

Biosystematic studies on the *Alebra albostriella* complex (Homoptera, Typhlocybinæ) in Greece

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The leafhopper *Alebra albostriella* (FALLEN, 1826) is widely distributed in Greece. It occurred in low population densities on several species of oaks and chest-nuts. However, this species caused serious damages to the foliage of a chest-nut forest during the last five years. The forest is located in the province Arcadia (Peloponnesus) above the village Kastanitsa and in an altitude of 1000–1200 m.

In this area sampling at intervals of 15 days at two localities revealed that the population densities of this species were much higher in slopes which were exposed to the sun than in shaded ones. In both localities this species has one single generation per year. Adults collected from June until November oviposit their eggs into the tissue of the young branches and never into the leaves. The eggs hatch by the end of April-beginning of May in the next year and larvae can be collected until the end of June.

In large samples taken from the beginning of June 1982 and 1983 the number of females were approximately three-four times higher than that of males. Three very distinct morphological types could be easily recognized in this species. One type representing 3.5% of the total number (7742) of individuals sampled during 1982 consisted of males and females approximately in equal proportions. The second type representing 67.2% comprised also males and females of a sex ratio of males to females 1.0 : 2.4. The third type comprised only females representing 29.3% of the total number collected during 1982.

Morphological differences in the male genitalia of the two male types could not be found so far. Caryological analysis in the egg-nucleus of ovarian eggs was applied successfully as it was done in planthoppers (DROSOPOULOS, S. 1977. Meded. Landbouwhogeschool Wageningen 77-14: 1-133). In 15 females of the second and third type the metaphases I showed a normal meiosis of a diploid organism. Triploids were not found so far.

Anyhow, further studies are in process in order to elucidate probable differentiation between these constant morphological types of the *Alebra albostriella* complex.

Ecological and biogeographic evidence for the origin of “pseudogamy” provided by some Auchenorrhyncha species-complexes

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Pseudogamy is a peculiar and paradoxical mode of reproduction. Females, usually triploids, produce again all-females triploids only after copulation with

fertile males. These males originate from normal diploid females with which the pseudogamous females coexist under natural conditions.

This phenomenon of pseudogamy of gynogenesis is in the same manner expressed in several species-complexes both among vertebrates and invertebrates. In Auchenorrhyncha it was discovered recently in the species complexes of *Muellerianella* (DROSOPOULOS, S. 1976. Nature, Lond., 263: 449–500) and *Ribautodelphax* (DEN BIEMAN, C. 1981. Acta Ent. Fenn. 38: 6). In both cases this phenomenon is obscurely expressed only by the excess of females in field samples. In addition, similar situations are noticed also in other Auchenorrhyncha species-complexes (that means two or more very closely related species). It is expected therefore that more cases of pseudogamous females will be found within this group of insects.

After several studies on morphology, ecology, genetics, acoustic and mating behavior in these complexes of species we are in the advance situation of studying the origin of these pseudogamous females and facing the question: are they indeed “reproductive parasites” of normal females, thus natural errors, or do they play a role in speciation.

Concerning the origin of pseudogamy, besides the experimental synthesis of such an organism in *Muellerianella* (DROSOPOULOS, S. 1978. Evolution 32: 916–926), we have in both complexes of species *Muellerianella* and *Ribautodelphax* ecological and biogeographic evidence for hybrid origin. Particularly in *Muellerianella*, pseudogamous females are found in areas where two or three closely related species are sympatric and their food plants are growing often in mixture. Especially in southern Greece where the southernmost limits of distribution of these European planthopper species are well defined, allopatric populations of *Muellerianella* species remain “pure” bisexual, while sympatric populations of *Ribautodelphax* species are in association with pseudogamous females.

According to the above situation hybridization obviously occurs, as at least in shown under laboratory conditions. Fertile F₁ hybrid females, which can be backcrossed with the parental males, would provide obstacles in speciation by allowing gene flow between the parental species. Logically, this is avoided by the triploid pseudogamous females which, once produced, lead the gene flow between the parental species into another canal or dead-track.

The wing coupling-apparatus of the Auchenorrhyncha at the SEM

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Our contribution is based on the observations with the SEM of the wing coupling-apparatus of some Auchenorrhyncha species belonging to 10 families. The fundamental plan of this apparatus shows always a longitudinal gutter-like fold (exceptionally two) on the claval margin of the mesothoracic wings (wing-coupling fold of OSSIANNILSSON, 1950); on the costal margin of the metathoracic wings there is a similar longitudinal fold or a shorter coupling lobe; sometimes on the same costal margin there is a secondary coupling-area.

Fifth Auchenorrhyncha meeting in Davos, Switzerland August 28-31, 1984

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