

Amber is a fossilised resin of prehistoric trees. Resin, when exuded by a tree, is sticky and thus constitutes a natural trap for small (few mm in size) organisms. Compared to other fossils, amber fossils have the advantage of being preserved intact (no damage to the organism once it has become embedded in resin) and very often being trapped while doing things which may shed a light on the life style of animals of the past (e.g. ant carrying a larva, parasite attached to its host, partners copulating). Studying amber fossils provides an insight into the diversity, biology and ecology of the organisms of the past.

The succinite, popularly known also as Baltic amber, is the best recognized, with respect to fossil fauna, type of amber. Its age is estimated as ca. 50 million years; it is a resin produced by trees of the so called amber forest which covered vast areas of Scandinavia during the Eocene with its subtropical/tropical climate. The resin became fossilised because it was carried by rivers, deposited on the bottom of water bodies in anoxic conditions, and then re-deposited into secondary deposits. The richest deposits of succinite (Sambian, Bitterfeld and Ukrainian) constitute the valuable source of inclusions which are the object of this study.

More than 4 000 animal species, mainly invertebrates, have been described from Baltic amber to date. Many amber inclusions are mites (most of them not yet studied) which are second only to flies. Out of the ca. 50 000 known mite species only 300 are fossil, and only half of them known from amber.

One of the most numerous groups of mites are terrestrial Parasitengona. They are found in various habitats, and their geographical distribution varies from very local to cosmopolitan. Their life cycle is complicated and involves active and inactive stages; each stage is morphologically different. Post-larval stages are predatory, whereas larvae are ectoparasites of arthropods (with the exception of Trombiculidae - ectoparasites of vertebrates). Larvae search hosts in leaf litter and vegetation which makes them likely candidates for becoming embedded in resin, alone or attached to their hosts.

Traditional and modern methods of amber processing may make it possible to study the fauna of Eocene mites, their morphology, life style and preferred hosts. The project is aimed at analysing fossil record of mites of terrestrial Parasitengona group in three amber deposits (Sambian, Bitterfeld and Ukrainian), in order to learn about their diversity, morphological and biological evolution and also to ascertain if the deposits are of the same or different origin, based on their mite fauna.