

= Prionomyrmex =

Prionomyrmex is an extinct genus of bulldog ants in the subfamily Myrmeciinae of the family Formicidae . It was first described by Gustav Mayr in 1868 , after he collected a holotype worker of *P. longiceps* in Baltic amber . Three species are currently described , characterised by their long mandibles , slender bodies and large size . These ants are known from the Eocene and Late Oligocene , with fossil specimens only found around Europe . It is suggested that these ants preferred to live in jungles , with one species assumed to be an arboreal nesting species . These ants had a powerful stinger that was used to subdue prey . In 2000 , it was suggested by Cesare Baroni Urbani that the living species *Nothomyrmecia macrops* and a species he described both belonged to *Prionomyrmex* , but this proposal has not been widely accepted by the entomological community . Instead , scientists still classify the two genera distinctive from each other , making *Nothomyrmecia* a valid genus .

= = Discovery and classification = =

The holotype worker for *P. longiceps* was collected by Austrian entomologist Gustav Mayr in 1868 . The fossil , which was preserved in Baltic amber from the Eocene , was formally described in Mayr 's journal article *Die Ameisen des baltischen Bernsteins* , designating it as the type species by monotypy (the condition of a taxonomic group having only a single taxon described) for the newly established genus *Prionomyrmex* . Originally , the genus was placed in the subfamily Ponerinae by Mayr , but in 1877 , Italian entomologist Carlo Emery classified the genus into the subfamily Myrmeciidae (now known as Myrmeciinae) , the same year Emery established the subfamily . In 1915 , the tribe Prionomyrmecini was erected by American entomologist William Morton Wheeler , who had placed *Prionomyrmex* in it . In that year , Wheeler placed the genus back into Ponerinae without any means of justifying his decision . British myrmecologist Horace Donisthorpe would also retain the genus in Ponerinae without explanation , but William Brown Jr. would return it to Myrmeciinae in 1954 .

In 2000 , Baroni Urbani described a new Baltic fossil species , of which he named it *Prionomyrmex janzeni* . After examining specimens of the new species and *Nothomyrmecia macrops* , Baroni Urbani stated that the newly described species and *Nothomyrmecia macrops* belong to the same genus (*Prionomyrmex*) , in which he synonymised *Nothomyrmecia* as a genus and treated the tribe Prionomyrmecini as a subfamily , known as Prionomyrmecinae . Prior to this , John S. Clark , the original author who described *Nothomyrmecia* , noted that the genus was similar in appearance to *Prionomyrmex* ; both the heads and mandibles were identical , but the nodes were different . As the mandibles of *Prionomyrmex* are similar to that of *Nothomyrmecia* , this suggests that they are intermediate to each other . This classification was short @-@ lived , as *Nothomyrmecia* was separated and treated as a valid genus from *Prionomyrmex* by Dlussky & Perfilieva in 2003 , on the base of the fusion of an abdominal segment . Other studies published in the same year came to the same conclusions of Dlussky & Perfilieva , and the subfamily Prionomyrmecinae would later be treated as a tribe in Myrmeciinae . However , Baroni Urbani would treat the tribe as a subfamily again in both his 2005 and 2008 publications , suggesting additional evidence in favor of his former interpretation as opposed to that of Ward and Brady 's arguments . In 2012 , *P. wappleri* was described by Gennady M. Dlussky , based on a fossilised worker from the Late Oligocene , Aquitanian stage . This subsequent report that described new fossil myrmecines accepted the classification of Archibald et al. and Ward & Brady without comment on the views of Baroni Urbani .

The generic name is a combination of two words ; priono derives from Greek word pri?n , meaning " a saw " , and myrmex , another Greek word , means " ant " .

The following cladogram generated by Archibald and colleagues shows the possible phylogenetic position of *Prionomyrmex* among some ants of the subfamily Myrmeciinae ; note that *P. wappleri* is absent , as the generated cladogram below was created in 2006 while the species itself was described in 2012 .

= = Description = =

The genus is characterised by large , slender workers with elongated mandibles , which are narrow and triangular in shape . The mesosoma and appendages are also long . These ants are similar in appearance to *Nothomyrmecia* , but can be distinguished from the shape of their node . They also had a powerful sting located in the abdomen . Two of the three species are from the Eocene while the third species is from the Late Oligocene .

= = = *P. janzeni* = = =

P. janzeni was described by Cesare Baroni Urbani of the University of Basel , Switzerland in 2000 , based on two specimens preserved in Baltic amber from Kaliningrad , Russia . The species is from the Eocene , Lutetian to Priabonian stage . Both specimens are preserved very well , with specimen number two being larger and more visible . Specimen number one is presumed to be a worker ; type material includes a holotype worker and a paratype ergatogyne , donated to the Geological and Palaeontological Institute and Museum , the University of Hamburg by palaeoentomologist Jens Wilhelm Janzen . The ant was named after Janzen by Baroni Urbani . The estimated body length is 13 millimetres (0.51 in) long with an elongated head , and large oval shaped eyes are present . The antennae are long and consist of 12 segments with a bent scape . The mandibles are very long and curved , being three quarters the length of the total size of the head . Both the legs and mesosoma are long and slender ; unlike modern ants , *P. janzeni* has two spurs on the tibiae instead of one . The petiole is high and domed shape while postpetiole is bell shaped . The gaster is long with round sides , divided into five segments . The whole body and some portions of the legs were covered by weakly curved hairs , erect and suberect . The holotype specimen is brown in colour while the paratype is black . While *P. janzeni* looks similar to *P. longiceps* , the pubescence on the scapes of *P. janzeni* is absent .

= = = *P. longiceps* = = =

P. longiceps was described by Gustav Mayr in 1868 , based on a holotype worker collected in Baltic amber from the Eocene . The original specimen collected by Mayr , however , has been lost . The estimated body length of *P. longiceps* is 12 to 14 millimetres (0.47 to 0.55 in) long , with a thick petiole and large propodeal teeth . Unlike *P. janzeni* , *P. longiceps* has erect and suberect hairs on the scape . These hairs are also longer and thicker on the legs and on other body parts . The mandibles are very long and curved , and the head is longer than its total width (2 to 2.64 millimetres (0.087 to 0.104 in) long and 1.68 to 2.08 millimetres (0.066 to 0.082 in) wide) . The legs are very long with strong claws , and a stinger is present in the abdomen . Wheeler (1915) described a male *P. longiceps* , commenting that the head is short but broad with very large eyes while the mandibles are small and far apart . The body is dark brown or blackish in colour , and the wings are somewhat yellowish .

= = = *P. wappleri* = = =

P. wappleri was described in 2012 by Russian palaeoentomologist Gennady M. Dlussky of the Moscow State University , from a fossilised holotype worker found in Germany from the Aquitanian stage 29 to 30 million years ago . The specimen is currently housed in the Institut für Paläontologie at the University of Bonn , North Rhine - Westphalia . Dlussky coined the specific epithet *wappleri* from the surname " Wappler " , as he named the ant after German palaeoentomologist Torsten Wappler . The estimated body length of *P. wappleri* is 14 millimetres (0.55 in) long , and the head is 1.35 times longer than the total width of it . The eyes are small and oval shaped , located in the upper part of the head , which is four times as long as the eyes . The mandibles are nearly three quarters the length of the head ; *P. wappleri* differs from *P. longiceps* and *P. janzeni* due to the apex of the clypeal lobe being pointed instead of round , and the

first segment of the flagellum is only half the length of the second segment . Before the discovery of *P. wappleri* , extinct Myrmeciinae ants were only found from Eocene deposits . This suggests that the subfamily was still present in Europe during the Late Oligocene .

= = Ecology = =

Archibald and colleagues suggested the life habits of extinct Myrmeciinae ants including *Prionomyrmex* may have been similar to extant ants within the subfamily . These ants foraged on the ground and possibly onto trees and low vegetation while preying on arthropods . These ants may have collected plant nectar , as *Myrmecia* species use this as a food source . Workers may have not recruited nest mates to food sources or lay down pheromone trails , as these ants were solitary hunters . Workers would have relied on their vision to hunt for prey and help themselves navigate .

William Morton Wheeler comments that *P. longiceps* were possibly an arboreal nesting species . This means the ant did not live in the soil and nested in trees instead . He assumed this due to its long legs , strong claws and long mandibles ; *Prionomyrmex* was also assumed to be predacious , equipped with a well developed and powerful sting that was most likely used to kill prey . *Prionomyrmex* may have preferred a jungle habitat at low elevations , and is even more primitive in its body structure than *Myrmecia* . Female stylopids were known to parasite *Prionomyrmex* ants .