

discovered by the author in Baltic amber (38 mya). Those could have been gall-makers on sympplast oaks.

POPULATION DYNAMICS IN SPECIES RICH HOST PARASITOID SYSTEMS OF CASEBEARER SPECIES (LEPIDOPTERA: COLEOPHORIDAE)

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As a potential natural „regulator” of phytophagous insects a parasitoid species needs to be synchronized with the host population. For example koinobiotic specialists of *Coleophora* larvae (many endoparasitoids) emerge later than their hosts, at a time when new host larvae of the following generation become available. However, this strategy increases risks for exposure to the idiobiotic generalists (mainly ectoparasitoids) and that at times unparasitized host larvae are not available. In situations of direct competition for a host individual the generalists normally succeed and therefore cause a numerical reduction of the koinobiotic specialists. The effects of this type of competition to host population dynamics can be modified in single host populations by species-area relationships; the idiobiotic generalists become promoted in diversified habitats - by providing alternative hosts - but not in uniform ones due to the lack of alternative hosts. As a result the species composition of the parasitoid complex and the numerical importance of both parasitoid groups to host population size change with the area covered by the host plant. Finally species-area relationships show a dynamic character forced by vegetational succession. In early successional stages and temporary habitats with a uniform character there will be a negatively correlated isolation-type of species-area relationship whereas the heterogeneity-type with an increasing number of species will be the more common one. Host populations underlying isolation-type conditions will fluctuate more than those living under heterogeneity-type conditions where population size is buffered.

THE EUROPEAN GALL-MIDGE *MIKIOLA FAGI* (DIPTERA: CECIDOMYIIDAE) AND ITS PARASITIDS

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In the course of their evolution from free external feeders to gall formers phytophagous insects have become more adapted and therefore more restricted to their host plants. Insect parasitoids attacking such hosts are living in a more coarse grained environment. They also usually become restricted to the host plant. The univoltine gall midge, *Mikiola fagi* Htg., forms complex galls on the European beech, *Fagus sylvatica* L. Ten species of Chalcidoidea are regularly exploiting the galls. *Eupelmus urozonus* is the only polyphagous ectoparasitoid species attacking a wide range of other gall makers from different groups on different plants. The remaining species are exclusively known from gall midges on beech. In contrast to the situation on free living hosts where parasitization activity of ectoparasitoid species usually occurs when older host larvae are available such a 'species crowding' in *Mikiola* occurs earlier. Three species acting in concert (*Aprostocetus elongatus*, *Torymus cultiventris* and *Mesopolobus fagi* are early season feeders) have relatives, whose activities of parasitization are clearly separated in time indicating an allochronous speciation by evolving special adaptations. Another more common way of speciation is specialization on different hosts feeding upon the same host plant such as *Mikiola fagi* and *Hartigiola annulipes*, a second common gall midge on European beech.

