

= *Myrmecia regularis* =

Myrmecia regularis is a species of ant endemic to Australia . A member of the genus *Myrmecia* in the subfamily *Myrmeciinae* , it was first described by American entomologist Walter Cecil Crawley in 1925 . These ants are medium to large in size , measuring 10 to 20 millimetres (0 @. @ 4 to 0 @. @ 8 in) , and they are bright brownish @-@ red in colour . Queens and workers share similar morphological features , but they can be distinguished by the noticeable size difference . Males also look similar , but collected specimens are too damaged to be examined properly .

M. regularis is found in the south @-@ western coastal regions , inhabiting eucalypt woodland and open forests . They nest underground and do not build mounds . Workers are active during the day and night , foraging on trees in search for prey and sweet substances such as sap and nectar . The larvae are strictly carnivorous and only eat insects that workers capture . Nuptial flight occurs around February to April , with queens shedding their wings inside the nest and mating near to their parent nest . Queens tend to look for food for their young before they hatch , taking as long as eight months to develop . Certain frog species are known to dwell inside *M. regularis* colonies .

= = Taxonomy = =

Myrmecia regularis was first described by American entomologist Walter Cecil Crawley , who provided the first detailed description of the ant in a 1925 article , " New ants from Australia - II " , published in the *Annals and Magazine of Natural History* . The ant was described from two syntype workers Crawley collected from Albany , Western Australia , now preserved in Crawley 's collection in the Oxford University Museum of Natural History . This name was initially short @-@ lived , with Australian entomologist John S. Clark synonymising *M. regularis* with *Myrmecia lucida* , now a junior synonym of *Myrmecia forficata* . Clark 's reasons for this were unknown , and William Morton Wheeler revived the species from synonymy , stating that specimens he and W.S. Brooks collected from southwest Australia were distinct from *M. lucida* , after comparing the two . Wheeler also stated that *M. lucida* was similar to *M. forficata* . Despite disagreeing with Wheeler 's views , Clark noted in his publication that Wheeler 's classification should be retained until the type specimen of *M. lucida* could be properly examined . In this same publication , Clark synonymised *M. lucida* with *M. regularis* . In 1991 , entomologists Kazuo Ogata and Robert Taylor reviewed the species groups of *Myrmecia* . They assigned *M. regularis* to the *M. gulosa* species group , based on the morphological characters of worker ants .

= = Description = =

Excluding the mandibles , *M. regularis* workers measure 10 to 14 millimetres (0 @. @ 4 to 0 @. @ 6 in) , with the mandibles measuring 3 @. @ 6 millimetres (0 @. @ 1 in) . Including the mandibles , workers measure 14 to 20 millimetres (0 @. @ 6 to 0 @. @ 8 in) , queens are 18 to 20 millimetres (0 @. @ 7 to 0 @. @ 8 in) and males are 15 to 17 millimetres (0 @. @ 6 to 0 @. @ 7 in) . These ants are bright brownish @-@ red in colour , with brown legs and scapes , and a black gaster . The whole of the head and thorax is a bright mahogany red , while the mandibles are shaded with brown . The hair is yellow , moderately long , erect and found all over the body , but the hairs are shorter on the legs and absent on the antennae . The pubescence (soft short hair) is confined to the clypeus .

The queen shares the same colour variation , body sculpture and pilosity of a worker , but they are usually larger . Queens show reduced thoracic development , and Clark described them as " subapterous " , suggesting that wings are present in the females as undifferentiated wing buds . However , queens collected from Manjimup bore well developed wings . The head , epinotum , mesonotum and pronotum are finely striate @-@ rugose . The head is as long as it is broad with a straight occipital border . The mandibles are slightly shorter than the head with a concave border . The pronotum is broader than its total length by one @-@ third and the mesonotum is broader by one @-@ sixth , being almost circular in shape and clearly convex . The epinotum is also broader ,

but only slightly . The gaster is slightly broader , and the postpetiole is one @-@ fifth broader than long . The scutellum is oval and almost twice as broad as long . Male specimens have been rarely collected , and those that are available are too badly damaged for a proper examination . However , the colour and pilosity of male and worker specimens show little differentiation .

The heads of the workers and queens are as long as broad with convex sides . The mandibles are long with thirteen known teeth . The first and third segments of the funiculus are equally long . The thorax is longer than broad by two to three @-@ fourths its width , and the mesonotum is longer than it is broad in workers ; the mesonotum is broader than it is long in queens . The node (a segment between the mesosoma and gaster) is as long as it is broad , and the postpetiole is one @-@ sixth broader than long . The first segment of the gaster is broader than its length . *M. regularis* shares a similar appearance to *M. forficata* , but there are several morphological differences that separate the two . Owing to the rugose sculpture of the head and thorax , *M. regularis* is noticeably smaller than *M. forficata* . The mandibles of *M. regularis* are much narrower , the posterior corners of the head are more round and the petiolar peduncle is longer . The mandibles appear to be deep red , and some areas , such as the gastric segments , are golden brown .

= = Distribution and habitat = =

M. regularis is found in the south @-@ western coastal regions of Australia . Nests have been recorded in the towns of Albany , Denmark , Nornalup , Manjimup , Pemberton and around the Margaret River in south Western Australia , Kangaroo Island in South Australia and Portland in Victoria . The ant prefers to inhabit a variety of rural environments , including woodland , open forests , dry marri forests , tree heath and granite mountains . In particular , it is a dominant species in Eucalyptus woodland , especially when *E. diversicolor* , *E. gomphocephala* and *E. marginata* trees are present . *M. regularis* colonies do not form mounds , but rather nest in damp , black soil or under large stones and logs with 100 to 200 workers present . These colonies are usually found at altitudes of between 80 and 350 m (260 and 1 @, @ 150 ft) above sea level . Excavated incipient nests (young colonies beginning to develop) show small chambers 2 @. @ 5 to 4 cm (0 @. @ 98 to 1 @. @ 57 in) wide , where logs and stones form the roof of the cell . The ground is flat with walls continuous on all sides ; the outer walls tend to be thin , as they are situated near the edges of a log or stone . Most nests have a gallery which descends further into the ground , usually around 6 cm (2 @. @ 4 in) and forms a small and more irregular chamber .

= = Behaviour and ecology = =

M. regularis is a highly aggressive ant that will pursue any intruder to a distance of 1 @. @ 8 ? 2 @. @ 7 metres (2 ? 3 yards) if their nests are disturbed . Their stings are very painful and particularly powerful . In some cases , human victims of *M. regularis* bites have displayed an allergy to the venom . In a 2011 study which investigated the causes of ant sting anaphylaxis in Australia , 265 of the 376 human participants reacted to the sting of several *Myrmecia* species . Of these , nine serum samples taken from patients were IgE positive to the venom of *M. regularis* . These ants are both diurnal and nocturnal , foraging on the trunks of Eucalyptus trees to feed on sap and nectar , or capturing small insects (such as caterpillars and ants in the genus *Camponotus* or subgenus *Orthocrema*) . The larvae are carnivorous and exclusively feed on insects , either consuming small portions of the insect or all of it . Unlike most *Myrmecia* species , trophallaxis takes place among adults or between adults and larvae . All stages of the frog *Metacrinia nichollsi* are known to dwell inside *M. regularis* colonies , where they use several galleries constructed by the ants . The parasitic ant *M. inquilina* may attempt to enter *M. regularis* nests to establish colonies , but *M. inquilina* queens may be seized and killed as soon as the two species come into contact .

Observations show that nuptial flight does not occur before February . This is based on larvae spinning into cocoons by November , and by January , these cocoons could not produce adult workers or reproductive males and females . Queens are most likely fertilised by males sometime

between February and April ; however , scientists have seen alates engage in nuptial flight during March . Before emerging from their parent nest , queens will shed their wings inside the nest and mate with low @-@ flying males nearby . After nuptial flight , a queen will isolate herself and form a small chamber underground , where she remains for seven to eight months . However , it is improbable that a queen can survive on her own storage of fat and wing @-@ musculature for that long . During this time , the queen may emerge from her nest occasionally , but she will only lay eggs from October to November when there is a rich supply of food . While this may be the case , some queens will lay eggs after a month of isolation during winter . *M. regularis* is a semi @-@ claustral ant , meaning that a queen will go out and forage in order to feed her young . Queens will emerge from their nests from time to time , during which they will capture insects for their young or feed on sweet substances . If food sources are deprived , a queen will only rely on her fat to feed the larvae until she perishes or finds food , but the larvae will not be cannibalised , and remain alive until a week after the queen 's death . An individual ant may take eight months to develop from an egg to an adult .