

An aphid from the Plio-Pleistocene København Formation, North Greenland

(Homoptera, Aphidoidea)

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An aphid found in 2.0-2.5 Ma old deposits in northeast Peary Land, Greenland has been identified as *Chaitophorus* cf. *salijaponicus* subsp. *niger* Mordvilko or a close relative.

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INTRODUCTION

A subfossil aphid was found by J. Böcher in Late Pliocene–Early Pleistocene sediments at Kap København in northeast Peary Land, Greenland, latitude 82°30'N., age about 2.0–2.5 Ma. The Kap København Formation is divided into two members, and the upper one, in which the aphid was found, is dominated by coastal and nearshore sand and contains remains of several plants and animals, among these many insects (Bennike & Böcher, 1990). Among the plants are species of coniferous trees, *Salix*, *Betula*, Caryophyllaceae, Ericaceae and Rosaceae. Among the insects are Coleoptera, Hymenoptera and Diptera. Only one representative of Hemiptera has previously been recorded, viz. 'cf. Cicadellidae, gen. and sp. indet.' It is remarkable that none of the insects occur in the High Arctic today. The flora and fauna were more like the subarctic or northern temperate floras and faunas of today.

J. Böcher recognized the similarity between a black, hard granule looking like a small, dry and shrivelled berry of some kind and an aphid, and most kindly let me study and describe the specimen (jr. No. 64924), which at that time was mounted dry on a cardboard rectangle on a pin. It was confirmed that Böcher was right. It was indeed an aphid, which rather remarkably had been conserved in sand in spite of the soft integument characteristic of aphids.

DESCRIPTION OF THE APHID

The dried specimen was apterous, black and

rather shrivelled. All appendages, antennae, rostrum and legs, were missing, which is comprehensible under the circumstances. After its death it had been drowned and rolled by waves at the sea coast before being included in the sediment.

At first several photographs were made of the specimen in its original condition (Fig. 1). Later it was kept for 28 hours in 10% KOH at room temperature and two more days in a less concen-



Fig. 1. *Chaitophorus* cf. *salijaponicus* *niger* Mordv. from Kap København. Body length 2.0 mm.

trated solution of KOH to make it clearer and softer. Only the anterior part (head and prothorax) and the end of the abdomen became clear after this treatment. After having been kept in water for 4 days studies had to be finished because the specimen broke down without being clear enough for detailed investigation of the middle part of the body. The remains were put into 70% ethanol and kept in the collection of the Zoological Museum, University of Copenhagen.

Body length was 1,9 mm. The body shape was oval and rather thick; the underside had become concave by shrivelling. The greatest width of the body (about the middle of the abdomen) was 1.08 mm, 0.51 x the body length. Length of head was 0.22 mm, width across eyes 0.48 mm. The frons was slightly convex, nearly straight (Fig. 2), with indication of very low lateral tubercles with the attachments of the broken antennae. On vertex a longitudinal suture was indicated. The eyes were large, longitudinal diameter 0.09 mm, with distinctly visible ocular tubercles placed behind the compound eyes. The place, at which the rostrum had been attached, was visible on the underside of the posterior part of the head. Length of pronotum was 0.22 mm. The integument showed a reticulate, jig-saw-puzzle-like pattern of transversely oval cells on head and body (Figs. 3 and 4), and it was probably rather strongly sclerotized. Segmental borders of thorax and abdomen were rather distinctly visible except between some of the abdominal tergites, apparently III-V or III-VI, perhaps II-VI. The posterior end of the abdomen was rounded conical with no indication of a cauda. This might mean that the specimen was immature. Siphunculi or siphuncular pores were invisible, perhaps an indication of a pore was present in the left side, diameter 0.06 mm.

TAXONOMY

The presence of compound eyes and a distinct border between head and pronotum in an apterous aphid show that it belongs to Aphidoidea, and within this superfamily not to Mindaridae, Hormaphididae, Anoeciidae, Thelaxidae or Pemphigidae. The absence of distinctly visible siphunculi makes it improbable that it belongs to Aphididae. The general habitus was similar to that of Chaitophorinae within Drepanosiphidae. The siphunculi of this subfamily are very short and truncate or pore-shaped, and such siphunculi would be very difficult to see under the present circumstances.

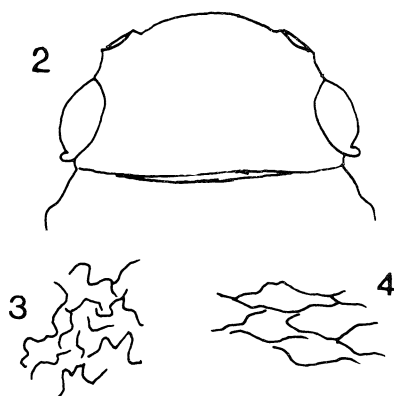


Fig. 2-4. *Chaitophorus* cf. *salijaponicus niger*. - 2: shape of frons and eyes; 3: reticulation on integument of head; 4: reticulation on integument of abdomen.

The similarity to species of *Chaitophorus* Koch is considerable. The abdominal tergites (I-)II-VI are fused in most species of this genus, and their integument is normally reticulate in the same way as the aphid from Kap København. It is probably the still extant *C. salijaponicus* subsp. *niger* Mordvilko or a close relative.

C. salijaponicus niger is 1.2-2.2 mm long, black, with a distinctly reticulate cuticle. It has long hairs, and hairs were not visible in the subfossil specimen, but hairs might as well as appendages have disappeared due to the disturbances occurring just after its death. *C. salijaponicus niger* has a well developed cauda, which is constricted at base, but only as an adult, and the subfossil specimen might be immature and consequently without a fully developed cauda.

C. salijaponicus niger feeds on several species of *Salix*. It is sometimes attended by ants (ants have been found in the Kap København Formation, while no ants live in Greenland today). Its recent distribution is: Europe (north to the southern part of Norway and Uppland in Sweden, about 59°N., south to Spain), Turkey, Ukraine, Caucasus, Central Asia, Mongolia and the Ussuri region (Heie 1982).

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