= Yantaromyrmex =

Yantaromyrmex is an extinct genus of ants first described in 2013 . Members of this genus are in the subfamily Dolichoderinae of the family Formicidae , known from Middle Eocene to Early Oligocene fossils found in Europe . The genus currently contains five described species , Y. constrictus , Y. geinitzi , Y. intermedius , Y. mayrianum and Y. samlandicus . The first specimens were collected in 1868 and studied by Austrian entomologist Gustav Mayr , who originally placed the fossils in other ant genera until the fossils were reviewed and subsequently placed into their own genus . These ants are small , measuring from 4 to 6 mm (0 @.@ 16 to 0 @.@ 24 in) in length and can be characterized by their trapazoidal shaped head @-@ capsules and oval compound eyes that are located slightly to the rear of the capsules midpoint , with no known ocelli present .

= = Distribution = =

Individuals of Yantaromyrmex species have been found as inclusions in four different Middle Eocene to Early Oligocene amber deposits in Europe . Baltic amber is approximately 46 million years old , having been deposited during the Lutetian stage of the Middle Eocene . There is debate on what plant family the amber was produced by , with evidence supporting them being relatives of either Agathis or Pseudolarix . Rovno amber , recovered from deposits in the Rivne region of Ukraine , is slightly younger in age , being dated to the Bartonian to Priabonian of the Late Eocene . Bitterfeld amber is recovered from coal deposits in the Saxony area of Germany and the dating of the deposits is uncertain . Bitterfeld represents a section of the Eocene Paratethys Sea , and the amber that is recovered from the region is thought to be redeposited from older sediments . The fossil record of Bitterfeld and Baltic amber insects is very similar with a number of shared species , and that similarity is noted in the suggestions of a single source for the paleoforest that produced the amber . The amber deposits on the Danish coast , often referred to as Scandinavian amber , is of similar age to the other three European ambers , however a study of the ant fauna published in 2009 indicates Scandinavian amber has a fairly distinct ant assemblage . Y. constricta and Y. geinitzi are both identified from all four European ambers , while Y. samlandicus has been described from Baltic , Bitterfeld and Rovno fossils . Y. intermedius and Y. mayrianum , are each known from only a few fossils , Y. intermedius from only a single Bitterfeld amber fossil while Y. mayrianum is known from a Baltic amber and a Rovno amber fossil .

= = History and classification = =

The type specimens of Y. geinitzi and Y. constrictus were collected in 1868 , and when first described were part of the University of Königsberg 's amber collection . The fossils were initially studied by Austrian entomologist Gustav Mayr who placed the two species in the genus Hypoclinea , now considered a junior synonym of the living genus Dolichoderus . Mayr 's 1868 type descriptions of the new species were published in the journal Beiträge zur Naturkunde Preussens . All the Y. samlandicus syntypes were collected by 1915 , and the first 73 described were part of the University of Königsberg amber collection . These fossils were first studied by American entomologist William Morton Wheeler , whose type description of " Iridomyrmex " samlandica was published in the journal Schriften der Physikalisch @-@ Ökonomischen Gesellschaft zu Königsberg . Both Y. geinitzi and Y. constrictus were both moved from Hypoclinea to the small related genus Bothriomyrmex in 1873 by Dalla Torre . In his 1915 paper The ants of Baltic Amber Wheeler suggested both species and the newly named " I. " samlandica would be better placed in the genus Iridomyrmex and noted Y. geinitzi to be one of the most abundant ant species in the Baltic amber he had studied .

Wheeler based the placement on the structuring of the labial and maxillary palpi . This placement was unchallenged until the genus was reviewed , redefined and split up in 1992 by Steven Shattuck . In his review , Iridomyrmex was split into a more restricted genus group while the other species which did not match the definition of that genus were moved to other genera . At that time Shattuck provisionally kept Y. geinitzi in Iridomyrmex citing a lack of specimens for him to study , while both

Y. constrictus and Y. samlandicus were transferred to the genus Anonychomyrma . The placements of Y. geinitzi was retained until 2011 when Shattuck and Brian Heterick again reviewed Iridomyrmex . With more fossils to study and based on a number of characters , Y. geinitzi was also moved to Anonychomyrma . The three species were reviewed again , this time in 2013 . The species were examined by Russian entomologists G.M. Dlussky and D.A. Dubovikoff , who they came to the conclusion that the three species , along with two unnamed species , were distinct from Anonychomyrma and Iridomyrmex . Based on the differences they noted , Dlussky and Dubovikoff erected the new genus Yantaromyrmex in 2013 for these ants and described two new species , Y. intermedius and Y. mayrinaum . The name is a combination of the Russian word ?????? , translated as yantar , meaning " amber " and the Greek ???????? which means " ant " . They noted the new species name intermedius was derived from the Latin word of that same spelling , meaning " intermediate " . They chose the name mayrianum to honor Gustav Mayr for his work as a myrmecologist .

= = Description = =

The genus is characterized by workers which have head @-@ capsules that are trapazoidal in shape , narrowing at the front and widening towards the rear of the capsule . The oval compound eyes are generally placed slightly to the rear of the capsules midpoint , and lacking ocelli completely . The mandibles have a number of teeth along the masticatory margin (the middle area of the mandibles) and an overall triangular shape . The gaster has a flat first tergite that does not cover the petiole , a flat fourth abdominal sternite .

= = = Y. constrictus = = =

Overall Y. constrictus can be distinguished from the congeneric Y. geinitzi in several ways . Y. geinitzi individuals are overall more gracile in form with a less constricted mesonotum and the mesosoma has a less convex appearance . Y. constrictus specimens have maxillary palps (sensory organs) which are six @-@ jointed , labial palps which are four jointed , and an abundantly hairy body . The antennae have a scape (the first segment of the antenna) which just passes the back @-@ edge of the head capsule on both female and ergatomorphic (male) workers . The ergatomorphs have larger and more rounded compound eyes than the workers , and the antennae are overall longer than in the workers . Both males and workers have a five segmented gaster and the males are distinguished by the slightly protruding stipites (the second segment of the maxilla) at the tip of segment five .

= = = Y. geinitzi = = =

Overall Y. geinitzi can be distinguished from the related Baltic amber species Y. constricta in several ways . Y. geinitzi individuals are overall more gracile in form with a less constricted mesonotum and the mesosoma has a less convex appearance . Y. geinitzi specimens have maxillary palps which are six @-@ jointed , labial palps which are four jointed , and the clypeal border is sinuately indented in the middle . The pupae which Wheeler referred to the species are noted to not have any cocoon unlike the modern larvae of some ant subfamilies which will spin a cocoon to pupate in . The eyes of Y. geinitzi are placed more to the front and sides of the head capsule than seen in Iridomyrmex species . Due to the shape of Y. geinitzi , the species may have been a herpetobiont (an inhabitant of the soils surface) , but scientists suggest that these ants inhabited trees , dwelling inside epiphytes and dead plant material (such as branches) .

= = = Y. intermedius = = =

The only specimen of Y. intermedius is 4 @.@ 5 millimetres (0 @.@ 18 in) that has several cracks surrounding it , and areas of white " mold " coatings . The indent behind the propodeum (the first

abdominal segment) is deep , the connection between the segment and the thorax is wide and covered in wrinkles of the exoskeleton . The propodeum has an angular appearance with a rounded corner when viewed from the side . This separates the species from both Y. geinitzi and Y. mayrianum . The legs of Y. intermedius are generally free of hairs while the mesosoma and head have only a few sparse hairs on the upper surface . This is different then the much hairier Y. constrictus which always has numerous erect hairs on the body and legs . The high conical propodeum and scape which does not extend to the edge ofhte head capsule isolate Y. intermedius from Y. samlandicus . The right antennae of the type specimen is preserved with the head of a Ctenobethylus goepperti worker ant clamped near the tip , and it seems the two had just fought prior to entombment .

= = = Y. mayrianum = = =

Workers of Y. mayrianum range in length from approximately 4 to 5 mm (0 @.@ 16 to 0 @.@ 20 in) and look very similar to workers of Y. geinitzi . In both species the indent behind the first abdominal segment is broader and shallower then seen in Y. constrictus , Y. samlandicus and Y. intermedius . Also unlike the other three species the first abdominal segments surface is smooth and unsculptured . Y. mayrianum can be distinguished from Y. geinitzi by the amount of hairs found on the workers body . In Y. mayrianum there is abundant erect hair covering the entire body , on the underside head capsule and along the eye margins and leg undersides . In contrast Y. geinitzi workers have smooth eye margins and legs , and a sparse scattering of hairs on the mseosoma , last segments of the abdomen and along the upper side of the head .

= = = Y. samlandicus = = =

Y. samlandicus specimens have maxillary palps which are six jointed , labial palps which are four jointed , and a total body length between 5 @.@ 5 ? 6 @.@ 0 millimetres (0 @.@ 22 ? 0 @.@ 24 in) . The antennae each possess twelve segments and a scape that curves at the base . The thorax is narrower in profile than the head capsule , reaching its widest in the broad flattened pronotum . The petiole is notably broad and short , having a high node that has a rounded point on the upper side . Y. samlandicus specimens have fine to coarse punctuation (small spots) across the head and thorax and an overall coloration that is black , though some specimens have a reddish tone to the legs or antennae .