Halictus bees are true bees that are much smaller than honey bees and they do not make honey that people can harvest. They are native bees and are likely important pollinators for crops and for other plants. Individuals live independently of others (i.e. they are solitary) or in small groups. These small, bright metallic bees are not aggressive. However, they can sting for defence but not aggressive attacks like honey bees while in their colonies.

Common Name (Language)

Halictus bees, Mining bees (English)

Scientific Classification

Kingdom: Animal
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Halictidae
Subfamily: Halictinae
Tribe: Halictini
Genus: Halictus Latreille, 1804

Species in the Genus

There are many species of Halictus bees recorded in different parts of the world. More than 330 species have been recorded representing 15 subgenera.

Species in East Africa

Little work has been done on Halictus bees in East Africa, with records of only *Halictus aeneobrunneus, Halictus turkmenorum, Halictus lucidipennis, Halictus chalybaeus, Halictus africanus* in the East African countries (Ascher 2010, Eardley and Urban 2010). Many scientific studies only refer to the observed individuals as *Halictus* species. The genus urgently needs revision before any species can be reliably identified.

Description

Halictus bees are small (smaller than honey bee) brilliantly metallic, mostly gold-coloured, sometimes green or bluish (Michener 1974). Many species are solitary while in others the females share a nest (Michener 1974). Halictus bees are mostly pollen collectors. If caught up in the clothing or between parts of the body, the females can sting (Michener 1974) although the sting is very mild unless you are sensitive. *Halictus* are close relative of *Lasioglossum* (sweat bees), most of whom have similar behaviour.

Economic / Ecological importance

Little information exists on Halictus bees in Africa but there is no knowledge of their nesting sites or foraging habits. But they can be fairly abundant and visit the flowers of wild and domesticated plants. There are, therefore, likely to be pollinators and thus contribute to increased agricultural productivity and the conservation of the natural biological diversity of the Region. More research is needed to understand the role of these bees as pollinators.

Potential confusion with similar taxa

These bees can be confused with some flies that have similar metallic colouring and size. Flies can be distinguished from Halictus bees in that they have only two wings while bees have four wings. *Halictus* differs from *Lasioglossum* and *Patellapis* in that they are metallic coloured and *Lasioglossum* and *Patellapis* are not.

Documented Distribution in Kenya, Tanzania, Uganda

There is little information about the distribution of these bees within the East Africa countries. However, considering their habitats and some previous studies (e.g. Martins 2008), representative species of these bees are likely to be found in all ecologies, farmed and protected areas, from coastal lands to highlands. As Halictus appears to be a fairly generalized feed on annual plant, it is widely distributed and common in disturbed areas.

Habitats

Halictus bees can be found in all habitats (land-uses), both disturbed and undisturbed. They will be found in forests and farmlands (Gikungu 2006, Martins 2008, Kasina et al. 2009).

Nesting Sites

Halictus bees construct their nests by burrowing in soil or in rotting wood (Michener 1974). They like open areas without vegetation. The nests have usually several ovoid "cells" in which pollen mixed with nectar is provided as food for the developing larva. A single egg is laid on a pollen mass, and the cell is sealed. Sometimes the cells are arranged in clusters resembling a honeycomb, but made of soil rather than beeswax.Since this is a old literature, there is need to confirm nesting habitats for these bees

Crops Visited

Halictus bees visit many different crops though they may be effective on a few specific crops. They have been recorded to pollinate okra, melon, solanaceous crops (tomato, capsicum, eggplant, pepper, etc) and apple (Njoroge et al. 2004, Wikipedia 2011). Kasina et al. (2010) showed that the behaviour of Halictus bees while visiting squash flowers can effectively pollinate the crop.

Other Plants Visited

Wild relatives of the crops listed above are visited by these bees. There is also a wide range of plants belonging to many different families that provide pollen to Halictus bees in natural habitats. Gikungu (2006) found that Halictus bees at Kakamega, Kenya visited a greater range of plants in comparison to other bees that showed solitary behaviour.

Threats

Very little is known about these bees in East Africa but it is likely that Halictus bees are threatened by factors such as habitat degradation, agricultural intensification, trampling of nests by livestock and people and the

overuse of pesticides. Farming practices that involve over-digging of soils are likely to threaten populations of these bees.

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 Halictus 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.

Legislation (National and International)

National environmental management policies and policies governing protected areas can play an important role in the conservation of bee pollination. However, at the present no laws or policies directly address their conservation in the Region. Developments such as the Good Agricultural Practices (GAPs) codes, standards and regulations may help to protect Halictus bees albeit incidentally, but they can be improved if they specifically include these species.

Sources of Further Information and Links

1. Ascher JS (2010) Discover Life bee species guide and world checklist (Hymenoptera: Apoidea: Anthophila). http://www.discoverlife.org/mp/20q?guide=Apoidea_species&flags=HAS: accessed 26 Dec 2010.
2. Eardley CD, Urban R 2010 Catalogue of Afrotropical Bees (Hymenoptera: Apoidea: Apiformes). *Zootaxa* 2455:1-548.
3. Gikungu MW (2006) Bee diversity and some aspects of their ecological interactions with plants in a successional tropical community. Dissertation, University of Bonn
4. Kasina M, J Nderitu, M Kraemer, C Martius and D Wittmann (2010) Some aspects of squash pollination in Kenya. KARI Biennial scientific Conference, Nairobi
5. Kasina M, M Kraemer, C Martius and D Wittmann (2009) Diversity and activity density of bees visiting crop flowers in Kakamega, western Kenya. Journal of Apicultural Research, 48 (2): 134-139
6. Kasina M, M Kraemer, C Martius, D Wittmann (2009) Farmers' knowledge of bees and their natural history in Kakamega district, Kenya. Journal of Apicultural Research, 48 (2): 126-133
7. Martins DJ (2008) Pollination observations of the African Violet in the Taita Hills, Kenya. J EA Nat Hist 97 (1): 33-42
8. Michener CD (1974) The social behaviour of the bees. Belknap Press, Cambridge, USA
9. Njoroge1 GN, B Gemmill, R Bussmann, LE Newton, VW Ngumi (2004)Pollination ecology of Citrullus lanatus at Yatta, Kenya. International Journal of Tropical Insect Science, 24(1): 73–77
10. Wikipedia (2011) List of crop plants pollinated by bees. http://en.wikipedia.org/wiki/, Accessed 05 Jan 2011.

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