

= *Myrmecia nigrocincta* =

*Myrmecia nigrocincta* , commonly known as the jumper ant or jumping jack , is an ant of the genus *Myrmecia* . The species was first described by Frederick Smith in 1858 . Colonies of this ant are abundant in eastern Australia . Ants of this species are known for their ability to jump several inches , and they also have a powerful , venomous sting . Rather than foraging on the ground , *M. nigrocincta* prefer to forage in trees where they are known to pollinate certain flowers .

This ant is a large species , some workers can grow to over 15 mm ( 0 @. @ 6 in ) in length . They have a distinctive pattern of orange @-@ red and black which distinguishes them from other *Myrmecia* species . *M. nigrocincta* possess the gamergates gene which allows workers to reproduce , either in the presence of a queen or in a colony where the queen is missing . Life expectancy of a worker ant is over one year . They are known to enslave ants of other species as workers for their colony , and they are aggressive when attacking intruders .

= = Distribution = =

Abundant in eastern Australia , *M. nigrocincta* ants prefer temperate bushlands , and are usually located in dry to semi @-@ dry forests and sclerophyll woodlands . The species is found in the eastern states of Australia , mostly on the coastal plains where much suitable dry forest habitat can be found . They prefer tropical climates and warm temperatures . They can also be found in other types of habitat at elevations ranging from 80 - 1 @, @ 220 metres ( 262 ft - 4 @, @ 000 ft ) .

*M. nigrocincta* colonies have been recorded from Cairns , Atherton , Mackay , Mt . Tamborine , Brisbane , Blackall Range and Fletcher in Queensland . In New South Wales , this ant occurs in Lismore , Dorrigo , Armidale and Sydney ( notably in the suburbs of Heathcote and Como ) , while in Victoria it is found in Trafalgar and Millgrove . Several colonies have also been recorded in South Australia .

= = Taxonomy = =

*M. nigrocincta* was first identified by British entomologist Frederick Smith in 1858 , after syntype workers were collected and described in his work Catalogue of hymenopterous insects in the collection of the British Museum part VI . In a study on phylogenetic relationships among species group of the genus *Myrmecia* , four species with an occipital carina including *M. nigrocincta* were found to form a paraphyletic and basal assemblage , while other *Myrmecia* species lacking an occipital carina were shown to have a supported monophyletic assemblage . The type specimen is located in the British Museum .

= = Description = =

Ants of genus *Myrmecia* are generally referred to as " bulldog ants " and *M. nigrocincta* , like other species in the genus , has elongated mandibles . *M. nigrocincta* ants are primarily black and orange @-@ red in colour . They have mandibles which are either black or yellow depending on where the ants are found . The gaster , head , legs and mesonotum are black while the pronotum , propodeum , petiole and post @-@ petiole are red . The ant has linear ridges along the front of its head . It also has apical spurs on the tibia of both its middle leg and hind leg . The legs are thin and become more slender away from the body . *M. nigrocincta* can be distinguished from other species in the *Myrmecia* genus by the bi @-@ coloured thorax and post @-@ petiole which are yellowish @-@ red and black and the yellowish @-@ red node .

The workers are 13 to 15 millimetres ( 0 @. @ 51 to 0 @. @ 59 in ) long , the males 16 to 17 millimetres ( 0 @. @ 63 to 0 @. @ 67 in ) while the female ( queen ) is 17 to 19 millimetres ( 0 @. @ 67 to 0 @. @ 75 in ) . The development of the queen 's wings is rudimentary and the stubby , reduced wings render the queen flightless .

## = = Behaviour and ecology = =

*M. nigrocincta* is an accomplished jumper with leaps ranging from 3 to 4 inches ( 76 to 102 mm ) . It has good vision and can be observed running amongst plants and leaves , occasionally jumping from one branch to another . It is mostly found foraging on plants , trees , and other vegetation , but it sometimes forages on the ground . It propels its jumps by a sudden extension of its middle and hind legs .

*M. nigrocincta* ants are diurnal and do not hibernate . They are omnivores , and feed on other insects including caterpillars and spiders , as well as honey water . *M. nigrocincta* has been observed to prey on the larvae of imperial hairstreak butterflies , even jumping while carrying them . Predators of the *M. nigrocincta* ( and the *Myrmecia* genus as a whole ) includes spiders , birds , lizards , mammals and other predatory invertebrates , including assassin bugs and Redbacks . The ants have been recorded visiting flowers of *Eucalyptus regnans* and *Senna acclinis* and are considered as a possible pollination vector for *E. regnans* trees . Although *Senna acclinis* is self @-@ compatible , the inability of *M. nigrocincta* to appropriately release pollen would restrict capacity to effect pollination .

These ants live in nests in sandy soil which sometimes have a mound , which resembles a molehill . *M. nigrocincta* ants labor to conceal their nests using twigs and leaves . Depending on the type of habitat in which the colony is located , they decorate the nest with plant material and gravel . Other materials that are used to camouflage *M. nigrocincta* colonies include dry leaves , rocks , vegetation , and twigs . Nests are beside a clump of grass or bush or at the base of a tree .

The colonies of *M. nigrocincta* ants are monogyne , i.e. they have only one queen per colony . The queen is semi @-@ claustral , meaning that during the founding of the new colony , the queen has to forage so that she has enough food to raise her brood . Colonies have between 400 and 1200 individuals and are thus considered to be " large " colonies . *M. nigrocincta* is known to enslave *Leptomyrmex* and other species of ants .

The worker and scout *M. nigrocincta* ants use pheromones for communication . They are quick to defend their nests and may react aggressively even to a shadow crossing their nest . Wheeler ( 1922 ) describes the reaction of *M. nigrocincta* to the disturbance of their nest as " they bound out of their small mound nest in a series of short hops like Lilliputian cavalry galloping to battle . " The ants aggressively defend their colony , causing multiple bites and willingly sacrificing themselves to protect the queen and the colony .

## = = Life cycle = =

*M. nigrocincta* is a gamergate species , which allows female workers to be fertile , and these are then able to reproduce in both queenless and queenright ( colonies with a queen ) colonies . This means a colony which loses its queen can still thrive in the absence of the queen . In laboratory colonies of *M. nigrocincta* where there was no queen present , worker @-@ laid eggs were reared to mature males , showing that workers are highly fertile . The average life expectancy of an adult worker *M. nigrocincta* ant is 1 @.@ 1 to 1 @.@ 2 years , with a maximum expectancy of 1 @.@ 3 years ( 400 or more days ) . Larvae collected from *M. nigrocincta* are 4.7mm in length but increase to 9.7mm when matured .

## = = Venom = =

*M. nigrocincta* ants have highly venomous stings which are painful and produce intense burning sensations . The sensations last for many days and the sting itches . If left untreated , the sting may develop into an ulcer . The venom of a closely related species , *M. pilosula* is amongst the strongest of the Formicidae and contains active ingredients such as acid and alkaline phosphatases , hyaluronidase , as well as phospholipases A2 and B. In a 2011 Australian ant allergy venom study , the objective of which was to determine what native Australian ants were associated with ant sting anaphylaxis , it was shown that 265 of the 376 participants taking part of the study reacted to the

sting of several *Myrmecia* species . Of these , 176 reacted to the *M. pilosula* , 15 to *M. nigrocincta* , three to *M. ludlowi* , and 56 to other *Myrmecia* ants . The study concluded that four main groups of Australian ants were responsible for causing anaphylaxis . Besides *Myrmecia* species , these included the green @-@ head ant ( *Rhytidoponera metallica* ) .