In most situations it is best not to eliminate ground-nesting bees and wasps since they are valuable pollinators of agricultural and landscape plants. Many are useful predators that help control harmful pests. Though the social bumble bees will defend their nests, most of these bees and wasps are solitary insects that will only sting if you try to capture them or restrain them! Nests or burrows located in areas frequented by humans may require controls in order to prevent human contact and the chance of being stung. The best option is to avoid the area where the bees or wasps are active during the time of year they are present.

Bumble Bees

Bumble bees are stout-bodied, robust insects with hairy bodies that are banded with black or yellow. Some species may have orange or red markings. Bumble bees are truly social insects, living in annual colonies that are formed in soil cavities, old rodent burrows, or similar voids. Bumble bees have the head distinctly narrower than the thorax. Carpenter bees have the head as broad as the thorax and carpenter bees usually have a shiny patch on the tips of their abdomens. There are three castes, ranging in size from $\frac{1}{2}$ to $1\frac{1}{2}$ inches long: large overwintering queens, males (called drones), and much smaller workers (all non-reproductive females). Both the queens and workers have stingers with which they can inflict multiple stings, unlike honey bees. New queens, produced and mated in the fall, overwinter under loose bark, in hollow trees, or other protected places. They emerge in May, and search for old nests of field mice or rabbits, holes in the ground, old stumps, abandoned mattresses, old bales of straw or hay in barns, cornhusks in corncribs, along foundations, etc. Colonies last only one summer. There are usually less than 50 individuals in a colony and nests are generally found in habitats where flowering plants are nearby. The queen establishes the nest site by lining an existing cavity with dry grass or moss. She constructs wax pots and provisions them with pollen moistened with nectar to produce a stored food called “bee bread.” In other wax chambers, eggs are deposited and larvae are reared. The first brood of spring numbers 5 to 10, all female workers, who enlarge the nest, build more wax chambers, gather food, and feed the larvae. The queen continues to lay eggs throughout the summer and by late summer, drones and new queens are produced. These mate during a nuptial flight and fertilized females seek
overwintering sites. Remaining males and workers in the colony die with frost or the first hard freeze. Nests can occasionally be detected by the presence of workers flying in and out of the entrance. Often, nests are not noticed and alarmed workers will often “dive bomb” animals that get close. Bumble bee nests are occasionally hit or run over by field mowers! The irritated workers will aggressively pursue such intruders and will sting repeatedly. Bumble bees are important pollinators of certain kinds of clover due to their long tongues. Favorited flowers are sunflowers, thistles, nettles, roses, partridge peas, raspberries, alfalfa, and clovers.

**Ground Bees or Digger Bees**

These bees are solitary, but they often live in common areas where a few to dozens of burrows can be found in a relatively small area. There are several species in Ohio, but almost all are a dark brown to tan color and are moderately hairy. The bees are about ½-inch long. Both males and females overwinter in ground burrows and emerge in late April into early May. Upon initial emergence, there can be many of these bees hovering back and forth over the turf or ground. The females clean out old burrows or construct new burrows in ground that has little or no plant cover. They can throw up soil into a pile that is commonly an inch high by three to four inches in diameter. The burrow opening is maintained in the middle of this mound. The females seem to spend a lot of time just sitting in their burrow openings while the males hover overhead, waiting for chances to mate. Eventually, the females fly to flowers where they collect nectar and pollen. This is deposited into chambers that are dug along the sides of their vertical burrows. Once a chamber is filled, an egg is laid, the chamber is sealed, and a new chamber is dug. This activity can persist for two to six weeks. Eventually the overwintered males and females die and the burrows soon become invisible after several rains … until the next spring.

These bees are very docile and the females will only sting if you try to capture and hold one. They prefer to fly away than fight to protect their burrows!

**Sweat Bees**

These bees are usually small and black to dark brown or they may have iridescent green colors on the body. Females usually nest in rotting wood or under loose bark of dead trees. The females dig ¼- to ⅛-inch diameter, cylindrical tunnels that end in larger chambers. Sweat bees measure ⅛- to ⅜-inch long and are sparsely covered with fine hairs. They frequently alight on sweaty hands, arms, or legs to obtain salt. During movement, if the bee is caught in a fold of skin, it can inflict a sharp, pin-prick-like sting that rarely hurts for more than a few minutes. These bees are common at flowers, gathering pollen and nectar to feed their young. They are considered to be beneficial pollinators and only sting when they are trapped in folds of skin or under clothing.

**Leafcutting Bees**

Adults resemble honey bees, but are usually darker in color (black to brown-black and the females have the underside of the abdomen covered with white to yellowish hair). The females have many long, stout hairs underneath the abdomen that form a pollen basket usually loaded with pollen. Unlike social honey bees,
leafcutter bees are solitary with each female digging a burrow in rotting logs, old wood-boring beetle emergence holes, but they prefer to nest in hollow stems or twigs. They will commonly chew out the pith of stems or branches that have been recently pruned or have broken. After preparing a nesting burrow, the females cut out oval, half-inch long sections from leaves. These are used to line the burrows. Circular leaf sections are used to plug the ends of chambers that have been provisioned with pollen and nectar. An egg is laid in each cell after it is provisioned, and three to a half dozen cells are commonly found in a finished nesting burrow. These bees do not defend their nest territory aggressively and are not a stinging hazard to humans. However, females do have a stinger that can be used if they are captured. They commonly build nests in the pithy stems of roses and use segments of rose leaves to line the burrows. Rose growers are quite intolerant of this damage! Rose growers often plug the cut rose canes with a piece of wood (a piece of match stick works well) or they coat the cut end with melted candle wax.

Digger Wasps
There are several species of wasps generally called digger wasps. They are often black with bands of white or yellow on the abdomen and/or thorax. Some species are blue-black in color and a couple are reddish-brown with shiny golden hairs. All are beneficial predators and each species specializes on one type of prey. There are species that capture and paralyze caterpillars, stink bugs, grasshoppers, crickets, or horse/deer flies! Each digger wasp female digs a burrow into the soil and most prefer open soil that is sandy or light in texture. Along the main burrow, chambers are dug out and each chamber will then be provisioned with the prey of choice. After a chamber is filled, an egg is attached to one of the paralyzed prey. The wasp larvae then devour the still living prey and by late fall, the mature larva pupates but waits until the next spring or summer to emerge.

These solitary wasps are very active and quick-moving insects. They will often take flight and fly menacingly back and forth in front of any intruder that happens to get near their burrow. They will not sting, but their loud buzzing can be very disturbing to people who fear wasps and stings! The females are
capable of stinging and will do so if you try to capture and hold them.

One of the largest wasps in this group is the cicada killer. This two-inch long wasp with red-orange wings captures annual cicadas to provision its brood chambers. The males, which have no stinger, will often try to fend off any moving animal (including humans) that enter into “their” territory. They are known to actually strike people on the head and shoulders in an attempt to encourage you to move away from the general nesting site!

These digger wasps have become an increasing problem in athletic facilities and playgrounds where sand is used as a substrate. The best way to discourage these wasps from nesting in the sand is to use a fiber cloth base (to allow for rain drainage) but keep the sand depth to four inches or less.

**Grass Carrying Wasp**

This curious solitary wasp is about an inch long, with the abdomen ending in a swollen club. They are a shiny black with a bluish tint. They have the habit of nesting in long, narrow cavities under the bark of trees. However, they often discover the half-inch square channels of double-hung windows! They collect pieces of grass and line the burrows with this grass. A central chamber is then formed and provisioned with paralyzed tree crickets.

The nests and the remains are often discovered when old double-hung windows are opened after not being used for some time. Simply clean out the materials and stuff fiberglass insulation into any exposed window sash openings.

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**Control**

Since ground-nesting bees and wasps will only sting if one attempts to restrain or handle them, controls are not recommended. These insects also provide valuable services of pollination and control of pest insects. Most nest in open areas or when there is thin turf with soil showing through. Attempt to get better vegetative cover in these areas or cover with mulch. Where playgrounds or recreational facilities use sand as the desired substrate, improve drainage and isolate the sand layer from the underlying soil with woven ground cloth. This will allow for drainage, but prevent the wasps from getting to soil, which is better for constructing brood chambers. In the rare instances where control is needed, there are several aerosol insecticides registered for bee and wasp control. These only work by contact with the wasp since most of these products have little to no residual action.