wise. At ecological level, they pollinate shrubs and plants and ensure their reproductive success. Some of the shrubs are important in erosion control and are source of food to animals and wildlife. Their presence is a good indicator of ecosystem.

Similar Taxa/Possible Causes of Confusion

Some insect species can be mistaken for *Afranthidium* bees. These include bees from same Tribe, Anthidiini. Some lady beetles can also be confused with *Afranthidium* bees. Many people confuse *Afranthidium* bees with *Pachyanthidium* bees. They can be easily distinguished by their foraging behaviours, size and colour of the body. *Afranthidium* are generally medium to large (xx – xx mm) compared to *Anthidium* bees which are small (xx – xx mm?). They can also be confused with some flies and wasps. Flies are different in that they have large eyes and two wings while bees have four wings. In addition, most flies that may be confused with these bees do not collect nectar or pollen in flowers.

Wasps on the other hand hare their abdomen constricting at the junction of thorax compared with the bees where clear constriction is absent and similar to other insects.

Documented Distribution in Kenya, Tanzania, Uganda

Afranthidium bees have been recorded in Tanzania and thus their present in other parts of the EA countries is unknown but need to be determined.

Habitats

Afranthidium bees can be found in various habitats (land-uses) in East Africa such as grasslands, natural forests, marshlands, protected areas, farmlands, rangelands, woodlands, woodlots (forest plantations), along river edges (riparian areas) and in coastal areas. In Uganda, these bees are found very common in semi-arid zones. Their presence is assured in all habitats where plants known to evolve together are already available. It is important to be on lookout for these bees and farmers should assist in reporting their presence in their neighbourhood once they spot these bees. This would enhance their documentation in the region.

Nesting Sites

Afranthidium bees build their nests in sheltered locations in pre-existing natural cavities such as burrows, crevices and hollow twigs that can be found in less disturbed and dry habitats.

Crops Visited

Afranthidium bees visit a variety of flowering crop species belonging to different plant families in East Africa. In Uganda they are seen visiting few crops such eggplant, cowpeas and sim-sim. As for most species in the Megachilidae family that have great potential for domestication, If known to be effective pollinators of given crops, apart from conservation, protocols on domestication can be developed to enhance their numbers if there is need to do so.

Other Plants Visited

Afranthidium bees can forage on a range of wild plant species (trees, shrubs, herbs, weeds, lianas) found in different habitats. These bees preferably visit plant species with small purple and blue, milk cream flowers.

Threats

In East Africa, *Afranthidium* bees and other bee taxa are threatened by factors such as habitat degradation, agricultural intensification and the misuse of pesticides. Information about the effects of their pests and diseases is lacking though these play important ecological role in regulation of population dynamics of species. Farming practices that involve over-digging of soils in any type of habitat threaten populations of these bees since they often nest in underground burrows. Trampling by people and livestock can affect their nests. The lack of knowledge of about these bees and their economic importance by the farmers do seriously affect their existence since factors encouraging their survival may not be considered in the usual farming activities.

Conservation and Management Practices

Little information exists on the usefulness of these bees to the lives of the people in East Africa and there is little effort to conserve them. However, information is now being sought and best practices for conservation and management of bees for enhancing 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 those species that nest in burrows. 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, KARI is collaborating with other stakeholders to ensure *in situ* 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. In addition, laws governing registration and use of plant protection products also indirectly play a major role in the protection of pollinators. 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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